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題名 都市のコンパクト化効果の還元と隔地間の権利変換による都市の集約化に関する研究

—群馬県前橋市をケーススタディとして—

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【要旨】

多くの地方都市は、急速な人口減少と高齢化に直面し、地域産業が停滞することで都市の活力が低下している。また、拡散した都市の低密度化が進み、住民などの生活を支えている公共サービスの質の低下が危惧されている。このような状況から、コンパクトシティ政策が推進されているが、抜本的な改善に至っているとは言い難い状況にある。

本稿では、コンパクトシティ政策に係る問題や課題を調査し、人や都市機能の集約方策を整理した。そして、群馬県前橋市を対象に、①都市の人や都市機能の集約・集積効果の評価、②住民等の移転推進方策の検証を行った。移転推進方策では都市のコンパクト効果を定量化し、その効果を住民等に還元することで隔地間の権利交換の可能性を検証した。

その結果、人の集約効果は移転率が高くなるごとに、また、一定の残留人口を許容することによって高くなることから、住民等の移転推進政策の重要性が示唆された。そのため、隔地間の権利交換に係る法改正や、移転を推進する経済的支援などの制度化を提案した。このような提案によって、真に価値ある社会の実現に貢献したいと強く切望する。

(以上、471文字)

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第1章 序論

1-1 研究の背景

我が国の多くの地方都市は、急速な人口の減少と高齢化に直面し、地域産業が停滞することで都市の活力がますます低下している。また、住宅や店舗などが郊外に立地していくことで、拡散した都市の低密度化が進み、厳しい財政状況下で住民等の生活を支える公共サービスの質の低下が危惧されている。これは高度経済成長期における中心市街地の過度な人口集中が、地価の高騰を招き、急速に増加する人口の受け皿として郊外が開発されることで、市街地が無秩序に拡散するスプロールが進展し、市街地の中心部に空洞が生じるドーナツ化現象が原因として考えられている。

このような状態を改善する目標として掲げられたコンパクトシティは、都市を構成する市街地の領域を小さく保ち、歩いて暮らせる範囲を生活圏として捉えて、住みやすいまちづくりを志向する持続可能な都市として認識されている。コンパクトシティ政策の経緯として、「2007年7月に社会資本整備審議会答申において集約型都市構造¹という名称で実質的にコンパクトシティ政策が国の方針として提示された²。」これを契機として、2014年7月に『国土のグランドデザイン 2050³』で示されたコンパクト+ネットワーク（以下、コンパクト・プラス・ネットワークとする。）の方針に沿う形で、2014年に立地適正化計画が制度化されている。このようなまちづくり計画を中心に、基礎自治体によるコンパクトシティ政策が推進されているが、多くの地方都市では抜本的な改善に至っているとは言い難い状況にある。

政策が進まない要因として、コンパクトシティ政策を推進していくための具体的な道筋が見えにくいことや、海外国内問わずコンパクトシティへの批判や政治・政策的な課題があるとされ、これらの要因を明らかにすることが政策を推進していくために重要である。海道(2007)は、コンパクトシティの有用性をめぐって英国・欧州で議論が続いているとし、その論点として、「第一に、コンパクトシティの有用性は定量的、科学的に根拠が乏しいこと、第二に、市民の支持を得られる具体的な実現手法や政策論は有効なのかといった計画論・政策論とともに、第三として、市街地環境の悪化などの反作用・副作用を持っているのではないか、とも疑われていること⁴。」の三点を挙げている。

そこで本稿では、コンパクトシティ政策の基本的な方針とされるコンパクト・プラス・

¹ 国土交通省 都市・地域整備局(2007)『集約型都市構造の実現に向けて』都市交通施策と市街地整備施策の戦略的展開

² 越川知紘, 菊池雅彦, 谷口守(2017)「コンパクトシティ政策に対する認識の経年変化実態－地方自治体の都市計画担当者を対象として－」土木計画学研究論文集, Vol.73, No.1, pp.16-23

³ 国土交通省(2014)『国土のグランドデザイン 2050～対流促進型国土の形成～』

⁴ 海道清道(2007)『コンパクトシティの計画とデザイン』学芸出版社, p.51

ネットワークの概念を整理し、立地適正化計画を中心とするコンパクトシティ政策の推進状況を概観しながら、政策を推進するための課題を抽出するとともに、地方都市を対象にコンパクト・プラス・ネットワークに資する新しい価値の創造を試みる。

1-2 研究設問

本稿は、急速な人口の減少や高齢化に直面する地方都市を中心に、コンパクトシティと言われる集約型構造の都市が持続可能な都市として認識されてきたなかで、長年にわたり政策の成果が見出せていないという現状を踏まえ、政策を担う基礎自治体とステークホルダーの中心にある住民等の視点から、コンパクトシティ実現に向けた方策を明らかにする。

1-3 研究の方法と目的

本稿は、図1に示す研究の方法と流れに基づき、実証研究の手法を用いた考察を行う。まず、地方都市を対象にコンパクト・プラス・ネットワークに求められる人や都市機能の

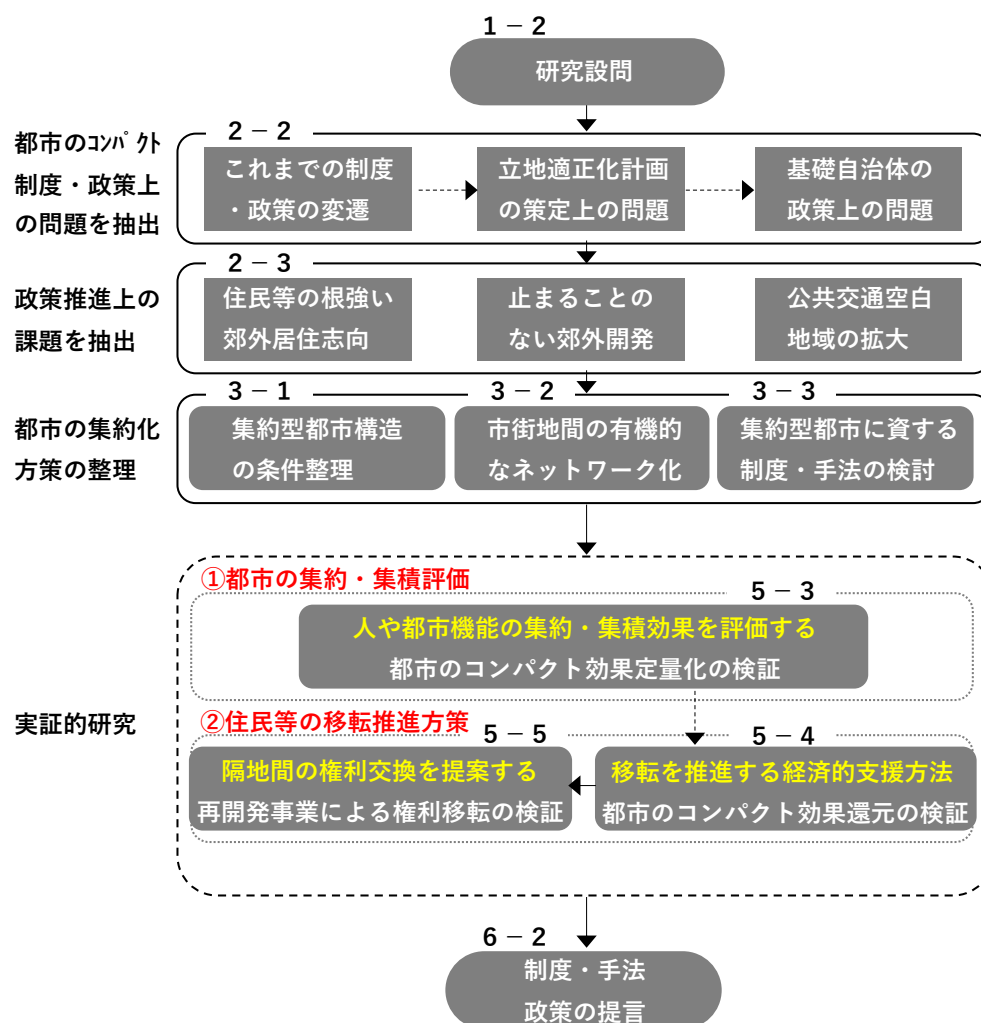


図1：研究の方法と流れ

集約とそのネットワーク化、集約化を推進するためのコンパクトシティ政策について問題や課題を整理する。次に、コンパクトシティとされる集約型都市構造の条件を定義して、都市を構成するそれぞれの拠点・市街地を有機的なネットワークで繋ぐための方法を整理する。整理した諸条件に基づく実証研究では、①都市の人や都市機能の集約・集積効果を評価して、②住民等の移転推進方策を検証する。そして、実証研究を通じてコンパクト・プラス・ネットワークに資する制度・手法の開発を試みることで、また、本研究で得られた知見から新たな政策を提言することを本稿の目的とする。

1-4 本稿の構成

本稿は、6章から成る。第2章では、地方都市におけるコンパクトシティ政策の問題として、国土交通省が提唱するコンパクト・プラス・ネットワークの概念を整理した上で、コンパクトシティ政策の推進状況を概観し、政策推進上の課題を明らかにする。第3章では、集約型都市の形成に向けた方策の検討として、集約型都市構造の条件を整理した上で、市街地間の有機的なネットワーク化とともに集約型都市に資する方策の方向性を提示する。第4章では、第3章で提示した制度・手法の構築に有用な先行研究の整理とともに、分析の枠組みの概要を述べる。第5章では、第4章の分析の枠組みに沿って実施する実証研究の結果について考察する。第6章では、本稿の結論として、全体のまとめと本研究の意義から、新たな政策を提言するとともに、研究の価値と限界について述べる。

1-5 用語の定義

本稿で用いる主要な言葉の定義は以下のとおりである。

【立地適正化計画】2014年の都市再生特別措置法の改正に伴って制度化されている。都市全域を見渡したマスタープランに位置づけられる市町村マスタープランの高度化版とされ、都市計画区域内を対象として都市機能誘導区域や居住誘導区域を設定する。

【モータリゼーション】自動車が社会と大衆に広く普及し、生活必需品化する現象を言う。国立国語研究所では、言い換え提案の中で「車社会化」という代替表現を提示している。

【区域区分・線引き制度】都市計画区域において、市街地として積極的に整備する区域と市街化を抑制する区域に区分する制度である。

【災害ハザードエリア】国が決めた基準に則って、都道府県が現地を調査して指定する。危害のおそれのある土地がイエローゾーン、特に建築物に損壊が生じるなど著しい危害のおそれのある土地がレッドゾーンに指定される。

【DID】人口集中地区：人口密度が 4,000 人/km²で、5,000 人以上が連なって人が住んでいる区域をいう。

【非線引き都市計画区域】市街化区域と市街化調整区域の区分がされていない都市計画区域をいう。

【特別用途地区】都市計画法に定められた地域地区で、用途地域内の一定の地区における当該地区の特性にふさわしい土地利用の増進、環境の保護など特別の目的実現を図るため用途地域の指定を補完して定める地区をいう。

【多変量解析（相関分析・重回帰分析・主成分分析）】複数の変数に関するデータをもとに、これらの変数間の相互関連を分析する統計的技法をいう。

【分散インフレ係数・多重共線性】最小二乗回帰分析における多重共線性の深刻さを定量化し、推定された回帰係数の分散(推定値の標準偏差の平方)が、多重共線性のためにどれだけ増加したかを測る指標である。

【パーソントリップ調査】一定の地域における人の動きを調べ、交通機関の実態を把握する調査とされ、交通実態調査ともいう。

【ビッグデータ解析】大量かつ多種多様なデータを分析することで、ビジネスなどを中心に有用な知見を見つけ出す技術といえる。

【交通需要マネジメント（TDM）】従来の自動車利用者の行動パターンを変化させることにより、道路渋滞をはじめとする交通問題を解決する手法であり、施策の分類として経路・手段・時間の変更や自動車利用の効率化、発生源の調整などがある。

【災害危険区域】、建築基準法第 39 条の規定に基づいて、地方公共団体が条例で指定する地域のことであり、津波、高潮、出水等による危険の著しい区域を、災害危険区域として指定することができる。

【コーホート要因法】各コーホートについて、自然増減（出生と死亡）及び純移動（転出入）という二つの人口変動要因、それぞれについて将来値を仮定し、それに基づいて将来人口を推計する方法である。

第2章 コンパクトシティ政策の問題と課題

我が国の多くの地方都市は、急速な人口の減少と高齢化に直面し、地域産業が停滞することで都市の活力がますます低下している。また、住宅や店舗などが郊外に立地していくことで、拡散した都市の低密度化が進み、厳しい財政状況下で住民等の生活を支える公共サービスの質の低下が危惧されている。このような状態を改善させるコンパクトシティと言われる集約型構造の都市が、持続可能な都市として認識されつつあるなかでも、長年にわたり政策の成果が見出せていない。

本章は、地方都市で進められているコンパクトシティ政策について、国土交通省が提唱するコンパクト・プラス・ネットワークの概念を整理した上で、政策の推進状況を概観し、政策推進上の問題や課題を明らかにする。

2-1 コンパクト・プラス・ネットワークの概念

コンパクト・プラス・ネットワークとは、国土交通省が『国土のグランドデザイン 2050』の中で、「人口減少・高齢化が進む中、特に地方都市においては、地域の活力を維持するとともに、医療・福祉・商業等の生活機能を確保し、高齢者が安心して暮らせるよう、地域公共交通と連携したコンパクトなまちづくりを進めることが重要⁵」とする、コンパクトシティ政策の考え方である。しかしながら、谷口(2010)が、「コンパクト化は「退く」という行為を潜在的に内在し、世の中の事象万事において、進むより退くことの方が難しいのは当然⁶。」と述べているとおり、拡散した都市の縮退化を進めて適正な規模に戻すことは容易なことではない。

そこでコンパクトシティ政策の推進状況を制度・政策の変遷を辿りながら、現在重要な位置付けにある立地適正化計画の策定状況と制度上の問題を、また、基礎自治体が進めてきた政策上の問題を明らかにし、コンパクトシティ政策推進上の課題を抽出する。

2-2 コンパクトシティ政策の推進状況

(1) これまでの制度・政策の変遷

高度経済成長期の中心市街地では、過度な人口集中に伴う地価の高騰や戦前の家督相続制度（原則一人だけが遺産を相続する。）から戦後、均分相続制度に改正されたことなど

⁵ 国土交通省ホームページ（政策・仕事，都市，重点政策）「コンパクト・プラス・ネットワーク」https://www.mlit.go.jp/toshi/toshi_ccpn_000016.html#:~:text=人口減少・高齢化が,です（コンパクト+ネットワーク）。（閲覧 2022.12.22）

⁶ 谷口守(2010)「コンパクトシティの「その後」と「これから」」日本不動産学会誌，第24巻，第1号，pp.59-64

を要因に土地の細分化が進展した。また、急速な人口増加で飽和した市街地の中心部から、居住条件や環境の良い郊外に向かって人の移動が進み、モータリゼーションの進展と大型商業施設の郊外立地が人の移動を後押しした。そして、人の移動に呼応するように医療・教育・福祉・行政などの都市施設が郊外へ移転分散していった。

このように人の移動と都市施設の配置変動が、都市のスプロール化とドーナツ化現象を助長させた。その結果、中心市街地の衰退が顕著になったことから、市街地の整備改善及び商業等の活性化を目的とした、中心市街地の活性化に関する法律、大規模小売店舗立地法、改正都市計画法から成るまちづくり三法が1998年（大規模小売店舗立地法は2000年に施行）に施行された。

一方でこの流れに反するように、2000年の都市計画法改正で、人口や産業活動の著しい拡大が予測されず、市街地内に相当の低密度利用地が存在するなど、区域区分の必要性が薄いと考えられる場合に線引き制度の選択が可能となった。これにより、低密度な市街地の拡散が助長され、2004年に総務大臣から、「中心市街地の活性化が図られていると認められる市町は少なく改善が必要」との勧告⁷が出された。

市街地の郊外拡散の危機感から、大型商業施設の郊外出店を強く規制することを目的として2006年にまちづくり三法が改正されたが、期待通りの効果は得られなかった。このような状況を踏まえて、行政と住民・民間事業者が一体となったコンパクトなまちづくりを促進することを目的として、2014年に都市再生特別措置法が改正され、立地適正化計画制度が創設された。

（2）立地適正化計画の策定状況と問題

国土交通省によれば、令和4年7月31日時点で634の都市が立地適正化計画について具体的な取組みを行っている。このうち460都市が計画を作成して公表をしており、都市機能誘導区域と合わせて居住誘導区域を設定した都市は457と多くの都市でコンパクト・プラス・ネットワークの方針に沿ったコンパクトシティ政策が積極的に推進されている。亘理(2017)は、「立地適正化計画は、従来の都市計画制度の基本枠組みは維持しつつも関連する周辺法制度との連携を図ろうとする点で「広義の都市計画制度」と呼び得るものである。また、種々の誘導策を通して市町村マスタープランの実効化を裏付けようとする点で、「市町村マスタープランの高度化版」と称することもでき、運用次第では、都市計画の実効化に寄与する可能性を秘めている⁸。」と述べている。これらを踏まえて基礎自治体の立地適正化計画の策定状況を概観しながら、計画制度の問題点を抽出する。

⁷ 総務省（2004）『中心市街地の活性化に関する行政評価・監視』

⁸ 亘理格（2017）「誘導的手法としての立地適正化計画－その特徴と課題」日本不動産学会誌，第31巻，第2号，pp.44-48

まず、都市の適性規模という視点で、立地適正化計画の策定状況を概観する都市を抽出する。飯塚・中村(1986)は、「市民参加の観点から、都市規模の上限は20万人程度⁹」とし、吉村(1999)は、「人口当たり歳出総額を最小にするという意味での最適都市規模は人口20万人程度¹⁰」とする都市の人口規模を示している。このような指標を参考に、法定人口が20万人以上の地方都市のうち、地方自治法第252条の22第1項に規定され政令によって指定を受けた中核市を対象とする。2022年4月1日時点で、中核市に指定された都市は62市であるが、概観する上で使用する統計情報の制約から、2021年4月1日時点で追加指定されている長野県松本市及び愛知県一宮市を除く60市を対象とする。

2023年1月までに中核市に指定された60市のインターネットホームページを閲覧して立地適正化計画策定状況を調査した結果、立地適正化計画を策定していない中核市が7市あった。この7市を除いた53市を対象として、居住誘導区域を設定する際の基準項目と当該項目を設定している都市数、その都市数が全体に占める構成比率を整理した。

表1：居住誘導区域を設定する際の基準項目

原則として居住誘導区域に含まないこととすべき区域	都市数	構成比 (%)	拠点・公共交通・幹線道路沿線を中心する指定状況	都市数	構成比 (%)	居住誘導区域内の人口密度目標値 (人/ha)	都市数	構成比 (%)
土砂災害特別警戒区域	50	94.3	設定	39	73.6	0-39	0	0.0
津波災害特別警戒区域	0	0.0	非設定	14	26.4	40-49	17	32.0
災害危険区域	19	35.8	未計画	7		50-59	11	20.8
地すべり防止区域	20	37.7	計	60	100.0	60-69	7	13.2
急傾斜地崩壊危険区域	42	79.2	拠点地域から300～800m	13	24.5	70-79	3	5.7
居住誘導区域外の居住地域等の指定状況	都市数	構成比 (%)	鉄道から500～1000m	38	71.7	80-89	2	3.8
設定	18	34.0	バスから250～500m	33	62.3	90-99	5	9.4
非設定	35	66.0	沿道から300m	4	7.5	100-109	2	3.8
未計画	7		人口密度	9	17.0	未設定	6	11.3
計	60	100.0	地形的制約の少ない地域	1	1.9	未計画	7	
						計	60	100.0

出典：筆者作成

立地適正化計画において、居住誘導区域の設定方法を大きく分類すると、市街化区域を中心として居住誘導に適さない範囲を除く方法や、公共交通機関の鉄道駅やバス停を起点とした一定範囲の区域を対象とする方法があり、これらの複数の条件を組み合わせる居住誘導区域を設定している市が多く、将来人口密度の目標値を掲げている市もある。一方、表1から中核市が策定している立地適正化計画の問題点等が浮き彫りとなった。居住誘導区域の設定方法が、立地適正化計画の目的に沿っているとは言い難い部分について、その理由を3点挙げて問題点を指摘する(表1)。

1点目は、本来居住を誘導すべきではないエリアが居住誘導区域に指定されている実態がある。多くの中核市では、原則として居住誘導区域に含まないこととすべき区域である災害

⁹ 飯塚和幸, 中村紀一(1986)「都市規模と民主主義(II)」『経済評論』35(5), pp.36-51

¹⁰ 吉村弘(1999)『最適都市規模と市町村合併』東洋経済新報社

の危険性の高いエリア（以下、災害レッドゾーンという。）を除外している。これは、2020年の都市再生特別措置法の改正により、立地適正化計画で設定する居住誘導区域から災害レッドゾーンの除外を徹底するとともに、居住誘導区域外の災害レッドゾーン内で住宅の建築の用に供する目的で行う一定規模以上の開発行為等（業として行われるものに限る。）について勧告に従わなかった場合は、その公表が可能となったことにある。改正に至った要因として権（2021）は、「国土交通省が行った調査の結果によると、2019年12月時点で居住誘導区域を含んだ立地適正化計画を公表している275都市のうち、居住誘導区域に土砂災害特別警戒区域等の災害レッドゾーンが含まれている都市は13都市（4.7%）、浸水想定区域等の災害イエローゾーンが含まれている都市は254都市（92.4%）に上る¹¹。」と指摘している。

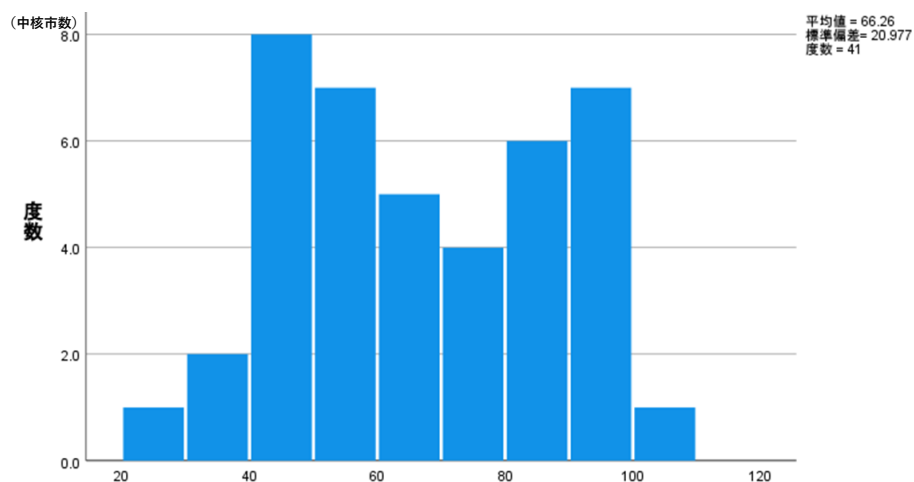
2点目は、居住誘導区域外において準居住誘導区域・新市街地区域・居住誘導準備区域などの名称を用いた地域で居住の継続を推奨する中核市が3割程度あり、居住を誘導する区域を線引きする効果や意義が薄れることにある。そして、居住誘導区域外の居住を推奨するために重要となる、都市の拠点となる都市機能誘導区域と居住誘導区域外のエリアを繋ぐ有機的なネットワークやアクセシビリティを確保する計画がない、または、具体的な計画として示されたものが見当たらない状況にある。吉武・泉（2021）が、誘導区域外の「計画が不在の自治体が多く存在することを確認したが、このような状況となっている背景には、実は都市計画区域外も含め、誘導区域外に対するビジョンと計画、実現のための施策に関わる特定の即値的な計画制度が弱いことも関連している¹²。」と述べている。

3点目は、9割程度の中核市が居住誘導区域内における人口密度の目標値を示しているものの、3割弱の中核市が拠点や公共交通・幹線道路沿線等を中心とする誘導区域の設定をしておらず、加えて、人口密度を指標とする設定方法を採用している中核市は、2割弱に留まっていることにある。このような状況から、都市機能誘導区域等の都市の拠点を核として集住を推進していく具体的なイメージが掴めていないのではないかと、という疑念が拭いきれない。そこで、中核市の居住誘導区域が市街化区域内に占める割合（以下、居住誘導区域面積比率とする。）と合わせて、市街化区域面積に対するDID面積の割合と、DID面積に対する居住誘導区域面積の割合から、居住誘導区域面積とDID面積の関係を整理することで、統計情報で把握できる人の集住度合（人口密度）と、立地適正化計画における居住誘導区域の設定範囲の関係性を検証する。なお、居住誘導区域面積は立地適正

¹¹ 権奇法(2021) 「都市再生特別措置法等の改正（令和2年6月10日法律第43号）」地方自治関連立法動向研究34, 自治総研通巻507号, 2021年1月号

¹² 吉武哲信・泉亮太郎(2021)「立地適正化計画での誘導区域外地域の方針とその記述に対する自治体の考え方」都市計画論文集, Vol.56, No.2, pp.334-346

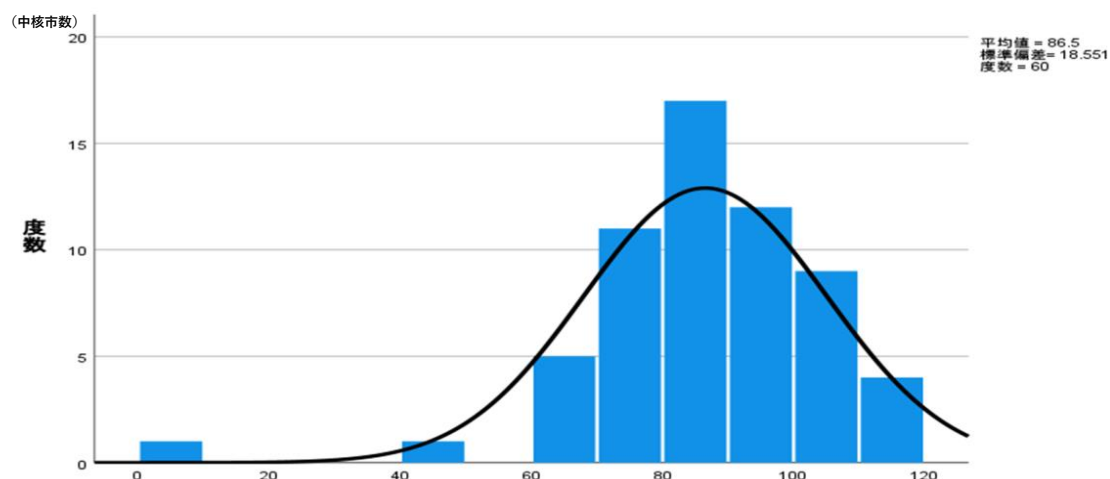
化計画書に掲載をしていない中核市が 17 市あるが、そのうち 5 市は先行研究¹³の数値を引用することとし、12 市を除いた 41 市を対象とする。



出典：筆者作成

図 2：市街化区域に居住誘導区域が占める割合〈居住誘導区域面積比率〉（%）

中核市の居住誘導区域面積比率は、平均値が約 66%、閾値を 10%単位とする階級値毎の度数（中核市数）は 40～50%、90～100%の間で多く分布しており、居住誘導区域面積比率 50%未満の中核市が全体の 3 割弱であった。ヒストグラム図が示す 2つの山の意味は、現状の市街化区域と概ね同範囲に居住誘導区域を設定している中核市と、市街化区域の半分程度まで居住誘導区域の絞り込みを行っている中核市を表している(図 2)。

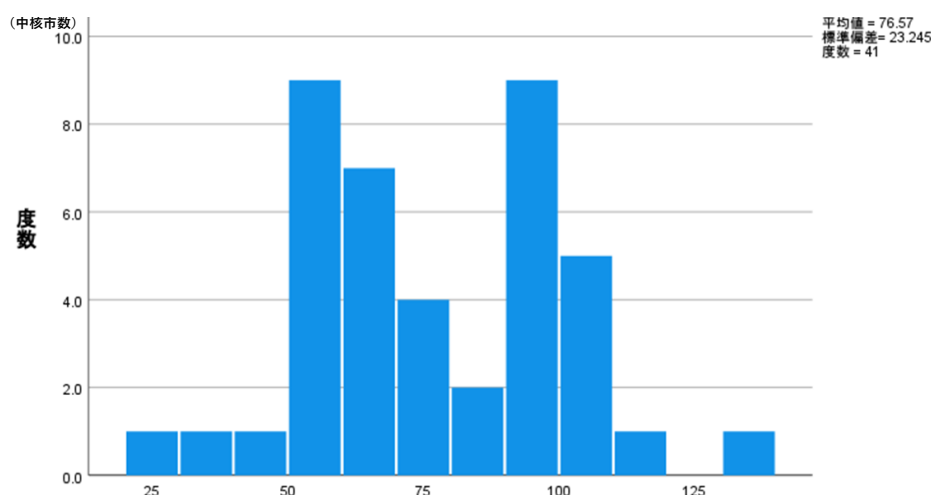


出典：筆者作成

図 3：市街化区域面積に対する DID 面積の割合（%）

¹³ 西井成志・真鍋陸太郎・村山顕人(2019)「立地適正化計画における居住誘導区域設定の考え方とその背景－市街化区域に対する居住誘導区域の面積比率が対照的な自治体の比較を通じて－」都市計画論文集, Vol.54, No.3, pp.532-538

また、市街化区域面積に対する DID 面積の割合は、平均値が約 86%、閾値を 10%単位とする階級値毎の度数（中核市数）は 80~90%が最も多く、これは、現状の市街化区域と概ね同範囲に DID が重なる中核市が多くあることを示しており、市街化区域=DID 人口集中地区と解釈できるだろう。しかしながら、今後想定される急速な人口の減少によってヒストグラム図に示す正規分布曲線は必然的に図左手へスライドすることになる(図3)。



出典：筆者作成

図4：DID面積に対する居住誘導区域面積の割合(%)

加えて、DID 面積に対する居住誘導区域面積の割合は平均値が約 76%、閾値を 10%単位とする階級値毎の度数（中核市数）は、ヒストグラム図が示す2つの山があり、これは、居住誘導区域が現状の DID と概ね同範囲で重なる中核市と、居住誘導区域を現状の DID より狭い範囲に設定している中核市があることを表している。今後想定される急速な人口の減少によって都市の人口密度が低下していくことが想定されるなか、現状の DID より広い範囲で居住誘導区域を設定することに課題があることを指摘しておきたい。(図4)。

最後に、居住誘導区域面積比率が9割を超える中核市を抽出して、居住誘導区域面積・DID 面積・市街化区域面積の関係性を整理した(表2)。市街化区域面積に対する DID 面

表2：居住誘導区域面積・DID面積・市街化区域面積の割合

中核市	立地適正化計画 居住誘導区域面積 (km ²)	DID面積※1 (km ²)	市街化区域面積※2 (km ²)	居住誘導区域面積/ 市街化区域面積 (%)	DID面積/ 市街化区域面積 (%)	居住誘導区域面積/ DID面積 (%)
豊中市	36.60	36.39	36.60	100	99	101
寝屋川市	21.00	22.77	21.49	98	106	92
鹿児島市	80.67	75.71	84.05	96	90	107
長野市	56.18	55.40	59.48	94	93	101
松江市	30.17	22.33	32.69	92	68	135
福島市	45.96	40.72	50.43	91	81	113
八尾市	25.00	31.26	27.49	91	114	80

出典：筆者作成

※1：総務省統計局(2020)「政府統計の総合窓口(e-Stat)」, 国勢調査(総務省)人口等基本集計第1-2表

※2：国土交通省(2010)「§2. 都市計画区域, 市街化区域, 地域地区の決定状況」

積の割合が高い都市は、DID 面積に対する居住誘導区域面積の割合が低い結果となった。これは、市街化区域より広い範囲に DID があり、DID よりも小さい範囲に居住誘導区域を設定していることを意味しており、都市の集約化を積極的に推進していく方針が窺える。一方で、この逆のケースにある中核市の居住誘導区域は、市街化区域とほぼ同範囲で設定され、DID より広い範囲にあり、将来的な人口減少に伴う人口密度の低下を加味して居住誘導区域を設定しているとは言い難い状況にあった。

このように一部の中核市において設定された居住誘導区域が、立地適正化計画の目的に沿っているとは言い難い3点の理由のとおり、当該計画が立地の適性を図ることを目的としながら、都市計画において周辺都市との整合性を含めた都市全域を見渡したマスタープランにはなっていないと言わざるを得ない。

(3) 基礎自治体の政策上の問題

巖・山村・鈴木(2018)は、「各市町村における都市計画の基本的方針となる都市計画マスタープランにおいても、多くの市町村において都市構造のコンパクト化を目指した拠点が設定されてきた。しかしながら、現状で都市サービス施設の集積が見られない場所にも、こうした拠点が設定されているといった問題や、立地適正化計画があるものの、誘導区域外での開発が進んでいる問題も指摘されている¹⁴。」としている。これまでに基礎自治体が進めてきた政策上の問題として、郊外開発、農地転用、公共施設などの郊外移転の3つの視点からその問題点を指摘する。

1点目は、基礎自治体が郊外における開発行為を容認してきたことである。現行の都市計画法第34条は、一定条件のもとで市街化調整区域内における開発行為を可能とする、いわゆる開発許可条例の制定を容認している。これは、無秩序な市街化を抑制すべき区域において開発行為を容認することで、農地の転用なども条例によって認めることになる。とりわけ都市計画法第34条11号(以下、3411条例という。)の規定が、市街地の拡大をもたらすとしてこれまでの研究でも懸念されてきた。

浅野・藤原(2010)は、自治体担当を対象とする3411条例に関するアンケート調査から、「自治体担当部局の見方では、持続的な集落維持や集落の衰退を目的として導入されたが、十分な効果があったとはみなされていない。」と評価している。そして「条例導入と開発の量的変化の関係は密接であり、開発件数と総開発面積の各々において急増している事例が多数見られる¹⁵。」と指摘している。また、野澤(2019)は、「立地適正化計画の策定を機

¹⁴ 巖先鏞・山村拓巳・鈴木勉(2018)「立地合致度指標を用いた公共施設立地の商業集積と空間的關係に関する研究」都市計画論文集, Vol.53, No.3, pp.1442-1447

¹⁵ 浅野純一郎・藤原郁恵(2010)「地方都市における開発許可条例の導入効果とその課題に関する研究～主に都市計画法34条11号条例を対象として～」都市計画論文集, Vol.45, No.3,

にした 3411 条例の見直しの動向調査において、指定区域の縮小をする予定はないとする市町村が 4 割あったが、人口だけでなく、世帯数も減少し始めている市町村では、今後、少なくとも 3411 条例の指定区域の見直しを行う必要がある¹⁶。」と指摘している。

2 点目は、前述した 3411 条例で市街化調整区域内の開発行為が容認されることで農地の転用も可能になったことである。農業・農村には、「国土の保全、水源の涵養、自然環境の保全、良好な景観の形成、文化の伝承等、農村で農業生産活動が行われることにより生ずる、食料その他の農産物の供給の機能以外の多面にわたる機能¹⁷」が期待され、食料・農業・農村基本法において国内の農業生産に必要な農地の確保及びその有効利用を図るとされている。一方で、経済対策に合わせた農地転用の促進や農業従事者の高齢化と担い手不足による耕作放棄地の増加などを背景に農地面積は減少の一途をたどっている。

武本 (2018) は、「都市的土地需要の増加に伴って、相対的に安価な農地（それも市街化区域以外に所在するもの）に対して宅地、工場用地、公共事業用地などへ転用する開発圧力が集中した。その背景には、農地制度と都市計画制度の間に、農地を非農地化した場合のシームレスな規制が存在していなかったことによるものである¹⁸。」と指摘している。

3 点目は、基礎自治体が郊外開発の抑制を図ることなく、自ら公共施設などの郊外移転を推進したことである。藤波 (2018) は、「農林水産省の土地管理情報収集分析調査結果の概要によれば、2000 年から 2007 年に、公共事業向けに転用された農地のうち、実に 82% が市街化調整区域や非線引きの都市計画区域（用途地域を除く）など、本来開発を抑制することが原則となっていた地域であることが分かっている。」と述べている。加えて、「安易な農地転用による公共施設の郊外立地の背景には、市街化調整区域における開発に際して、民間事業者であれば必要となる開発許可が、公共施設の場合不要とされていたことがある¹⁹。」と指摘している。国谷・中井(2001)は、移転を計画した病院を対象とするアンケート調査結果から、「行政側は病院の郊外移転に対して、現状追認型である。そして行政による中心市街地への影響評価においても、中心市街地の衰退よりも移転跡地の活用可能性に対する評価の方が高い。」と述べている。加えて、「行政による影響評価と基本計画

pp.685-690

¹⁶ 野澤千絵(2019)「立地適正化計画の策定を機にした市街化調整区域における規制緩和条例の方向性―「コンパクト・プラス・ネットワーク」型の開発許可制度の構築に向けて―」『土地総合研究』2019 年春号, pp.36-41

¹⁷ 農林水産省ホームページ（農村振興，農業・農村の有する多面的機能）
https://www.maff.go.jp/j/nousin/noukan/nougyo_kinou/（閲覧 2023.1.20）

¹⁸ 武本俊彦(2018)「日本における土地の所有・利用の制度のあり方～日本社会の拡張期から収縮期における歴史的展開過程の一考察～」『土地と農業』(48)pp.114-131

¹⁹ 藤波匠(2018)「コンパクトシティ形成に向けた土地利用について」JRI レビュー Vol9, No60 , pp.2-22

の整合性については、病院移転を衰退原因の1つとしての位置付けがなされていない市町村が多い。今後新たに施設整備を行う市町村においても、基本計画への跡地利用方針を定めていない市町村が多い²⁰。」と指摘している。

2-3 コンパクトシティ政策推進上の課題

(1) 根強い郊外居住志向

コンパクトシティ政策推進上の障壁として、住民等の根強い郊外居住志向を一因とする仮説を立てた場合、視点を変えれば街なか居住には住民等の共感が得られない理由があると言い換えることができる。その最たる理由は、中心市街地である街なかは、土地の価値が高いため、不動産を取得しても居住環境が悪く、必要な空間が確保できないことだろう。しかしながら、居住地を選択する条件は、経済的な理由以外にも地縁や年齢層・世帯構成などの直接的要因から住宅種別や周辺環境、勤務地や労働条件、アクセシビリティや交通手段、時代背景などの間接的要因まで考慮すると多様である。

木村・桜井(2005)は、地縁性と居住経歴に着目した研究における、地方都市郊外の居住継続性に関わるアンケート調査結果から、「市との関係よりも町内・郡内といった範囲の地縁性が極めて強いが近郊と遠郊ではその程度に大きな違いがあり、モータリゼーションを前提に成立している圏外近郊では市との結びつきが顕著に強くなっている。」と考察をしている。また、「住生活・住意識の実態は複雑であるが、大都市の居住歴と地縁がある人や転居歴と地縁がある人は特に、市町村に対する愛着やまちづくり意識の高さが窺えることから、多様な居住体験と地縁の結合が今後の方向性として注目される²¹。」と指摘している。居住地を選択する条件や事情は一樣ではない。しかしながら、高度経済成長期における中心市街地の過度な人口集中と、急速に増加する人口の受け皿として整備された郊外住宅地で新たな地縁を生み、その地縁に強く影響を受けた人々が、郊外の居住を選択する要因となっている可能性も考えられる。

経済社会構造の変化によって市街地が拡大し、これに伴って居住地の選択が限定される傾向にあった社会的背景から、その土地で培われ、築き上げられた縁故関係をリセットし、新たな居住地として街なかを選択することは難しいのではないだろうか。

²⁰ 国谷航介・中井検裕(2001)「地方都市における医療施設移転の実態と行政による中心市街地への影響評価に関する研究」都市計画論文集(第36回日本都市計画学会学術研究論文発表会), pp.331-336

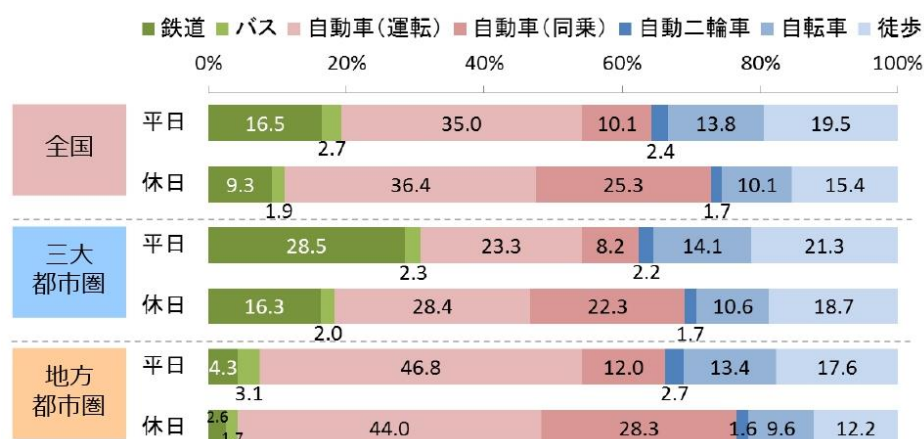
²¹ 木村慶一・桜井康宏(2005)「地縁性と居住経歴からみた福井市郊外民間戸建住宅団地の居住者特性—地方都市郊外における居住の継続性に関する基礎的研究—」都市計画論文集, Vol.40, No.3, pp.529-534

(2) 郊外開発の進展

郊外開発が中心市街地の空洞化を招き、商店街などのコミュニティ機能が衰退する要因であると指摘され、問題視されてきた。このような問題の中心として挙げられるのが郊外型ショッピングモールなどの大規模小売店舗の出店である。これらの施設を中心として、郊外開発が進展していく要因を施設計画・立地条件・開発規制という視点から検証する。

まず、施設計画についてショッピングモールを例に整理する。ショッピングモールは、モールという遊歩道に見立てた通路に併設された、上下階の様子が窺える快適な吹き抜け空間が、来客者の滞在時間を長くさせ、購買意欲を掻き立てる。このような空間を設えるためには、低層建築物として広い土地が必要になるが、中心市街地（街なか）は土地の価額が高いことに加えて、土地が細分化されていることで、まとまった空間が確保できず、土地が安価で広くまとまった空間が確保できる郊外地が選択される。

次に、立地条件について人の移動に伴う交通手段の選択状況から整理する。国土交通省による全国都市交通特性調査は、人の動きからみた交通実態を捉え、その実態変化を把握

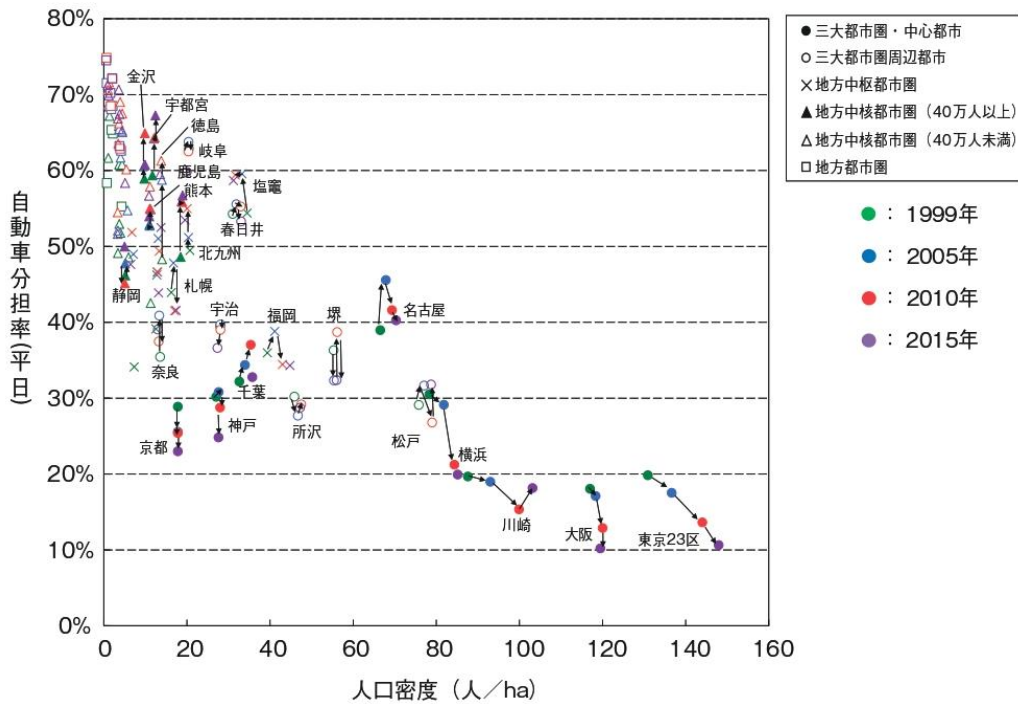


出典：国土交通省都市局都市計画課都市計画調査室

「都市における人の動きとその変化～平成27年全国都市交通特性調査集計結果より～」

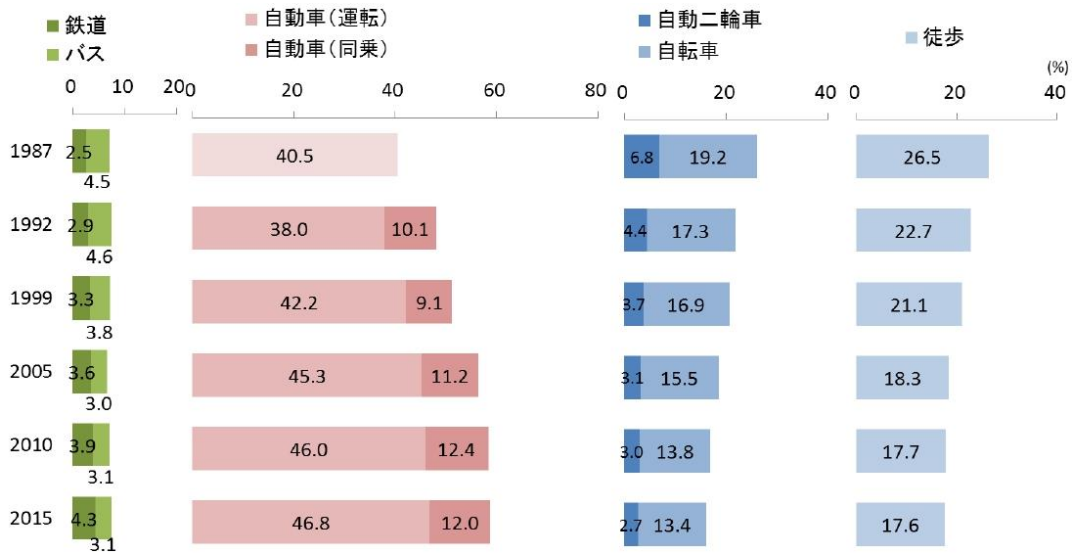
図5：移動の交通手段別構成比（全国・三大都市圏・地方都市圏）

する目的で実施されている。図5の移動の交通手段別構成比から、全国・三大都市圏・地方都市圏における平日と休日の交通手段の選択状況が窺える。三大都市圏は、都市機能が集積して人口密度が高く、公共交通が十分に整備されていることから鉄道やバスの選択率が高い傾向にあるが、地方都市圏は自動車の選択率が高い傾向にある。このデータから、地方都市における中心市街地と郊外地域の交通手段の選択状況は把握できないが、図6からは、人口密度が低い都市ほど自動車分担率が高い傾向が確認できる。地方都市において公共交通機能が比較的整っている中心市街地を三大都市圏と同様に捉え、公共交通機能が乏しく人口密度が低い傾向にある郊外地域を地方都市圏と同様に捉えた場合、自動車の選択率が高い地域は、その利用を可能とする道路交通網が整備されていると理解することができる。



出典：国土交通省「令和3年版の交通政策白書」

図6：都市の人口密度と自動車分担率



出典：国土交通省都市局都市計画課都市計画調査室

「都市における人の動きとその変化～平成27年全国都市交通特性調査集計結果より～」

図7：移動の交通手段別構成比の経年比較（地方都市圏・平日）

できる。また、図7に示す地方都市圏の平日における経年比較から、自動車の選択率は増加傾向にあり、これはモータリゼーションの進展が自動車保有率の増加とその利用を可能とする道路交通網の整備が進められてきた背景として解釈できる。このような状況から道

路交通網が整備されている郊外地域は、ショッピングモールなどの大規模小売店舗の商圈対象であると解釈ができ、郊外開発が進められてきた理由として考えられる。

最後に、大規模小売店舗などの計画に対する開発規制について整理する。明石(2005)は、「都市の土地利用コントロールにおいて、規制の対象となるべき開発案件と土地利用規制を所掌する広域自治体と基礎自治体との間における空間的スケールの不一致から、都市計画制度が機能不全に陥る事態があり得る²²。」と問題提起している。また、開発許可権限の有無によって自治体の判断が分かれたケースや大型店を制限する特別用途地区を指定した都市に隣接する周辺市町村において大規模商業施設が次々と出店した事例を挙げ、広域的観点から行う新たな用途規制制度創設の必要性を指摘している。

基礎自治体の行政区域を越え密接に繋がった道路を起点とする開発行為を、自治体単位の規制だけで対応することには限界がある。前述した事例のように一つの自治体の判断が、周辺の自治体に対して影響を及ぼす可能性も否定できない。そのため、基礎自治体には、都市の土地利用コントロールを目的とする広域的な視野が求められ、市街化調整区域内の開発行為の規制・緩和について慎重な判断が求められる。

(3) 公共交通空白地域の拡大

公共交通空白地域は交通不便地域とも言われ、鉄道駅やバス停から一定の距離を越えた地域を指しているが、この一定距離を規定するものはない。国土交通省(2009)が策定した『地域公共交通づくりハンドブック』においては、「交通機関が充実している都市では、駅からは半径500m以上、バス停から半径300m以上とし、地方では、駅から半径1000m以上、バス停から半径500m以上を空白地域と捉える場合も見られる。」としている。

地域公共交通づくりハンドブックが示す地方の水準(駅から半径1000m以上、バス停から半径500m以上という一定距離)を、表3の国土交通省が算定した公共交通空白地域の面積・人口に重ねると地方都市は条件3に該当し、日本全体面積の約3割が空白地であり、全人口の約6パーセントがこの空白地に居住してことになる。一方、鉄道駅やバス停から一定の距離を示す空間的指標に高低差等の地理的影響が加味されていない。また、「鉄道・バスの運行本数が考慮されることは稀であるが、運行本数は公共交通の利便性を左右する重要な要素である²³。」と国府田(2010)は指摘している。

²² 明石達生(2005)「広域的観点が必要な土地利用規制における開発計画と行政権限の不一致に関する考察—地方都市郊外の大規模商業開発を例として—」都市計画論文集, Vol.40, No.3, pp.421-426

²³ 国府田論(2010)「公共交通空白地域を抽出・分析する新手法—日本版 PTAL 指標を用いた研究(その2)—」人文地理学会大会 研究発表要旨, 36-36, pp.86-87

表3：公共交通空白地域の拡大状況

	空白地面積 ^(※)	空白地人口
条件1 バス 1km 鉄道 1km	17,084 km ² (14.2%)	2,362千人 (1.8%)
条件2 バス 600m 鉄道 1km	30,122 km ² (25.0%)	5,311千人 (4.2%)
条件3 バス 500m 鉄道 1km	36,477 km ² (30.3%)	7,351千人 (5.8%)
条件4 バス 300m 鉄道 500m	62,982 km ² (52.2%)	26,510千人 (20.7%)
日本全体	面積) 120,544 km ²	(人口) 127,768 千人

出典：国土交通省総合政策局公共交通政策部

「地域公共交通の現状等について」（平成25年9月11日）

（出典）平成23年国土交通省調査による

（※）空白地面積は居住地メッシュのみ。0.25km²/メッシュとして算出。

2-4 小括

本章では、地方都市におけるコンパクトシティ政策について把握するため、国土交通省が提唱するコンパクト・プラス・ネットワークの概念を整理した上で、コンパクトシティ政策の推進状況を概観し、その問題と課題を整理した。

コンパクトシティ政策の推進にあたり、重要な位置付けにある立地適正化計画が、本来の目的に沿って策定されているとは言い難い状況を、居住誘導区域の設定状況と当該区域外の整備方針を例に挙げてその問題点を指摘した。加えて、基礎自治体の問題として郊外開発を容認してきたこと、これに伴う農地転用をコントロールするための農地制度と都市計画制度の間で連携した規制がないこと、公共施設などの郊外移転を自治体自ら推進してきた経緯を挙げ、その問題点を指摘した。最後に、コンパクトシティ政策推進上の課題について、住民等の根強い郊外居住志向や止まることのない郊外開発、公共交通空白地域の拡大から見える公共交通ネットワークの機能不全を例に挙げ、その課題点を指摘した。

多くの地方都市では、高度経済成長期における中心市街地の人口集中と急速に増加する人口の受け皿として、住宅地や大規模小売店舗などの郊外開発が進み、市街地が無秩序に拡散するスプロールの進展と、市街地の中心部に空洞が生じるドーナツ化現象が顕著である。そして、拡散した都市の縮退化を進めて適正な規模に戻すことは容易ではない。

次章では、集約型都市の形成に向けた方策の検討として、集約型都市構造の条件を整理した上で、市街地間の有機的なネットワーク化とともに、集約型都市に資する方策の方向性について提示する。

第3章 集約型都市形成に向けた方策の検討

3-1 集約型都市構造の条件

集約型都市構造とは、市街地の無秩序な拡大を抑制するとともに、公共交通にアクセスしやすい場所に居住し、医療・福祉等の生活サービス機能などを集積させた都市の構造とされ、この都市構造によってあらゆる人々にとって過度に自家用車に頼る必要のない生活を実現させることが可能だと解釈される。

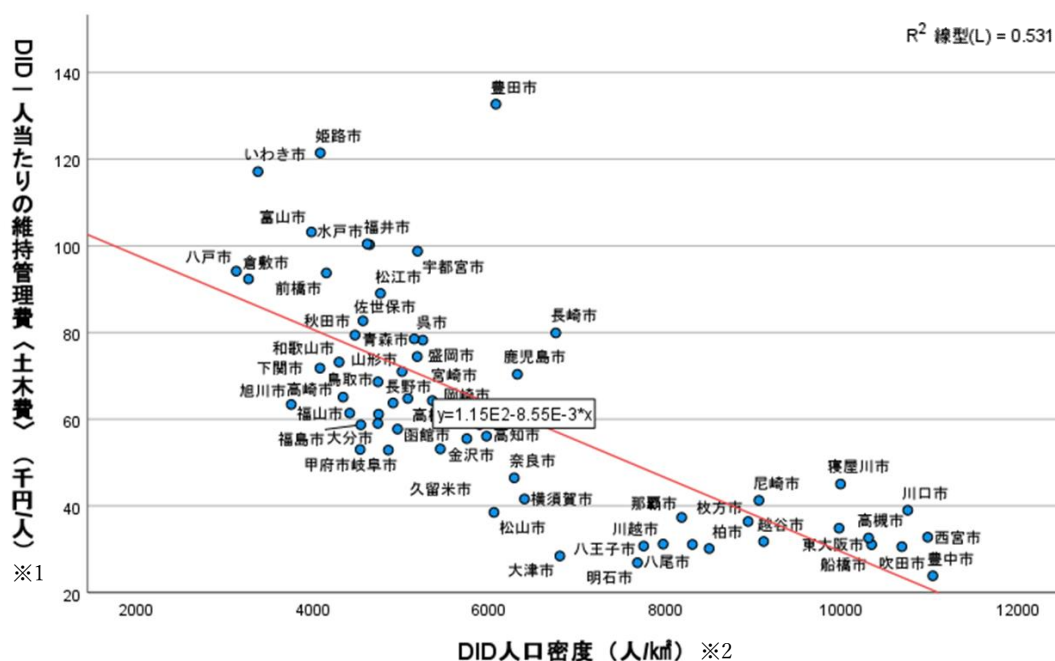
丸尾ら(2018)は、「地方中核市は、地方創生における連携中枢都市圏構想の拠点に位置づけられ、東京一極集中に対抗する地方圏のダムとしての役割を担うことから、都市圏内の集約拠点とそのほかの地域が公共交通ネットワークで有機的に結ばれ、暮らしやすく持続可能な都市構造、いわゆる集約型都市構造の実現が急務である²⁴。」と指摘している。そして、集約型都市構造の実現に向けた3つの指標を用いた評価では、「大都市や政令市でない地方中核市に限っても、人口密度・アクセシビリティ・基盤整備状況が都市によって様々であった。」と述べている。そこで中核市の人口密度・面積規模とアクセシビリティに着目して集約型都市構造の条件を整理する。

(1) 人口や面積からみた都市の領域

国土交通白書(2014)では、「都市がコンパクトになり人口密度が高まると、行政サービスを効率よく提供できるようになるため、一人当たりの歳出が低下する可能性」を示している。コンパクトシティを高密度な都市と捉えれば、都市機能の集積とその機能を中心に人が集住することで都市の持続可能性が高まると解釈できるが、コンパクトシティの有用性については定量的、科学的な根拠に乏しいという指摘がある。

そこで、中核市60市を対象に、都市における集住の視点から、DID人口密度を尺度に検証する。公共施設などを対象とするDID居住者一人当たりの維持管理費(中核市の歳出のうち土木費)とDID人口密度の相関を示す散布図を作成した(図8)。図が示すとおり、負の相関関係が見られ、人口密度が高い都市ほど一人当たりの維持管理費が低くなる傾向が確認された。次に、都市における生活圏の視点から、面積規模の尺度を検証する。まず、DID居住者一人当たりの維持管理費とDID・市街化区域・可住地の人口密度の相関分析に加えて、DID居住者一人当たりの維持管理費を従属(目的)変数に、DID・市街化区域・可住地の人口密度を独立(説明)変数・予測値とした重回帰分析(表4)を行った。相関分析では、それぞれに強い相関関係が見られたものの、重回帰分析において、それぞれの説明変数が目的変数に有意に影響しているとは言えない結果となった。また、これらの3つの変数の分散インフレ係数(VIF)は7.424~14.319であり、多重共線性の問題が起きている

²⁴ 丸岡陽・松川寿也・中出文平・樋口秀(2018)「集約型都市構造の実現に向けた地方中核市の評価に関する研究」都市計画論文集, Vol.53, No.1, pp.85-96



出典：筆者作成

※1：総務省(2020)「令和2年度地方財政統計年報」2-4-14表 中核市別目的別歳出決算／総務省統計局(2020)「政府統計の総合窓口(e-Stat)」, 国勢調査(総務省)人口等基本集計第1-2表

※2：総務省統計局(2020)「政府統計の総合窓口(e-Stat)」, 国勢調査(総務省)人口等基本集計第1-2表

図8：DID一人当たりの維持管理費（土木費）とDID人口密度の関係

可能性を排除できない。そこで、多重共線性の問題を回避するため、3つの変数について主成分分析を実施した(表5)。第1主成分の寄与率は、95.454と極めて高いため、第1主成分を「都市密度」と命名した。さらに、主成分分析により抽出した「都市密度」を独立

表4：維持管理費に対する諸要因の効果(重回帰分析)

要因	標準化回帰係数 (β)
DID人口密度(人/km ²)	-.546 n.s
市街化区域人口密度(人/km ²)※1	-.204 n.s
可住地人口密度(人/km ²)※2	.013 n.s
R 2	-.732
調整済み R 2	.510
F 値	21.132 **
自由度	3

出典：筆者作成

a：従属変数 DID一人当たりの維持管理費〈土木費〉(千円/人)

b：独立変数 予測値 **相関係数は1%水準で有意(両側)です。 *相関係数は5%水準で有意(両側)です。

※1：市街化区域人口/市街化区域面積 国土交通省(2010)「§2. 都市計画区域, 市街化区域, 地域地区の決定状況」

※2：可住地人口/可住地面積 可住地人口として中核市の人口を使用 総務省統計局(2015)「政府統計の総合窓口(e-Stat)」統計でみる市区町村のすがた(社会・人口統計体系) - 国勢調査(総務省) A1101_総人口, 総務省統計局(2020)「政府統計の総合窓口(e-Stat)」統計でみる市区町村のすがた(社会・人口統計体系) - 国勢調査(総務省) 可住地面積

表5：諸要因についての主成分分析

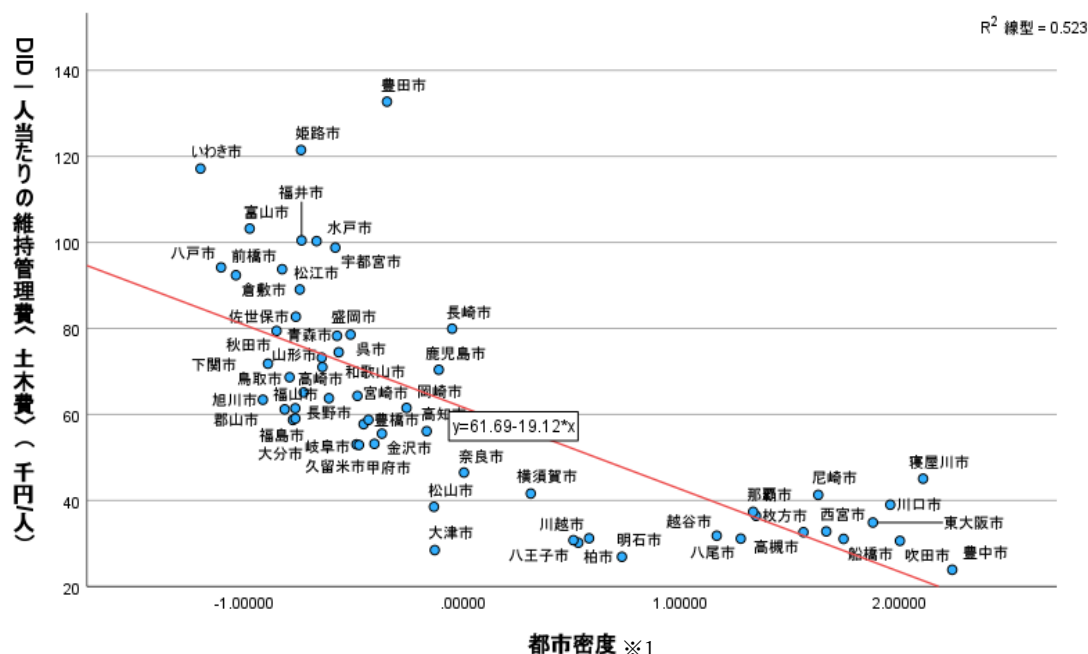
	第1主成分
DID人口密度(人/km ²)	.980
市街化区域人口密度(人/km ²)※1	.983
可住地人口密度(人/km ²)※2	.968
固有値	2.864
寄与率	95.454

因子抽出法：主成分分析

信頼性統計量：クロムバックのアルファは.968

(説明) 変数とし、DID居住者一人当たりの維持管理費を従属(目的)変数とした単回帰分析を実施した(図9)。その結果、標準化回帰係数は-.723と1%水準で有意となる結果であった。最後に、都市の人口密度と面積規模の関係性を見るため、都市密度とDID・市

街化区域・可住地・中核市の面積を対象とする相関分析(表 6)を実施、この結果から、都市密度と可住地面積の散布図を作成した(図 10)。図 10 が示すとおり、可住地面積が小さい都市ほど人口密度が高く、可住地面積が大きい都市ほど都市密度が低くなる傾向が確認され、相関係数は-0.806 であり、1%水準で有意となった。



出典：筆者作成

※1：DID・市街化区域・可住地、それぞれの人口密度をもとに主成分分析を行った結果抽出された成分データ

図 9：中核市のDID一人当たりの維持管理費（土木費）と都市密度の関係

表 6：主要変数（都市密度と都市の面積規模）の相関係数

	1	2	3	4	5
1 都市密度	—				
2 DID面積(km ²)	-.268*	—			
3 市街化区域面積(km ²)	-.465**	.848**	—		
4 可住地面積(km ²)※1	-.806**	.404**	.509**	—	
5 中核市面積(km ²)※2	-.721**	.168	.372**	.868**	—

出典：筆者作成

**相関係数は1%水準で有意（両側）です。

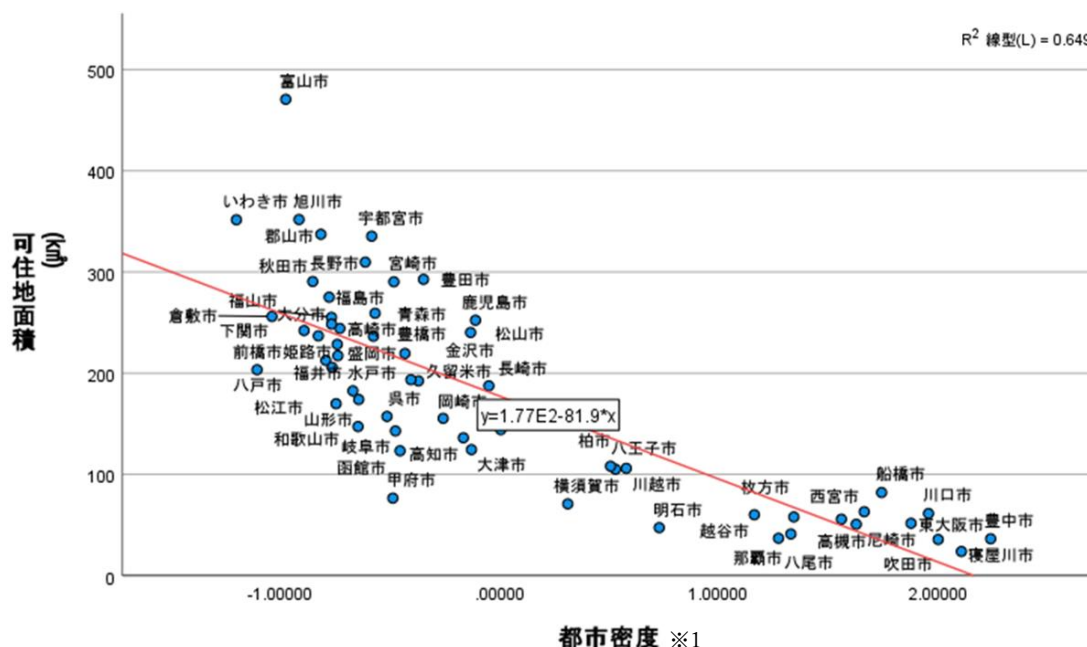
*相関係数は5%水準で有意（両側）です。

※1：総務省統計局(2020)「政府統計の総合窓口(e-Stat)」統計でみる市区町村のすがた（社会・人口統計体系）-国勢調査（総務省）可住地面積

※2：総務省統計局(2020)「政府統計の総合窓口(e-Stat)」統計でみる市区町村のすがた（社会・人口統計体系）-国勢調査（総務省）総面積（北方地域及び竹島を除く）

中核市における人口密度や面積規模からみた都市の領域について多変量解析等の手法を用いて検証した。中核市の歳出内訳から土木費を都市の維持管理費と捉え、人口や都市のコンパクトさ（DID人口密度）で回帰した結果から、都市のコンパクトさと行政コストの関係として、集約型都市の行政サービスが効率よく提供できる可能性があることを確認

した。また、都市密度と可住地面積の関係から、可住地面積が大きい都市では人口密度が低い傾向があるため、拠点毎の集約化とともに、各拠点を中心とするアクセシビリティの向上と交通（モビリティ）のネットワーク化が重要であることの再確認ができた。



出典：筆者作成

※1：DID・市街化区域・可住地、それぞれの人口密度をもとに主成分分析を行った結果抽出された成分データ

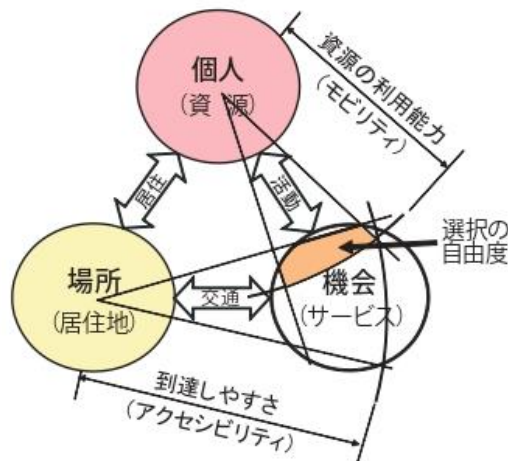
図10：中核市の可住地面積と都市密度の関係

(2) 都市におけるアクセシビリティ

アクセシビリティは、英語で「Accessibility」と示され、近づきやすさや利用のしやすさと訳される。都市の集約化を「自動車を利用しない人を含む多様な都市生活者にとって、都市の暮らしやすさという観点から徒歩又は公共交通利用による都市生活の利便性を計量するアクセシビリティ指標²⁵⁾」として定義する例がある。また、土井(2015)は、アクセシビリティを「移動によって本来求めていた就業、買い物、医療等の生活行動や活動を行うことができるかを交通の面から表すもので、機会・サービスへの到達のしやすさ」と位置付け、モビリティを「個人の持つ資源（時間、金銭、支援や介助、さらには環境的条件等）を利用できる能力」と説明している。また、双方の違いを「（人が存在する）場所の側から自由度を捉えるものがアクセシビリティであり、人を中心に選択の自由度を捉えるものがモビリティの視点である。」とし、「我々の選択自由度は、アクセシビリティとモビリティの双方から規定される²⁶⁾。」と述べている（図11）。

²⁵⁾ 国土交通省国土技術政策総合研究所(2014)「アクセシビリティ指標活用の手引き（案）」
https://www.mlit.go.jp/toshi/tosiko/toshi_tosiko_fr_000009.html（閲覧 2022.12.22）

²⁶⁾ 土井健司(2015)「都市と交通」『交通・安全学』第1章，公益財団法人国際交通安全学会



出典：土井ら(2006)「米国の TOD に見る新たなアクセシビリティ概念 Location Efficiency に関する考察」図-4 Location efficiency 概念の理論的考察 を引用

図11：モビリティとアクセシビリティの関係

弓場ら(2020)は、交通インフラ政策に関して「主として経済発展に対応するもの、あるいはそれを促すものとして推進されてきたと言える。交通インフラの機能評価についても、新規道路の建設・車線増加などによる交通容量の増加や、交通速度上昇による移動時間の短縮といった客観的・物理的な指標に基づいて行われてきた²⁷⁾。」と指摘し、「交通インフラはそれ以外にも地域の歴史や人々の暮らしを形作るという、社会的・文化的・心理的な影響を持つものであるとも言われ、その多様な役割に着目した政策や研究が必要とされている²⁸⁾。」としている。そして、余暇における都市娯楽活動が人々の幸福感に一定の影響を及ぼすという仮説を検証する研究において、「交通機関の使いやすさといった主観的評価が、余暇活動の充実を通じて人々の主観的幸福感を増大させている可能性が示唆され、人々が幸福に生きる魅力的な都市の形成を目指す上で、交通インフラの整備が重要な役割を果たし得ることや、その整備が余暇活動を促進するものであることに重要な意義がある可能性を意味しており、都市計画や交通政策を立案するにあたり、これらの視点が欠かすことのできないものである²⁷⁾。」と論じている。

では、あらゆる人が自由に移動できることを権利としてどのように捉えられているか。障害者権利条約²⁹⁾の第 9 条において、「障害者が他の人と同じように物理的環境、輸送機関、情報通信及びその他の施設・サービスを利用できること」が規定されており、外務省

²⁷⁾ 弓場雅斗・川端祐一郎・藤井聡(2020)「都市娯楽活動へのアクセシビリティが主観的幸福感に及ぼす影響に関する研究」土木学会論文集 D3 (土木計画学), Vol.75, No.6, pp.267-276

²⁸⁾ 鈴木春菜・北川夏樹・藤井聡 (2012)「移動時幸福感の規定因に関する研究」土木学会論文集 D3 (土木計画学), Vol.68, No.4, pp.228-241

²⁹⁾ 21 世紀では初の国際人権法に基づく人権条約であり、2006 年 12 月 13 日に第 61 回国連総会において採択された。

が提供する日本語訳では「施設及びサービス等の利用の容易さ」とされている。一方で、山越(2011)は、「我が国では、移動権ないし交通権を憲法で明確に保障してはいないが、憲法第13条の幸福追求権、第22条第1項の移動の自由、第25条第1項の生存権を根拠に移動権ないし交通権が法廷で争われることはある³⁰。」と述べている。そして、交通基本法検討小委員会³¹における論点として移動権に関する問題点を3つの視点から示している。1点目は、法制論から「個々人の移動に関するニーズは千差万別で権利の内容について国民のコンセンサスが得られているとは言えない状況にある。そして、交通権に照らし適法であるか否かが争われた訴訟における判例では原告適格を欠くとの理由でその主張を退けている」こと。2点目は、行政論から「移動権を保障する責務を行政府が有する場合、権利内容の給付を裏打ちする財源が必要であり、プログラム規定或いは抽象的な権利とした場合にも、各地において争訟の発生や交通の現場での混乱がもたらされるおそれがある」こと。3点目は、社会的実体論から「交通は、利用者、運輸事業者等の関係者が協働してより良いものに創り上げていくべきもので、権利と義務は表裏の関係にあることから、権利のみを取り上げるのは問題である」ことなどが指摘され、移動権に関する規定化は時期尚早として見送られている。

アクセシビリティは、都市における近接性や接近可能性などの機会を得るための条件に留まらず、人々が幸福に生きる魅力的な都市の形成を目指す上で重要な役割を果たし得ることから、都市計画や交通政策の立案にあたり、これらの視点は欠かすことができない。一方で、あらゆる人の自由に移動できる権利を担保することは難しいため、政策推進上の限界があることに留意した政策立案が求められる。

(3) 人と都市機能の集約による効果

都市の活性化とは、経済・文化・産業活動などに生き生きと作用する力を与えることで社会活動に対する人々の意欲が向上し、都市に人が集い賑わいを創出させることである。都市の活性化を測る指標として、就業・定住・世帯の人口密度、商業・業務・文化・娯楽などの施設数・密度・面積規模と来訪者数、交通機関の数と乗降客数のほか、公園・緑地などのオープンスペースにおける歩行者の通行量や密度、消費額、路線価、空き家率など様々な要素が挙げられる。また、人や都市の機能を集約することで得られる効果について経済面・文化面・産業面・定住面から分析を試みたデータが存在する。

³⁰ 山越伸浩(2011)「交通基本法案～地域公共交通の確保・維持・改善に向けて～」『立法と調査』(参議院調査室作成資料), No.316

³¹ 2010年11月に社会資本整備審議会及び交通政策審議会に「交通基本法検討小委員会」が設置され、同年12月までに4回審議が行われ、2011年2月に「交通基本法案の立案における基本的な論点について」が報告された

経済面の効果として、労働生産性の向上に焦点を当てた国土交通省の分析で、「都市に人口が集積すれば、様々な産業が成立しやすくなり、それは多様な財・サービスが供給されることにもつながる。また、様々な産業が存在し規模の経済や範囲の経済が働くことで労働者の生産性も高まる。実際、都道府県、政令市ごとの人口密度と労働生産性の関係を見ても、正の相関があり、人口密度の高い地域ほど労働生産性が高くなる傾向があり、特にサービス業において効果がある(図 12, 13)。³²⁾と示している。また、産業面の効果と

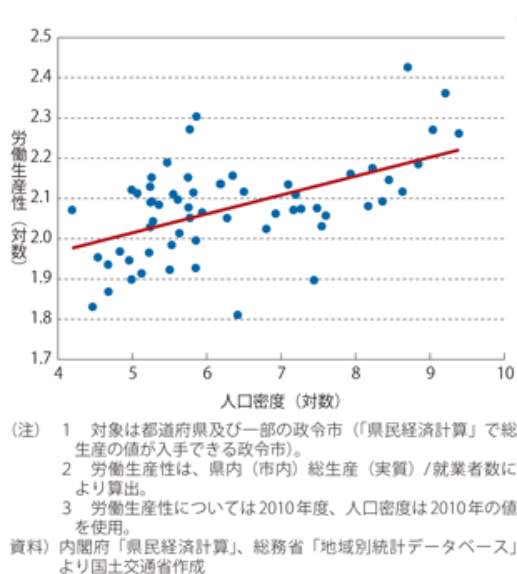


図 12：労働生産性と人口密度の関係

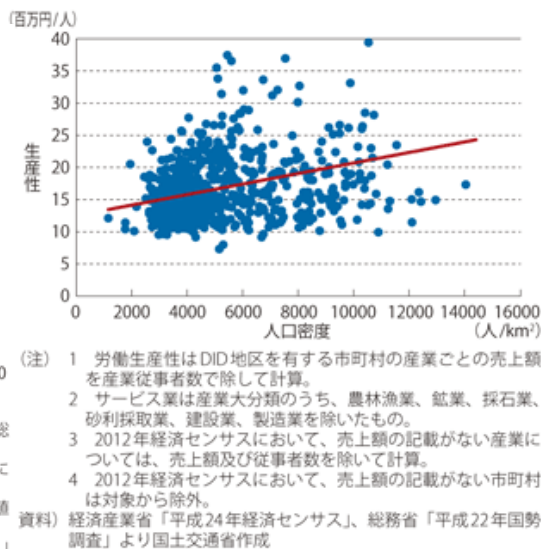
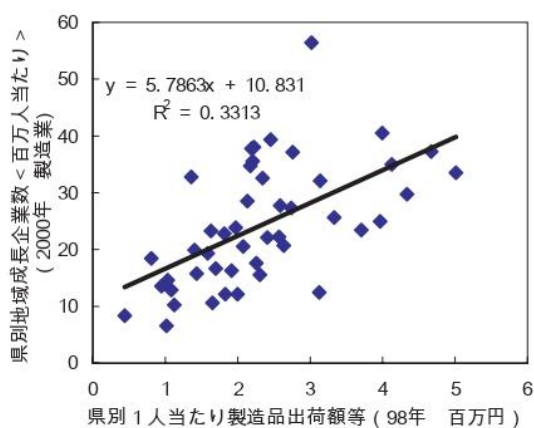
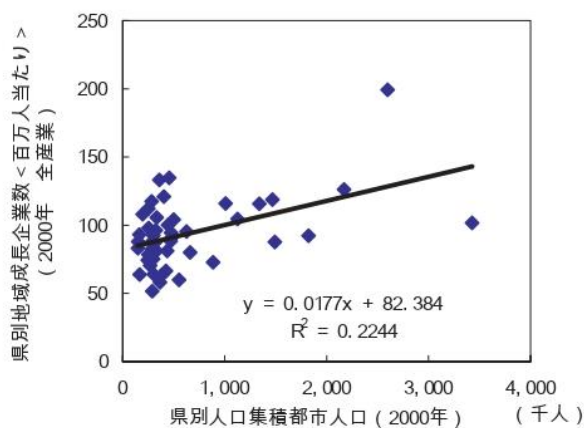


図 13：サービス業の労働生産性と DID 地区人口密度との関係

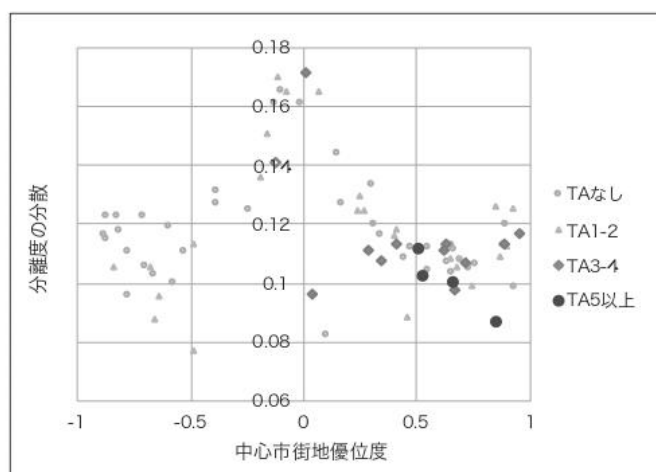


(備考) 1. 成長企業数は、(株)帝国データバンクの企業概要ファイルを用いて、内閣府にて作成。
2. 人口集積都市人口は、県庁所在地人口のこと。総務省「人口推計」より作成。
3. 製造品出荷額等は、通商産業省「工業統計表」より作成。

図 14：人口集積や産業集積に依存する地域成長企業の分布

³²⁾ 図 12, 13 出典：国土交通省(2014)『国土交通白書 2014』, pp.67-68

して、新しい産業を生み出す地域成長企業の分布に関する内閣府の分析で、「人口集積や産業集積がその地域に位置する企業にとって、ニーズの集中、情報ネットワークなどを通じて優位性を与えている可能性があると考えられる。このように、集積効果を通じてニーズが発現されれば、優良企業の数が増え、それが更に集積効果をもたらすという好循環によって、地域経済が活性化されることが期待される(図14)。³³⁾」と述べられている。次に、



出典：石井ら(2020)「観光資源の空間的分布がもたらす地方都市中心市街地の賑わいへの影響」

図3を引用

※観光資源が多数ある都市の多くが、駅周辺に対して中心市街地が優位であることがわかる。これより、観光資源には中心市街地を活性化させる効果があることが推測できる

図15：中心市街地優位度、分離度の分散、観光資源数による布置

文化面の効果として、石井ら(2020)の観光資源への訪問者の回遊性と商業地の賑わいに関する分析では、「市街地内に存在する観光資源には都市内の商業集積を活性化させる効果があること(図15)、観光資源による回遊性は都市に複数の賑わいのある商業集積をもたらすことに加え、都市全体の賑わいを増加させる効果もある。一方、商業集積を衰退させる要素としては、自動車交通の利便性が大きい³⁴⁾。」と結論付けている。最後に、定住面の効果として、小暮(2020)による賑わいと住みやすさの相関分析では、「人口や小売業が多いからといって住みやすいとは言えないが、福祉施策、環境対策、都市施設整備等の社会的課題の低減により住みやすくなると考えられる。また、高度成長期のように人出を増やし、経済活動の活性化を追求した賑わいを経済的賑わいとすれば、現在は経済的賑わいと同時

³³⁾ 図14 出典：内閣府政策統括官(2002)『平成14年度 地域経済レポート 2002(経済財政政策担当大臣報告) -新しい産業分野による地域市場の拡大-』, pp.19

³⁴⁾ 図15 出典：石井智也・古川徹・讃岐亮(2020)「観光資源の空間的分布がもたらす地方都市中心市街地の賑わいへの影響」都市計画報告集, No.19, pp.94-100

に社会的課題の解決、低減が両立しなければ定住性は高くならない(図 16)³⁵。」と述べている。以上のことから、人と都市機能の集約による都市の活性化の効果を経済面・文化面・

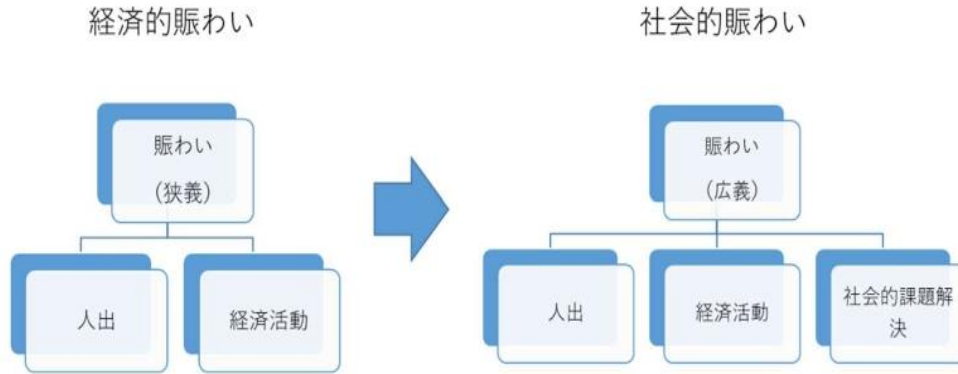
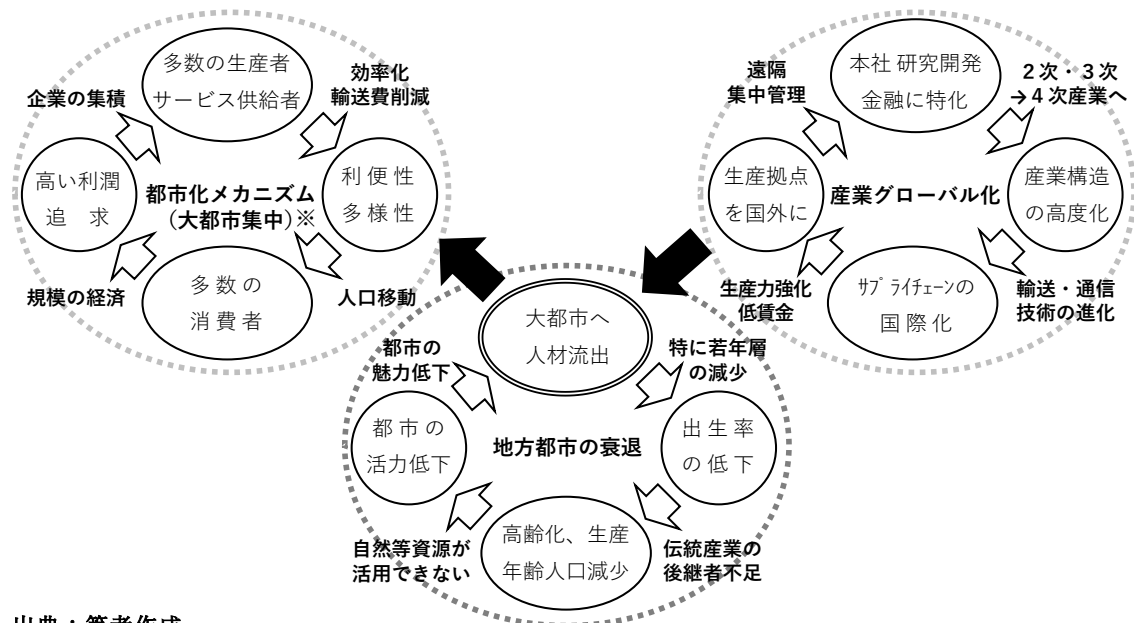


図 16：賑わいのイメージ

産業面・定住面から定量的・定性的に確認することができた。都市機能と居住機能の適度な住み分けを行って、賑わいと住環境のバランスを保つこと、そして、都市機能に対するアクセシビリティの確保や公共交通などのネットワーク化が、歩いて暮らせる住みやすい持続可能な都市とされる集約型都市構造の条件だと言える。

しかしながら、多くの地方都市において人と都市機能の集約を目指すだけでは、都市の活力低下を防ぎ、活性化を図っていくことは難しいだろう。図 17 に示すとおり、大都市へ



出典：筆者作成

※：浜口(2015)「グローバル化と人口減少下における地域創生の課題」 図1 都市化のメカニズムを引用

図 17：地方都市の衰退メカニズム

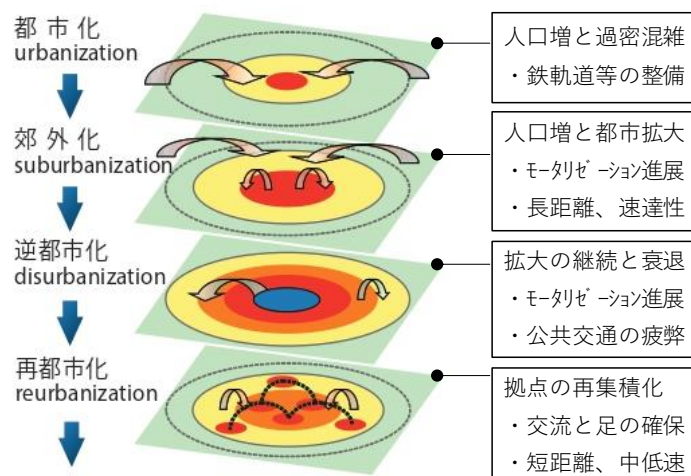
³⁵ 図 16 出典：小暮真人(2020)「研究レポート「特別区の「賑わい」と「住みやすさ」の相関分析」」地域経営学研究, Vol.2, No2, pp.1-16

の人・モノ・カネ・情報などの過度な集中や、産業構造のグローバル化が地方都市の衰退を加速させている。都市化のメカニズムで説明される大都市の一極集中は、合理的な選択による市場メカニズムの帰結と解釈できる。そして、グローバリゼーションの進展という時代の潮流に逆らうことは難しい。

3-2 市街地間の有機的なネットワーク

(1) 交通の役割変化と現状

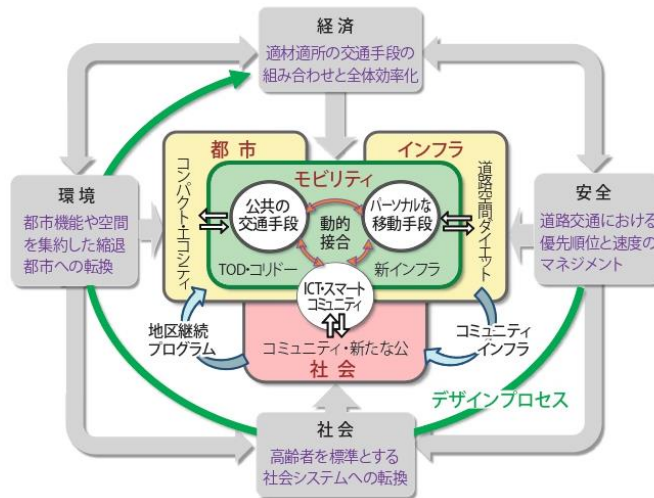
「都市は時間の経過とともにその姿を変え、成長から衰退へと向かう。人の一生に準えるならば、都市にも少年から青年期（都市化）、壮年から中年期（郊外化）、高年期（逆都市化）がある。そして人にはないが、都市には再生期（再都市化）という4つ目の段階が期待される(図18)。」土井(2015)は、「今後、人口減少および超高齢化がさらに進むわ



出典：土井(2015)「都市と交通」『交通・安全学』第1章，図1を引用

図18：都市化のプロセスと交通の役割の変化

が国においては、国土・都市経営の観点から都市の大幅な縮退が迫られる。しかし、厳しい制約こそが閉塞を打ち破るための創造力を育み、交通、都市および社会の共発展をもたらす。」とし、モータリゼーションの弊害の一つとして移動速度の画一化を挙げ、「都市内外あるいは拠点内外を問わない速さの追求は、都市空間の階層性を損ない画一的な都市の拡大をもたらす。日々の通勤・通学等のトリップ長の増加、移動のためのエネルギー消費の増加、そこから発生するCO₂や局地的な環境負荷の増大、さらには交通死傷事故のリスクを高め生命をも脅かす。」ことを問題視し、総合交通の視点として多様なものを繋げて1つにするという統合化の重要性について指摘をしている。そして、都市・交通の統合デザイン(図19)について、「都市、インフラ、モビリティおよび社会という4つの領域の繋がりが描かれ、中心部に置かれたモビリティを、公共の交通手段とパーソナルな移動手段が相互補完するシステムとして位置付けている。公共の交通手段を土地利用面から支え



出典：土井(2015)「都市と交通」『交通・安全学』第1章，図8を引用

図19：都市・交通の統合デザイン

るものは公共交通志向型開発やコリドー整備である。」と説明し、安全確保のための優先順位と速度マネジメントの徹底は、ユニバーサルデザインを柱とする高齢者標準の社会システムへの移行を可能とし、都市機能と空間を集約したコンパクトシティへの転換が促されるとしている。加えて、「これらと与件として地域公共交通が存続可能となり、適材適所の手段選択と補完による全体効率化が図られる。モビリティ変革を実行するためには、明確な優先順位の下での速度と空間のマネジメントおよび外的な衝撃や制約を逃さず変革力に変える時間マネジメントという全体的な視点が欠かせない²⁶。」と論じている。

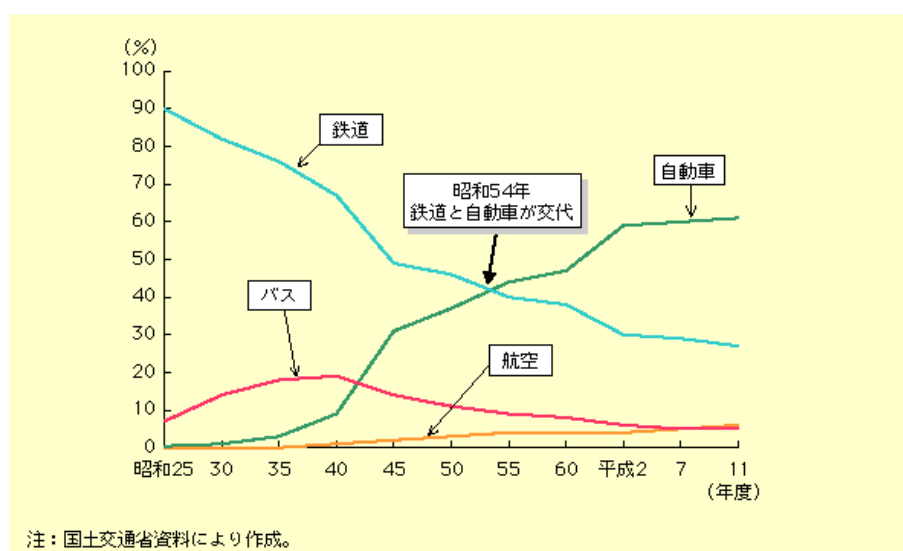
しかしながら、地方都市における地域公共交通は、利用者が減少することで交通事業者の経営が圧迫され、赤字路線は廃止せざるを得ないなど運営の維持が困難な状況にある。このような状況から、今後、公共交通が衰退していくことで、公共交通サービスを必要とする住民等の移動が制約される、危機的な状況にあることは否定できない。

(2) 地域公共交通政策の限界

地域鉄道は、一般に、新幹線、在来幹線、都市鉄道に該当する路線以外の鉄軌道路線のことをいい、その運営主体は中小民鉄並びにJR、一部の大手民鉄、中小民鉄及び旧国鉄の特定地方交通線や整備新幹線の並行在来線などを引き継いだ第三セクターである。これらのうち、中小民鉄及び第三セクターを合わせて地域鉄道事業者と呼んでおり、2020年4月1日現在で95社となっている。この地域鉄道は、地域住民の通学・通勤等の足として重要な役割を担うとともに、地域の経済活動の基盤として移動手段の確保、少子高齢化や地球環境問題の対応、まちづくりと連動した地域経済の自立・活性化等の観点から、その活性化が求められる重要な社会インフラである。しかしながら、地域鉄道を取り巻く環境

は、少子高齢化やモータリゼーションの進展等に伴って極めて厳しい状況が続いており、2021年度は、新型コロナウイルスの影響を受けた結果、全95社中91社とほぼすべての事業者が鉄軌道業の経常収支ベースで赤字を計上するに至っている³⁶。また、2000年度から2020年2月時点までの概ね20年の間で、全国の45路線・1,157.9kmの鉄軌道が廃止されている。

日本のバス事業2020年度版³⁷によると、乗合バスの輸送人員は1967～1970年の100億人台、乗車密度21.9人(1967年)から年々減少傾向を辿っており、2018年には輸送人員は43億4,773万人、乗車密度10.7人(2009年)、輸送人キロは352億人キロとなっている。総走行キロは1967年を100とすると、2018年は105と増加傾向にあるが、概ね50年の間で輸送人員が半減しているにもかかわらず、総走行キロが増加している要因として、運行地域における利用者数減少と人口低密度地域の広範囲化として捉えることができる。また、国内旅客輸送の機関分担率では、自動車は鉄道や乗合バスを大きく上回っており、モータリゼーションの進展による影響が窺える(図20)。



出典：国土交通省(2001)『国土交通白書 平成13年度』， p.20

図20：国内旅客輸送の機関分担率の推移 (人キロ)

国土交通省が公表する鉄道事業者へのアンケート調査に関する資料³⁸で、「鉄道の維持が困難、又は他モードへの転換が適切であると考える基準やその根拠」という問いがあり、

³⁶ 国土交通省ホームページ (政策・仕事, 鉄道, 地域鉄道対策) 「地域鉄道の現状」

https://www.mlit.go.jp/tetudo/tetudo_tk5_000002.html (閲覧 2023.2.13)

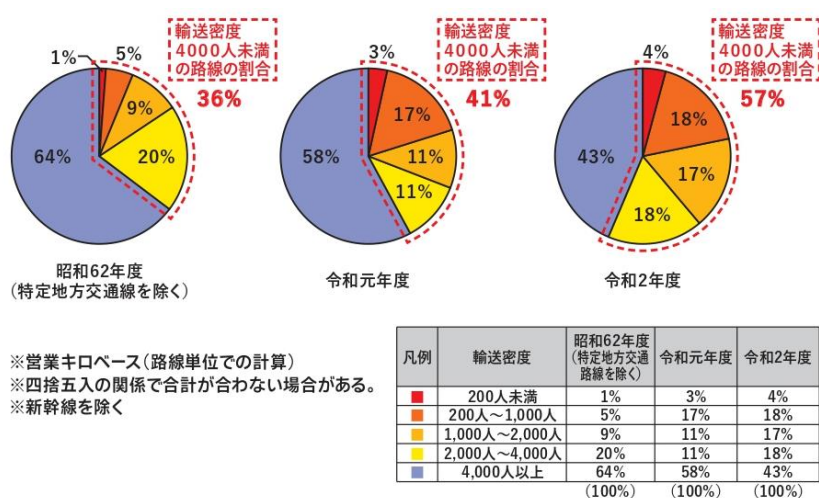
³⁷ 『日本のバス事業 (2020年度版)』公益社団法人日本バス協会

³⁸ 国土交通省ホームページ (政策・仕事, 鉄道, 地域鉄道対策) 2022年4月18日に開催された

「第3回鉄道事業者と地域の協働による地域モビリティの刷新に関する検討会」配布資料

https://www.mlit.go.jp/tetudo/tetudo_tk5_000017.html (閲覧 2023.2.14)

各社が「ローカル線の廃止の目安」について回答している。各社ともに「国鉄末期の特定地方交通線の廃止基準である第3次特定地方交通線の輸送密度4,000人を目安としながら、第2次基準の2,000人未満でピーク時の輸送量が小さく、鉄道特有の機能が発揮できない線区については他の交通モードにより鉄道と同等のサービス提供が可能。」とする見解が多く、この目安によって優先的に存廃を検討したいという意向であった。このような状況を踏まえて、国の検討会は一日に平均何人を運んだかを示す「輸送密度が、1000人未満の区間などを対象にバスなどへの転換も含め、協議を進めるべき」とする提言³⁹をまとめた。JR旅客6社における輸送密度ごとの路線の割合では、輸送密度が1000人未満の区間にある路線が全国路線の2割を占めており、60路線に上ることがわかった(図21)。



出典：鉄道事業者と地域の協働による地域モビリティの刷新に関する検討会(2022)

図21：JR旅客6社における輸送密度ごとの路線の割合

鉄道は、維持継続コストは大きいですが、旅客需要の多い高密度都市で効力を発揮する大量交通手段であるため、事業性をバランスさせることができる。一方で、旅客需要が少なく都市の人口密度が低下傾向にある地方都市は、鉄道を維持継続する事業性のバランス化が困難な状況にあり、都市の構造を変えることも一朝一夕にはいかない。

(3) モビリティネットワークの今後

2020年の地域公共交通の活性化及び再生に関する法律(以下、活性化再生法とする。)の一部改正に伴って、地域公共交通計画が制度化された。地域公共交通計画は、公共交通ネットワークの確保・充実(主に路線再編や新規整備)を目標に策定が任意であった地域公共交通網形成計画に代わり、交通ネットワークの確保・充実に加え、ダイヤや運賃など

³⁹ 鉄道事業者と地域の協働による地域モビリティの刷新に関する検討会(2022)「地域の将来と利用者の視点に立ったローカル鉄道の在り方に関する提言～地域戦略の中でどう活かし、どう刷新するか～」 https://www.mlit.go.jp/tetudo/tetudo_tk5_000011.html (閲覧 2023.2.14)

の面からサービスを総合的に捉えた改善に取り組むことを目標に策定が努力義務化された。国土交通省の資料⁴⁰によれば、国はまちづくりとの連携強化を図るため、地域公共交通計画を立地適正化計画と併せて策定する市町村数を2024年度末時点で400（2022年3月時点で316市町村）とする新たな政策目標値を設定している。

有機的なモビリティネットワークを構築するためには、地域交通のあるべき姿と現状のギャップを把握することが肝要である。ギャップの把握に必要な情報として、①居住状況（年齢・世帯別人口分布、人口推計など）や、②都市施設（商業・医療・業務・教育文化・行政・娯楽施設等）の充足率、③移動性能（地域公共交通の路線網・運行本数・運行間隔・公共交通以外の移動支援サービス、道路状況・地理地勢・土地利用状況等）に加え、④人の行動態様と人流分析（パーソントリップ調査・ビックデータ解析等）、その将来予測が極めて重要である。特に、地域交通のあるべき姿と現状のギャップだけではなく、現在の移動性能が人の行動態様にどのような影響（移動障壁）を与えているか、その結果として現状の人流が生じているという視点に立った評価が求められる。一方で、住民等に対するアンケート調査から一定の障壁要因を把握することは可能であるが、具体的な分析や評価に基づいて策定された地域公共交通網形成計画または地域公共交通計画は少ない。

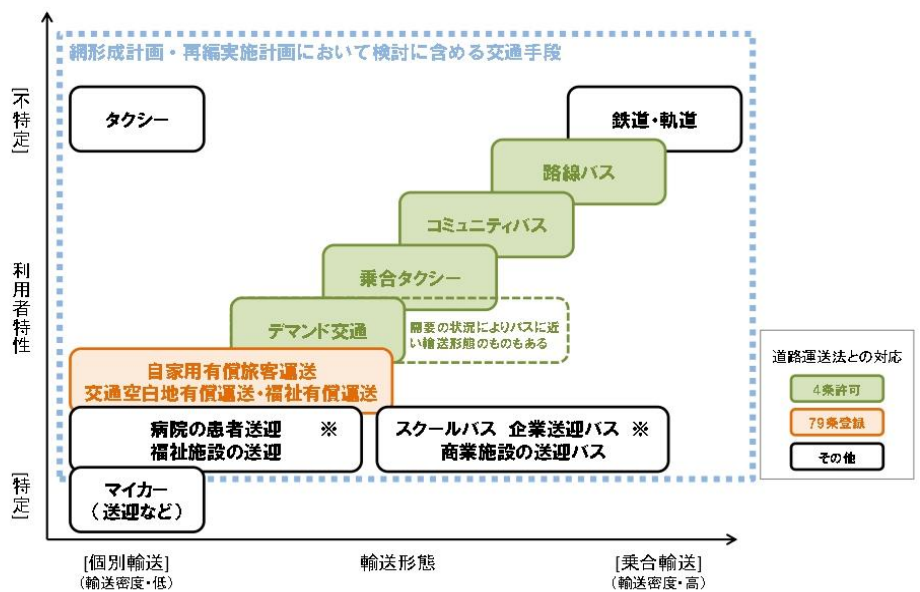
これらの情報に基づく分析・評価と将来予測から、現在の地域公共交通サービスの改善案について仮説を立てることになるが、権利や物理的な制約条件の解消を伴う①居住や②施設の再配置は、都市政策との連携強化が重要である。また、③移動性能の核となる地域公共交通政策では前述したとおり、事業（採算）性が大きな課題となる。そのため、人々の移動を促進する移動性能と利便性の向上を図る政策によって、人々の行動態様に変化を生じさせ、人・モノ・カネ・情報を集積させる好循環を創り出す必要がある。そして、人の移動性能や利便性を向上させるために、様々な移動方法を一つのサービスとして捉えて移動ニーズに対する最適な移動手段のシームレス化を図ることが必要である。

具体的には、①重複路線の解消や幹線支線の連結、ターミナルによる乗り換え集約など路線網の最適化を図る。②医療や商業施設のほか道の駅などの賑わい施設の路線ルートを設定する。③異なる交通機関の乗り継ぎに配慮して覚えやすいダイヤとする。また、④医療施設の診療時間や教育施設の始業時間などに配慮したダイヤとする。⑤バス停などの周辺の既存施設（コンビニエンスストアのイートインスペース等）と連携した待機所等を設置する。⑥定時性の確保が難しい乗合バスなどはバスロケーションシステムにより見える化を図る。⑦MaaS（マース：Mobility as a Service）の採用によって、複数の交通手段を利用する際の移動ルートを最適化し予約・運賃の支払いを一括で行えるサービスを構築する、

⁴⁰ 国土交通省ホームページ（政策・仕事，総合政策，公共交通政策）地域公共交通の活性化及び再生に関する法律について 関係資料「新たな計画制度における政策目標値」

https://www.mlit.go.jp/sogoseisaku/transport/sosei_transport_tk_000055.html（閲覧 2023.2.14）

などシームレス化による移動性能と利便性を向上させる政策を推進する。また、利用者の特性に応じた輸送形態を適切に選択できるような有機的モビリティネットワークの構築が重要である(図 22)。特に、自家用車を利用せざるを得ない人の公共交通機関の利用を促進



▲網形成計画及び再編実施計画において検討すべき交通手段の範囲（陸上交通の場合）
※様々な運行形態で行われている（無償の場合は道路運送法の対象外）。

出典：国土交通省(2018)『地域公共交通網形成計画及び地域公共交通再編実施計画作成のための手引き(第4版)』

図22：多様な移動手段・旅客輸送サービス

するため、パークアンドライドやフリンジパーキングなどを交通結節点に整備することや自家用車の利用が困難な人のためにデマンド交通によるフレキシブルな対応が求められる。一方、これらの政策による効果は限定的であり、人口が低密度に拡散した多くの地方都市において、抜本的な問題の解決には至らない。しかしながら、デジタル技術の更なる発展から都市交通を中心とした政策の統合化を推進できれば、様々な社会課題の解決に期待ができるだろう。一例として、前述した MaaS と、これまで推進されてきた交通需要マネジメント (TDM)、需要応答型デマンド交通などの政策に AI (人工知能) を活用した自動運転を組合せることで利用者の属性や需要を自動的に分析し、地域交通の運行状況をタイムリーに検知した結果から、公共交通への接続を含めた最適な運行ルートを提案するなど、地方都市において交通政策の効率化・最適化を図ることは可能だと考える。

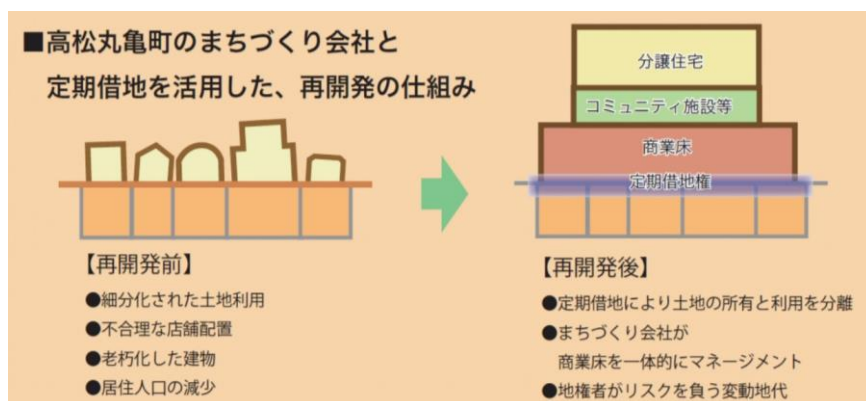
3-3 集約型都市形成に資する制度・手法

(1) 都市機能の集約化手法

地方都市における中心市街地は、高度経済成長期の土地価額の上昇や相続などを背景に土地が細分化され、権利関係が複雑であるケースが多い。また、土地所有者の多くは高齢

であるため、土地の所有や利用意欲の低下、活用のノウハウ不足等を理由に、適切な利用や管理がされない土地が今後増加することが想定される。このように、まとまった空間を確保することや中心市街地に相応しい土地の利活用が難しい状況にある中で、点在する遊休地が駐車場などに暫定利用されることで地域の賑わいや活力が低下している。

中心市街地の街なか再生を促進する面整備・改善手法には、土地区画整理事業や市街地再開発事業などがあり、多くの基礎自治体で中心市街地活性化基本計画等に沿ってこれらの事業が推進されている。その中で、認定中心市街地活性化基本計画の好事例として挙げられるのが高松市の丸亀商店街の再生⁴¹である。衰退した商店街の再生事例として取り上げられることが多い丸亀商店街であるが、連鎖型の市街地再開発事業によって商業施設のほか医療・福祉施設、ホテル、高齢者向け共同住宅など都市機能が集積されている。特筆すべきは、個々の土地所有権をそのまま残す権利変換の方法や定期借地権方式による事業スキーム等を採用した土地の総有的利活用(図 23)にある。これは再開発事業だからできる



出典：古川康造「高松丸亀町まちづくり戦略 改訂版（内部資料）」p.19より引用

図23：高松丸亀商店街の再開発スキーム

市街地の面整備・改善手法だと言える。市街地再開発事業は、従前の権利を新たに建設する再開発ビルに置き換える権利変換手続きによって、土地の合理的かつ健全な高度利用、建築物の不燃化、公共施設の整備などを行って、居住環境の整備や都市機能の更新を図ることを目的とした事業である。細分化された土地が多く都市機能の更新が難しい中心市街地の改善を図る有用な手法となり得る一方、制度上は街区単位の面的整備に留まり、都市の集約化を図る推進力という観点でその効果は限定的である。

(2) 都市のアクセシビリティ向上手法

人や都市機能の集約と地域公共交通を中心とするモビリティのネットワーク化によって、コンパクトなまちづくりを進めることが求められている。しかしながら、都市の低密度化

⁴¹ A 街区から G 街区までの約 470 メートルのうち、A 街区及び G 街区の整備を契機として、段階的に大都市の民間都市再開発事業とは異なる身の丈再開発によるまちづくりが進められている。

が進み、旅客需要の少ない地方都市において、交通事業の維持存続が困難な状況にあり、都市の構造を変えることも一朝一夕にはいかない。このような状況から、有機的なモビリティネットワークを構築するために、様々な移動方法を一つのサービスとして捉え、移動ニーズに対して最適な移動手段のシームレス化を図ることが重要であるが、これらの政策による効果も限定的であり、抜本的な問題の解決には至らない。

一方、アクセシビリティの向上は、都市における近接性や接近可能性などの機会を得るための条件に留まらず、人々が幸福に生きる魅力的な都市の形成を目指す上で重要な役割を果たし得ることから、都市計画や交通政策の立案において重要な視点となる。そのため、移動障壁のないアクセシビリティを向上させる手法の検討を目的に、「防災のための集団移転促進事業に係る国の財政上の特別措置等に関する法律（以下、防集法とする。）」に基づく防災集団移転促進事業⁴²（以下、防集事業という）を参考に考察する。

防集事業は、災害が発生した地域又は災害危険区域のうち、住民の居住に適当でないと認められる区域内にある住居の集団的移転を促進するため、国から地方公共団体に対して事業費の一部が補助される。近年の災害の激甚化・頻発化を踏まえ、災害ハザードエリアから事前の住居移転が災害防止の観点で有効な手段であることから、災害ハザードエリア指定制度の充実化や、人口減少に伴う集落の小規模化等の経済社会情勢の変化に対応するため、2020年度に制度改革が行われている。震災復興事業におけるコンパクトシティ形成状況を考察した星ら(2019)の研究では、「内陸側に鉄道線路を移転させ、2箇所の新駅と病院周辺の3箇所に新市街地が整備されたことで、これらの施設を中心として住宅の集積傾向が見られ、コンパクトな市街地の形成が進行していることが明らかとなったこと。また、居住者アンケートの結果から、新市街地の利便性の高さが移転理由として最も高く、周辺の既存市街地の人も引き付ける結果となった⁴³。」と述べている。一方、姥原(2017)は、「防集事業による集約化で比較的成功したのは、主に平野部の農村集落や新興住宅市街地であり、これらの集落は、複数がまとまって内陸部に移転・集約化することで、これまでよりコンパクトな形態になっている」としながら、「交通軸の位置には変更がない一方で、集落が高台に移転したことにより両者の空間的關係が分離、すなわち集落がネットワークから分離してしまった場合が見られ、公共交通ネットワークまでのアクセスをいかに確保するかが、大きな課題となっている⁴⁴。」と指摘している。

⁴² 市町村が、住民の意向を踏まえて移転促進区域を設定し、国土交通大臣と協議・同意を得た上で集団移転促進事業計画を策定する流れとなっており、関係権利者等の合意の下進める任意の事業である。移転元地の買取りや移転先の住宅団地の整備等に要する費用は国から補助される。

⁴³ 星卓志・赤川俊哉・金井寛樹(2019)「宮城県山元町における震災復興事業によるコンパクトシティ形成状況」日本建築学会計画系論文集, 第84巻, 第757号, pp.611-619

⁴⁴ 姥浦道生(2017)「東日本大震災からの復興とコンパクトシティ」『環境情報科学』環境情報科学センター, 第46巻, 第1号, pp.53-57

防集事業の事例から、現状の居住地から移転せざるを得ない理由や新しい居住地に移転したいと考える動機に加え、移転に伴う経済的な支援などが後押しすることで都市の拠点へ人の移動を促し、その結果として、アクセシビリティを向上させることが可能であると考えられる。前述した都市機能の集約化に有用な市街地再開発事業の手法を活用し、災害危険区域内や公共交通空白地域などに居住する高齢者などを対象に移転を推進するような隔地間における権利交換が実現できれば、人と都市機能の集約とともにアクセシビリティの向上を図ることが可能になるのではないかと。次項では、市民の移転を推進する隔地間の権利交換手法について検証する。

(3) 隔地間における権利交換手法

隔地地域（以下、隔地という。）から、集約化を推進する地域（以下、集約地という。）へ権利を移転する方法（以下、権利交換という。）を、中心市街地の街なか再生に有用な面整備・改善手法である、土地区画整理事業や市街地再開発事業などの現行制度を対象に活用の可能性を検証する。なお、隔地対象とする地域や対象者は、災害危険区域内や公共交通空白地域などに居住する高齢者などを想定して検証を進める。

土地区画整理事業は、道路、公園、河川等の公共施設を整備・改善し、土地の区画を整え宅地の利用の増進を図る事業である。土地区画整理事業運用指針⁴⁵では、飛び施行地区に関する留意事項として、「物理的に離れている地区であっても、両地区が密接不可分の関係にある場合には、飛び施行地区として捉えることができる。この密接不可分の関係（都市施設上・土地利用上）については、都市計画事業として実施する場合、一つの都市計画で決定されている必要がある」と示されている。①都市施設上の密接不可分は、都市計画道路の同一路線の未整備区間を含むなど、公共施設の一体的整備上、密接不可分の関係にある場合とし、②土地利用上の密接不可分は、市街地再開発事業等の施設建築物及び共同化住宅等への参加者の集約や墓地、鉄道操車場等、立地が限定される施設の移転先の確保、土地利用の整序を図るために土地の入れ替えが必要な場合など、土地利用上密接不可分の関係にある場合に限定している。権利交換の対象とする隔地の権利者を「災害危険区域内や公共交通空白地域などに居住する高齢者など」の幅広い対象とする場合には、集約地と都市施設上または土地利用上密接不可分の関係にあるとは言い難い。

次に、市街地再開発事業である。飛び施行地区に関する一般的な考え方として、社団法人再開発コーディネーター協会(2012)は、「工区分により工区間の権利の渡りは認められるが、施行地区の区域設定は道路等の公共施設又は敷地によって連続している必要がある

⁴⁵ 国土交通省ホームページ（政策・仕事，都市，市街地整備，土地区画整理事業）土地区画整理事業運用指針(平成13年12月)全文，pp.19-20

https://www.mlit.go.jp/toshi/city/sigaiti/toshi_urbanmainte_tk_000037.html（閲覧2023.2.22）

り、飛び施行地区が認められない⁴⁶。」とし、施行地区の区域設定方法について弾力的な運用を図るためには法令の改正が必要だと示している。また、土地区画整理事業の換地によって市街地再開発事業への参加を希望する権利者等を集約し、市街地再開発事業を施行する一体的施行の規定についても、前述したとおり、集約地と隔地の間において、都市施設上及び土地利用上の密接不可分の関係性が求められる。このように、土地区画整理事業や市街地再開発事業などの現行制度において、集約地と隔地の間の権利交換は、原則として認められていない。

しかしながら、防集事業のように近年の災害の激甚化・頻発化を踏まえ、災害ハザードエリアから事前の住居移転が災害防止の観点で有効とする考え方がある。また、2020年に国土交通省は、都市における水災害対策を進めるための容積率緩和の考え方について技術的助言の通知を発出した(図24)。この根拠となる水災害対策とまちづくりの連携のあり方



出典：国土交通省 都市局長、水管理・国土保全局長、住宅局長(2020)「都市における水災害対策の促進に係る容積率緩和制度の活用について」

図24：都市における水災害対策の促進に係る容積率緩和制度の活用

検討会(2020)の提言の中で、「我が国の都市におけるまちづくりでは、人口減少や高齢化を背景に、医療や福祉等の生活機能や公共交通が確保され、安心して暮らしやすい生活空間の実現を目指して、コンパクトシティの取組が進められているが、近年の災害の発生状況を踏まえ、水災害リスクの低減にも配慮して居住や都市機能の立地を誘導することが極めて大切となっている⁴⁷。」と指摘されている。このように、都市全体の構造をコンパクト化して減災と防災性を向上させる隔地間の権利交換は、都市再開発法第1条の目的にある公共の福祉に寄与するものであり、新しい制度・手法として検証の価値があると考えられる。

⁴⁶ 社団法人再開発コーディネーター協会 大震災等支援本部(2012)「東日本大震災中心市街地の復興と再生に向けてー市街地再開発事業等を活用した復興の提言ーH24.5」 p.25

⁴⁷ 水災害対策とまちづくりの連携のあり方 検討会(2020)「水災害対策とまちづくりの連携のあり方について 提言」 p.1

一方で、集約化を推進する地域と隔地地域の間では、不動産価値の乖離（土地価額の差）が大きいため、集約地と隔地の間において等価による権利交換を前提にした場合、隔地の土地所有者等の生活再建を図る権利の変換は非常に困難である。

3-4 小括

本章では、集約型都市形成に向けた方策を検討するため、集約型都市構造の条件を整理した上で、地域公共交通政策の限界を踏まえたアクセシビリティ向上を目的とする、集約型都市の形成に資する制度・手法について整理した。

最初に、集約型都市構造の条件を整理した。人口密度や面積規模からみた都市の領域やアクセシビリティからみた都市のあり方、そして、人や都市機能の集約効果として、行政サービスなどに対する住民の負担軽減や経済・文化・産業・定住面からみた都市の活性化の可能性を確認した。

次に、交通の役割変化と現状を整理した。地域の公共交通は、利用者が減少し交通事業の維持が困難になることで、公共交通サービスを利用できない住民等が増加する危機的な状況にある。そして、あらゆる人の自由に移動できる権利を担保することは困難であり、アクセシビリティを向上させる集約型都市形成に資する制度・手法の必要性を確認した。

そこで、都市のコンパクト化による効果を定量化して、その効果を土地所有者等へ還元することで、集約地と隔地間の権利交換が実現できるか、その可能性について実証研究を通じて明らかにする。

第4章 先行研究と分析の枠組み

人や都市機能が都市の拠点に集約・集積することで、行政サービスなどに対する住民の負担軽減や、経済・文化・産業・定住面の活性化などの効果が期待できる。しかしながら、コンパクトシティ政策推進上の障壁として、住民等に根強い郊外居住志向がある。街なか居住に共感が得られにくい最たる理由に、土地の価額が高く、不動産を取得しても必要な空間が確保できないことが挙げられる。

このような状況を改善させる方法として、現状の居住地から移転せざるを得ない正当な理由の下、移転を推進する制度とこれに必要な経済的支援などを組み合わせた政策の複合化が挙げられる。このように、複合的な政策を推進することで、郊外から街なかへ移転を促進し、都市活動における住民等のアクセシビリティを向上させることができる。

本章では、実証研究における蓋然性を高めることを目的に、参考とする先行研究と分析の枠組みを整理する。第一に、都市のコンパクト化効果を定量化する方法を、先行研究を参考にして整理する。第二に、先行研究に見当たらない集約地と隔地間における権利交換の方法を、第三に、移転に必要となる経済的な支援方法を整理する。

4-1 都市のコンパクト化効果の定量化方法

人や都市機能が都市の拠点に集約・集積することで得られる効果を、都市のコンパクト化効果と位置付け、このような効果を都市施設等の維持管理費の削減額として定義する。都市施設等の維持管理は、利用者が適度に集積し、都市施設等の利用と管理が効率化することによって、維持管理費の最適化が図れると仮定する。

都市のコンパクト化効果は、2020年から2080年までの60年間に継続して得られると設定する。これは、土地や建物等不動産の一次取得者の年齢は、30代が最も多く、日本全体の平均寿命は概ね85歳であることから、土地や建物等の所有権を取得後に最長60年程度は権利を保持することが考えられるためである。

この都市のコンパクト化効果を定量化するためには、都市施設等の維持管理費の変動を予測する必要がある。そのため、先行研究を参考に、将来人口分布予測モデルを構築し、都市のコンパクト化ケースやコンパクト化効果を測定する都市施設等を設定する。

(1) 先行研究の整理

都市のコンパクト化と都市施設のマネジメント費用の変化を検証する研究は多くある。土屋ら⁴⁸は、都市のコンパクト化効果を人口密度の高度化と捉えて、3次(1km²)メッシュ単位の将来推計によって人口分布の把握を行い、一部の地域を対象に都市のコンパクト化による道路維持管理費用の削減効果を分析した。また、根市らも同様に都市のコンパクト

⁴⁸ 土屋貴佳・室町泰徳(2006)「都市のコンパクト化による道路維持管理費用削減に関する研究」都市計画論文集, No.41-3, pp.845-850

化施策の有無別による全国将来人口の分布予測結果から、都市施設のマネジメント費用の変化を分析している。そして、佐藤ら⁴⁹はコンパクト化の住み替え率による上下水道、道路橋梁、公共建物（小中学校、保育所、公民館）等の維持管理費の削減額を試算しており、都市のコンパクト化によって効率よく維持管理費用を削減するため、郊外の縮退エリアを設定して計画的なコンパクト化を実施することが重要であると考察している。

都市のコンパクト化と都市施設のマネジメント費用の変化に関する主な先行研究を表7に示す。研究の対象とする都市施設等として、ネットワーク型の都市基盤施設では、道路や上下水道施設が多く電力・ガス施設が少ない。また、除雪は研究対象とする都市の気候によって検証の有無が異なる。その他、ネットワーク型ではない都市基盤施設や公共建物、税収などの便益効果を対象とする研究があり、表7に示していない項目としても、警察・消防施設、公民館、農地、交通エネルギーなどを対象とした研究が存在する。

表7：主な都市施設のマネジメント費用項目

	論文		マネジメント対象 ※便益効果を含む											
	年	著者	道路等	除雪	上水道	下水道	電力	ガス	公園	税収	住宅	学校等	大気質	防災
既往論文	1989	Duncan	○		○	○						○		
	1989	Burchell	○		○	○			○	○				
	1995	黒川ら	○			○			○	○				
	1995	森尾ら							×		×			
	1997	Burchell	○		○	○						○	○	○
	1999	高橋ら	△			△			△	△				
	2000	杉田ら	○		○	○						○	○	
	2002	Speirら			△	△								
	2003	Burchellら	○		○	○			○	○	○		○	
	2005	青森市	○	○	○	○						○		
	2006	土屋ら	○	○										
	2007	根市ら	○	○	○	○		○						○
	2009	佐藤ら	○		○	○						○		
	2010	小瀬木ら	○		○	○								
	2013	和田ら	○	○	○	○	○	○	○		○			
	2015	森島ら			○	○				○				
	2017	松縄ら									○		○	
	2018	瀬戸口ら	○						○	○	○			
2020	高野ら	○		○	○				○				○	
本研究	2023	筆者	●	-	●	●	-	-	-	-	●	●	-	-

出典：根市他「都市のコンパクト化による都市施設マネジメント費用の変化に関する研究」より引用し筆者が加筆

(2) 参考とする先行研究

本研究では、土屋・根市らが実施した3次（1km²）メッシュ単位の将来人口推計方法を参考に、コンパクト化ケース毎に人口分布を把握し、佐藤らが実施したコンパクト化の住み替え率によって、都市施設等における維持管理費の段階的な削減効果を検証する。

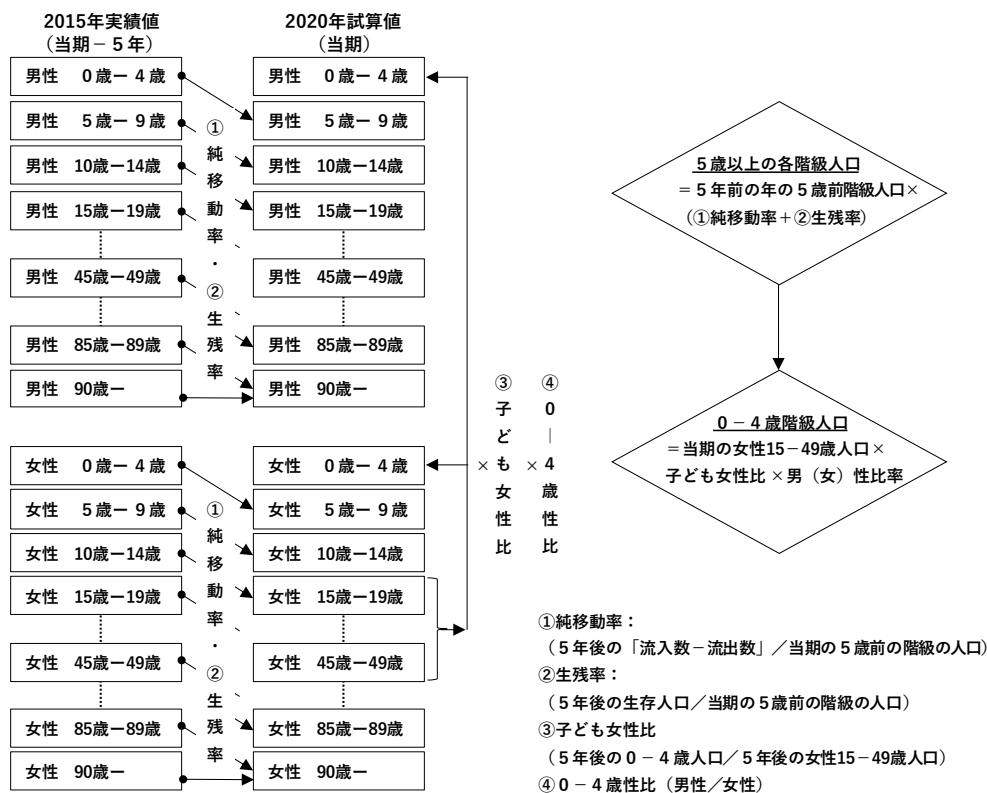
(3) 将来人口分布予測モデルの概要

本研究における将来人口分布予測モデルの概要を示す（図25）。国土交通省が提供する

⁴⁹ 佐藤晃・森本章倫(2009)「都市コンパクト化の度合に着目した維持管理費の削減効果に関する研究」都市計画論文集, No.44-3, pp.535-540

国土数値情報として、2020年から2050年までの5年毎の1kmメッシュ別将来推計人口データを用いて2055年から2080年までの5年毎の1kmメッシュ別将来人口変動予測を実施する。1kmメッシュ別の将来推計人口データは、総務省の「平成27年国勢調査」に基づいて、平成27(2015)年の500mメッシュ別人口を基準単位とした、2050年までのメッシュ別将来人口を試算している。

本試算では、2015年の500mメッシュ別の区分別人口を基準として、以降5年ごとにコーホート要因法を用いている。例えば、2020年人口は、図25に示すとおり、5歳以上の各階級人口を2015年の5歳前階級人口×(生残率+純移動率)で算定し、0-4歳階級人口を2020年の女性15-49歳人口×子ども女性比×男(女)性比率で算定している。本試算結果をもとに、後述する2055年から2080年までの5年毎の1kmメッシュ別将来人口変動予測を実施し、都市のコンパクト化ケースごとの1kmメッシュ別将来人口を用いて、都市施設の維持管理費の変動状況から都市のコンパクト化効果を予測する。



出典：国土交通省 国土政策局 総合計画課(2019)「平成27年国勢調査を基準とした500m及び1kmメッシュ別将来人口の試算方法より筆者作成

図25：将来人口分布予測モデルの概要（2020～2050年）

(4) 都市のコンパクト化ケースの設定

本研究は、都市のコンパクト化による都市施設等の維持管理費削減効果を検証するため、都市のコンパクト化ケースを2パターン設定する。ケース1では、2020年から都市のコン

コンパクトシティ政策が行われず、2080年まで推移した場合の現状推移型とする。ケース2は、2020年から都市のコンパクトシティ政策を推進して、集約化がされた場合の集約都市型とする。ケース2では、前橋市の市街化区域、市街化調整区域、非線引き都市計画区域内の用途地域、用途地域指定のない区域、都市計画区域外の5地域に加え、立地適正化計画の居住誘導区域を1kmメッシュ別に区分し、2パターンを設定する。

都市のコンパクト化ケース2のパターン1は、市街化調整区域、非線引き都市計画区域内の用途地域、用途地域指定のない区域、都市計画区域外の4地域（縮退化推奨区域①）から、市街化区域内（集約化誘導区域①）へ居住地の移転を誘導する。パターン2では、居住誘導区域外（縮退化推奨区域②）から、居住誘導区域内（集約化誘導区域②）へ居住地の移転を誘導する。そして、集約の度合として移転率は10～100%の間で変化させる。具体的には、縮退化推奨区域内の各メッシュ人口を移転率に応じて減じる。この減少した人口を、集約化誘導区域内の各メッシュの人口規模に応じて按分する。

（5）コンパクト化効果を測定する都市施設等

本研究で対象とする都市施設は、表7の既往論文で研究の対象とされた主な都市施設のマネジメント費用項目を参考にネットワーク型の都市施設である道路及び上下水道とする。また、前橋市公共施設白書（改訂版）に掲載されている施設類型一覧及び延床面積割合から、全体の36.7%を占める学校教育系施設のうち小学校・中学校と全体の27.1%を占める公営住宅が都市経営に与える影響が大きいと判断して効果測定の対象とする。なお、ネットワーク型の都市施設である電力やガスなどのエネルギー供給施設は、再生エネルギーなど供給方法が多様で事業者（企業）毎の供給網であることから、行政区域を対象とした効果の測定が難しく既往研究も少ない。また、東京ガス株式会社の2020年度ガス供給計画によれば、前橋市における都市ガス供給区域内の全体普及率は、43.7%と半数に満たない状況にある。そして、中心市街地を中心に敷設が想定される都市ガスは、住民等が中心市街地の外から中心市街地内へ移転することで得られる効果の多くは期待できないと考えられる。このような状況を踏まえ、ネットワーク型のエネルギー供給施設である、電力やガスは効果測定の対象から除外する。

4-2 集約地と隔地間の権利交換方法

前述したとおり、都市機能の集約手法として市街地再開発事業を一例に、細分化された土地が多く都市機能の更新が難しい中心市街地の改善に有用である一方で、制度上は街区単位の面的整備に留まることを確認した。

そこで、住民等の移転推進を目的として、市街地再開発事業手法を活用した都市機能の集約とアクセシビリティを向上させる、集約地と隔地間における権利交換方法の可能性について検証する。なお、現行制度において、隔地間の権利交換は規定されていないため、

筆者独自に仮定した条件の下で検証を進める。

人や都市機能の集約を推進する区域として、立地適正化計画で定める都市機能誘導区域内に市街地再開発事業の施行区域を設定する。また、市民の居住移転を促す対象地として、立地適正化計画で定める居住誘導区域外に再開発ビルの権利と交換するための隔地を設定する。なお、隔地対象とする地域や対象者は、災害危険区域内や公共交通空白地域などに居住する高齢者などを想定して検証を進める。

4-3 移転を推進する経済的支援方法

集約地と隔地地域の間では、不動産の資産価値の乖離（土地価額の差）が大きいため、集約地と隔地間において等価による権利交換を前提にした場合、隔地地域の土地所有者等の生活再建を図る権利変換は非常に困難となる。

そこで、隔地間の権利交換を推進するため、定量化した都市のコンパクト化効果の一部を隔地地域の土地所有者等へ寄与度に応じて還元するスキームを構築する。還元原資は、都市のコンパクト化効果である都市施設等の維持管理費用の削減額から、不要となった都市施設等の撤去や施設転換などにかかる費用の差額と定義する。

個々に分配するための土地所有者等の寄与度は、隔地権利者が所有する土地面積が居住誘導区域外の総宅地面積に占める割合で設定する。総宅地面積に占める隔地権利者が所有する土地面積の割合を寄与度（還元率）として、隔地権利者に配分する還元額を算定する。

第5章 実証研究と考察

5-1 本研究の位置付け

本章では、対象都市のコンパクト化効果を定量化することで集約型都市構造を評価する。また、集約地と隔地間のモデル権利変換計画を作成し、隔地間の権利交換の可能性を検証する。そして、権利の交換を推進するための経済的な支援策として、都市のコンパクト化効果の還元とその効果を検証する。

これらを組み合わせた複合的な施策によって、都市機能の集約化に加え、住民等の移転推進と都市活動におけるアクセシビリティの向上などコンパクト・プラス・ネットワークに資する制度・手法の開発を試みることを実証研究の目的とする。

5-2 研究都市の選定

(1) 対象都市の選定基準

研究の対象とする中核市の選定基準を設定する（表8）。基準の1点目は、地方自治法第4条第1項の規定によって都道府県の行政事務を扱い行政機関の本庁舎が置かれる都市

表8：研究対象都市の選定基準

中核市	①県庁所在地	②DID人口密度 (人/km ²)	③DID一人当たり の維持管理費 (千円/人)	中核市人口 2015年※1 (人)	将来推計人口 2045年※2 (人)	④2045年推計人 口/2015年人口 比率(%)
八戸市		3,131	94	231,257	162,127	70%
倉敷市		3,270	92	477,118	432,431	91%
いわき市		3,377	117	350,237		
旭川市		3,754	63	339,605	248,360	73%
富山市	●	3,984	103	418,686	356,918	85%
下関市		4,081	72	268,517	181,656	68%
姫路市		4,084	121	535,664	461,967	86%
前橋市	●	4,153	94	336,154	275,661	82%
和歌山市	●	4,297	73	364,154	296,577	81%
高崎市		4,343	65	370,884	325,277	88%
福山市		4,418	61	464,811	429,585	92%
秋田市	●	4,478	79	315,814	225,923	72%
甲府市	●	4,536	53	193,125	146,591	76%
福島市	●	4,544	59	294,247		

出典：筆者作成

選定基準：①県庁所在地、②DID人口密度4,500人/km²未満※3、③維持管理費90千円/人以上、
④推計人口比率85%未満※3

※1：総務省統計局(2015)「政府統計の総合窓口(e-Stat)」, 統計でみる市区町村のすがた(社会・人口統計体系)
- 国勢調査(総務省) A1101_総人口

※2：国立社会保障・人口問題研究所(2018)「日本の地域別将来推計人口(平成30(2018)年推計)」男女・年齢(5歳)
階級別データ

※3：②DID人口密度4,500人/km² × ④推計人口比率85% = DID人口密度40人/ha未満 = DID基準を下回る水準

である。県庁所在地は、定められた頃に人口が集中していた城下町・港町・門前町などの商業地や交通の要所が選ばれた傾向があり、現代において政治・経済・文化などの中心的な役割を果たす都市が多いと考えられる。2点目は、DID人口密度の低い都市である。DID人口密度は、人口集中地区（人口密度が4,000人/㎢で5,000人以上が連なって人が住んでいる区域）におけるDID人口/DID面積である。高度成長期の都市の人口集積と都市的地域の拡大が進み人口が分散することでDID人口密度が低下してきた経緯から、今後の人口減少による影響が大きい都市である。3点目は、DID一人当たりの都市の維持管理費（土木費）が、高い傾向にある都市である。一人当たりの負担が大きい都市では、負担の小さい都市と比較して都市経営が不効率な状態にあることが想定される。4点目は、2045年の将来推計人口が、2015年の人口と比較して減少率の大きい都市である。人口の減少率が大きい都市では、一人当たりの都市の維持管理費（土木費）が高くなるリスクがある。以上の4点の指標に基づいて、表8のような整理を行った。①県庁所在地であり、②DID人口密度が4,500人/㎢以下、③DID一人当たりの都市の維持管理費が90千円以上、④人口比率が85%未満である、4点の条件全てに該当する都市が群馬県前橋市であった。そのため、前橋市を研究対象の都市として選定した。

（2）前橋市の概況と立地適正化計画の概要

前橋市は、群馬県の県庁所在地で県の中南部に位置し、中核市に指定されている。群馬県内では、高崎市に次ぐ第2位の人口を抱える。構成の約8割が旧勢多郡に所属していた。1889年に東群馬郡前橋町として町制が施行され、1892年には市制が施行された。現在の市域は、勢多郡（旧東群馬郡・南勢多郡）・群馬郡（旧西群馬郡）・那波郡（現佐波郡）で構成され、旧前橋市は、2001年4月1日に特例市の指定を受け、周辺の町村と合併しながら、2009年に県内で初めて中核市へ移行するとともに富士見村と合併している。

前橋市における立地適正化計画の策定経緯として、2015年から計画の策定に取り組み、都市機能誘導区域は2018年3月に、居住誘導区域は2019年3月に策定・公表がされ、2022年7月1日に変更の公表がなされており、概ね20年後となる2040年の都市づくりを見据えた計画となっている。都市機能誘導区域に係る計画の策定は、市民アンケートやオープンハウス・市民説明会・パブリックコメントを実施して、市民の意見を踏まえた取り組みがされている。オープンハウスは、特定の市民が対象のワークショップと異なり、不特定多数の市民を対象に計画や白書等の内容についてコミュニケーションを図りながら説明し、市民から直接意見を聴く方法として活用されている。また、居住誘導区域に係る計画の策定において市民説明会・パブリックコメントを実施して、市民の意見を踏まえた取り組みがされている。

立地適正化計画の目的では、既に人口減少や市街地の拡散が進んでいる状況下であり、今後はさらに急激な人口減少・高齢化が進むと推計がされ、将来を見据えたまちづくりの

転換が必要な状況にあること。こうした状況を踏まえ、医療や福祉、商業施設などの都市機能施設や住居などがまとまって立地し、公共交通を介して移動しやすい環境を備える、「コンパクトシティプラスネットワーク」の構築を目指し、将来を見据えた持続性のあるまちづくりの実現を図ることが示されている。

まちづくりの基本方針では、①「市内全体に一様な投資を続けるのではなく、選択と集中の観点から、積極的に投資を行う地域を選定し、そこに居住地や都市機能を誘導する都市のコンパクト化」と、②「公共交通網の整備方針と連携し、自動車以外でも移動が容易な都市構造への転換を図ることで、自動車を中心とした生活から過度に自動車に依存しない生活への転換」を着眼点として挙げている。そして「都市機能の集積とまとまりのある居住の推進」、「利便性と効率性の高い都市機能の誘導を推進」、「公共交通の充実によるネットワーク性の向上を推進」を定めている。

(3) 前橋市のコンパクトシティ政策の課題

立地適正化計画ではこれまでの居住地を、①まちなか居住エリア、②生活サービス充実居住エリア、③公共交通沿線居住エリア、④一般居住エリアの4種類のエリアに区分している。①～④の計画対象地域の面積が52.3 km²、①～③の居住誘導区域の面積が26.4 km²であり、居住誘導区域が計画対象地域に占める割合は約52%である。前橋市の総面積は311.59 km²、可住地面積は236.93 km²、市街化区域面積は49.30 km²であるが、旧前橋市時代の区域区分（線引）の設定が、その後の町村合併による市域の拡大後も、一定の範囲内に市街化区域が収められてきた背景として考えられる。

一方で、2010年の前橋市の人口は約34万人、市街化区域内の人口は約20万人で市全体の約6割にあたり、市街化区域外の人口が約4割を占めることになる。これは、市街化区域外約187 km²（可住地－市街化区域）のエリアに人口の約4割が居住し、市街化区域の外に薄く広く人口が分布していることを意味する。このような状況から、前橋市におけるコンパクトシティ政策の課題としては、①市街化区域外に居住する市民の移動手段を確保する交通ネットワークなどの具体的な政策が示されておらず、公共交通（不便地域）空白地域が存在すること、②居住誘導区域に移転を促進する具体的な支援策等が示されておらず、市民がまちなか居住を選択するメリットがないことが挙げられる。

5-3 前橋市におけるコンパクト化効果の定量化

(1) 将来人口変動予測モデルの概要

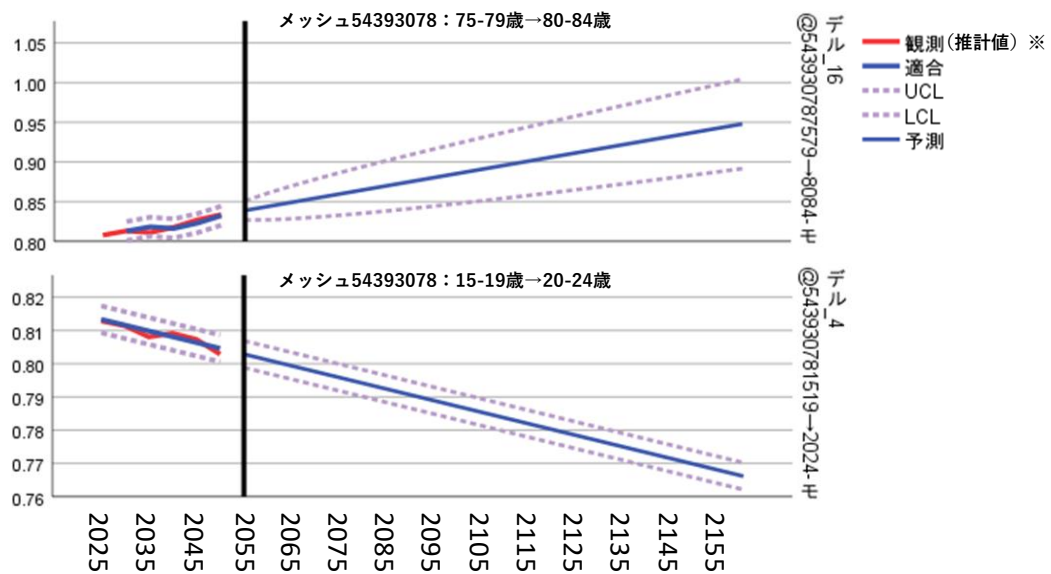
国土交通省が提供する国土数値情報より、2020年から2050年までの5年毎の1 kmメッシュ別将来推計人口データを用いて、2055年から2080年までの5年毎の1 kmメッシュ別将来人口変動予測を実施する(図26)。本予測にあたり、2020年から2050年までの5年毎の1 kmメッシュ別将来推計人口データから、5歳以上の各階級人口では、(当期)人



出典：筆者作成

図26：将来人口変動予測モデルの概要 (2055～2100年)

口を (当期-5年) の5歳前階級人口で除して変化率を求める。そして、この変化率をもとに SPSS 統計解析ソフトを用いて、2025年から2160年までの将来人口変動率の予測を実施 (図27) し、この予測結果を①変化率とする。

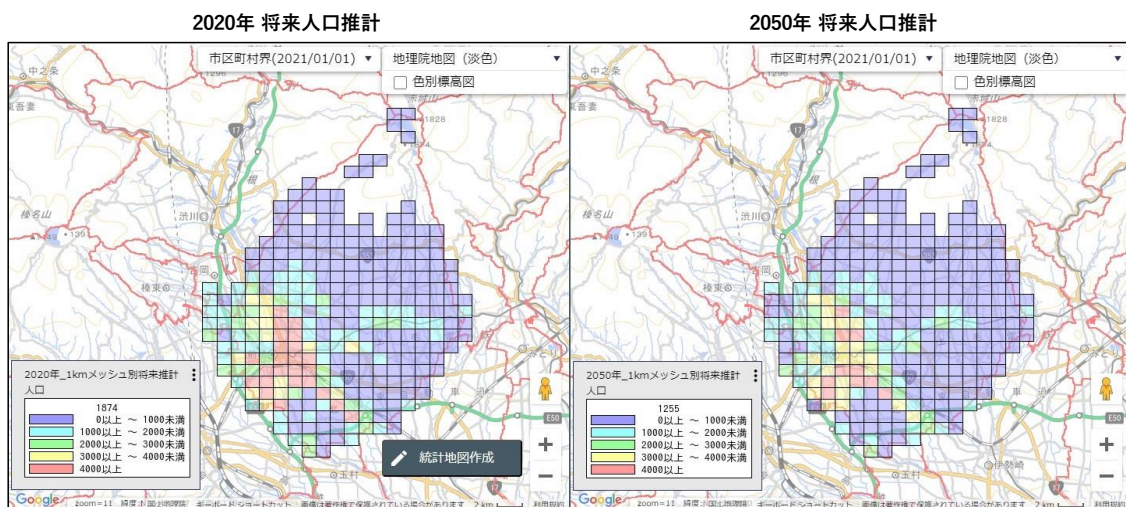


出典：筆者作成

※国土交通省の将来人口推計値（2020-2050年）に基づいてSPSS統計解析ソフトにより予測
SPSS（Statistical Package for Social Science）

図27：将来人口変化率の予測〈男性〉（2055～2160年）

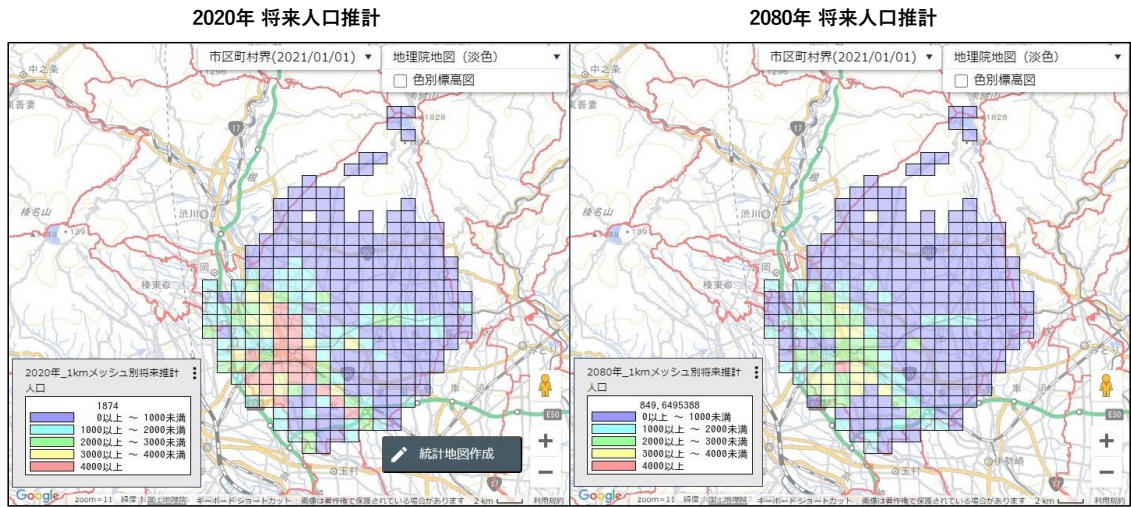
1 km メッシュ別将来人口変動予測は、まず、図 26 に示すとおり、総務省統計局の統計データである市町村別メッシュコードを参照し、国土交通省が提供する国土数値情報から、前橋市のメッシュコード範囲を抽出する。次に、5 歳以上の各階級人口は、(当期－5 年)の5 歳前階級人口に①変化率を乗じて算定する。また、0－4 歳階級人口は、(当期)の女性15－49 歳人口×子ども女性比 ×男(女)性比率によって算定した。ここまでの算定結果を検証し、次の2点の問題点を改善するための補正を行った。



出典：筆者作成

※国土交通省 国土政策局 総合計画課(2019)「平成27年国勢調査を基準とした1 kmメッシュ別将来人口推計」より j STAT MAPで作成

図28：前橋市の1 kmメッシュ別将来人口推計（2020年－2050年比較）



出典：筆者作成

※国土交通省 国土政策局 総合計画課(2019)「平成27年国勢調査を基準とした1kmメッシュ別将来人口推計」および、筆者作成データよりjSTAT MAPで作成

図29：前橋市の1kmメッシュ別将来人口変動予測（2020年－2080年比較）

1点目は、90歳階級人口である。他の階級人口と比較して増加傾向が強く、これは、2020年から2050年までの5年毎の1kmメッシュ別将来推計人口データに起因しており、このデータのベースとなる2015年の人口実績値から算定した推計の結果が影響していると考えられる。そのため、90歳階級人口では、②生存率を乗じることで補正を行った。2点目は、前橋市のメッシュコード範囲の推計人口の合計値である。1kmメッシュ単位の推計人口であることから、行政区で隣接市の一部の人口が計上されていること、また、2080年頃から推計年数を重ねるごとに推計人口が微増しており、これは、一定の①変化率によって人口増加、または人口減少が積み上がった結果と解釈でき、本研究における推計方法の限界と言える。そのため、2020年の前橋市における推計値に対する実績値の割合を、⑤実績率として各階級人口に乘じることで補正し、1kmメッシュ別将来人口変動予測は2080年までの結果を採用した（表9）。

表9：前橋市の将来人口推計と変動予測の結果

(人)

基準年	将来人口推計※1							人口変動予測※2						
	2020年	2025年	2030年	2035年	2040年	2045年	2050年	2055年	2060年	2065年	2070年	2075年	2080年	
	377,499	371,805	363,421	353,009	340,616	326,530	311,526	296,349	252,297	244,249	239,101	235,964	234,540	235,122
実績値①	実績値②				参考値①					参考値②				
	336,154	332,149	-	-	280,181	-	-	-	-	220,541	-	-	-	-
-	実績率 89%	※1：国土交通省 国土政策局 総合計画課(2019)「平成27年国勢調査を基準とした1kmメッシュ別将来人口推計」の合計値（メッシュが市行政境界を跨ぐことで実際の人口より多く計上されるため、変動予測で補正を行う） ※2：将来人口推計から「1kmメッシュ別将来人口の変化率を予測して当該変化率などを使用して算定した結果」の合計値 実績値①：総務省統計局(2015)「政府統計の総合窓口(e-Stat)」－国勢調査（総務省）A1101_総人口 実績値②：総務省統計局（令和2年）国勢調査の「人口等基本集計」（確報）、実績率：実績値②/将来人口推計値 参考値①、②：県都まえばし創生プラン（前橋版人口ビジョン・総合戦略）推計値												

出典：筆者作成

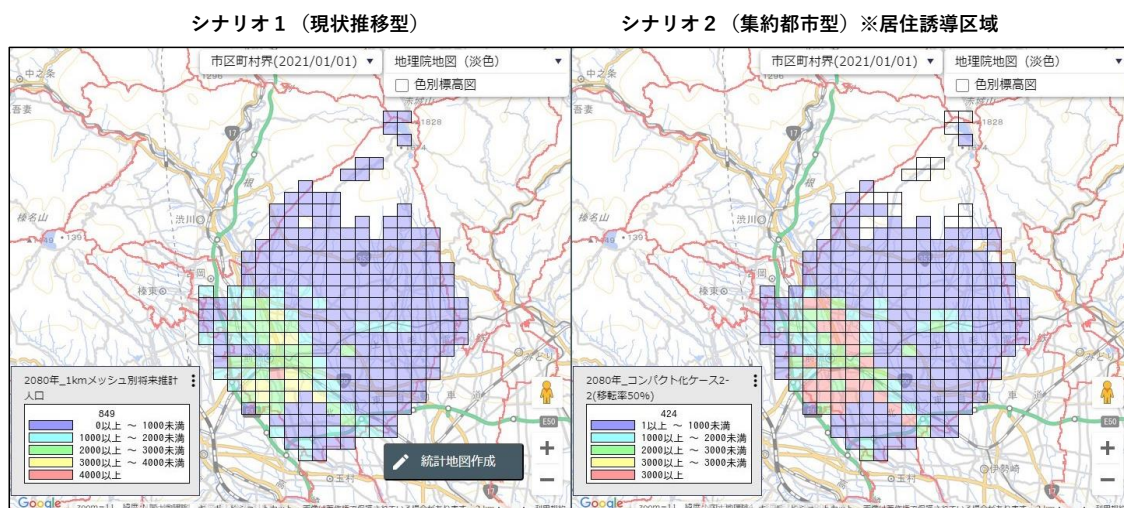
(2) コンパクトシティ政策とコンパクト化ケース

市町村合併による前橋市域の変遷、人口分布や公共施設の配置状況のほか、地理的条件などを考察し、立地適正化計画を中心とするコンパクトシティ政策の推進状況を踏まえて本市を対象に設定した都市のコンパクト化ケースの妥当性を検証する。

前橋市は、2004年12月5日に大胡町・宮城村・粕川村、2009年5月5日に富士見町と合併した。合併前の旧前橋市は、現在の市南西部に位置し、面積が約147km²・人口約283千人で人口密度は約1,900人/km²、大胡町・宮城村・粕川村は、面積が約93km²・人口約37千人で人口密度は約40人/km²、富士見町は、面積が約70km²・人口約22千人で人口密度は約31人/km²であった。市町村合併で市域が拡大しているが、旧前橋市のあった市南西部に人口が集中し、中心市街地が形成されていることが分かる。

公有財産である公共施設（不動産の中の建物）は、前橋市公共施設白書（改訂版）で439施設を対象に調査されている。施設を大きく分類すると、市民文化、社会教育、スポーツ・レクリエーション、産業、学校教育、保健・福祉・医療系施設、子育て支援施設、公営住宅、公園などの市民利用系施設と行政施設・供給処理施設などの業務系施設に分けられる。人口分布と密接な関係にある市民利用系施設の配置状況は、市全域に一様に配置された市民文化・社会教育・学校教育・子育て支援施設と、市南西部の市街地を中心に公営住宅、比較的配置にばらつきがある保健・福祉・医療系施設、スポーツ・レクリエーション施設と、各施設は利用者や利用目的に応じて適切に配置されている。しかしながら、市全域に一様に配置された公共施設は、今後の人口減少と少子高齢化により、都市のスポンジ化が進展することで需要と供給のミスマッチが生じ、施設の再編成が求められることになる。

図30に2080年におけるケース1及びケース2の1kmメッシュ別将来人口変動予測を



出典：筆者作成

※国土交通省 国土政策局 総合計画課(2019)「平成27年国勢調査を基準とした1kmメッシュ別将来人口推計」および、筆者作成データよりj STAT MAPで作成

図30：前橋市の1kmメッシュ別将来人口変動予測（2080年）シナリオ2 移転率50%

示す。現状推移型であるシナリオ1は、市南西部に一定の人口集積が維持されるものの北東部は低密度化が進むと予測される。シナリオ2（移転率50%の場合）は、人の集約化によって市北部の一部に人口ゼロのメッシュが見られ、市南西部の中心市街地に人口集積の効果が確認できる。

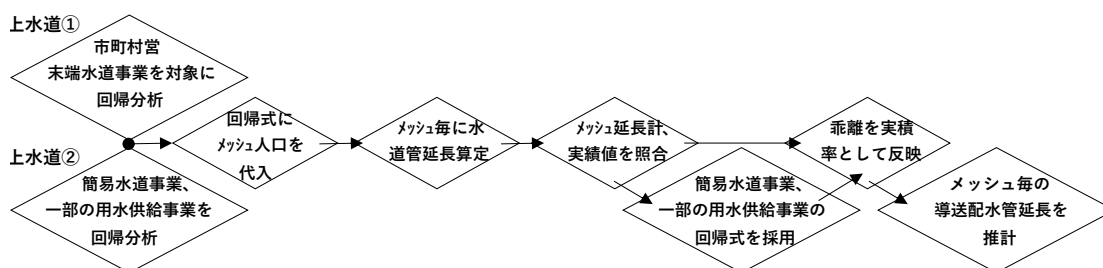
前橋市の地形は、赤城山と利根川の活動によりつくられた北部の赤城火山南麓、中央部の広瀬川低地、南部の前橋台地と東部の榛名火山東麓により形成される。前橋市における現状の人口分布や公共施設の配置状況、地理的条件等を考察した結果から、既成市街地のある市南西部を中心に人と都市機能を集約するコンパクトシティ政策とそのコンパクト化ケースの設定は整合している。

(3) 都市施設等における維持管理費の削減効果

本研究では、維持管理費の削減効果を測定するネットワーク型の都市施設として、上水道・下水道管路及び道路を対象とする。都市のコンパクト化効果を測定するために、1kmメッシュ単位の将来予測人口に相応する管路延長や道路延長を推定する必要がある。

まず、上下水道は、市町村単位の管路延長を目的（従属）変数、人口や計画給水人口を説明変数とする回帰分析を行って得た式を用いて管路延長の推定を行う。また、道路延長は、国土交通省が提供する国土数値情報から道路密度・道路延長メッシュデータを使用する（図31）。次に、ネットワーク型ではない小・中学校などの都市施設については、前橋

都市施設	分析項目	回帰式	決定係数
上水道①	目的変数 y:導送配水管延長、説明変数 x:人口	$y = 1.49E2 + 4.98E-3 * x$	$R^2 = 0.667$
上水道②	目的変数 y:導送配水管延長、説明変数 x:計画給水人口	$y = 29.78 + 0.01 * x$	$R^2 = 0.459$
下水道	目的変数 y:下水管布設延長、説明変数 x:人口	$y = 18.86 + 3.52E-3 * x$	$R^2 = 0.782$
道路	国土交通省が提供する国土数値情報の道路密度・道路延長メッシュデータを使用する		-



出典：筆者作成

図31：ネットワーク型都市施設の延長原単位 y の推計方法

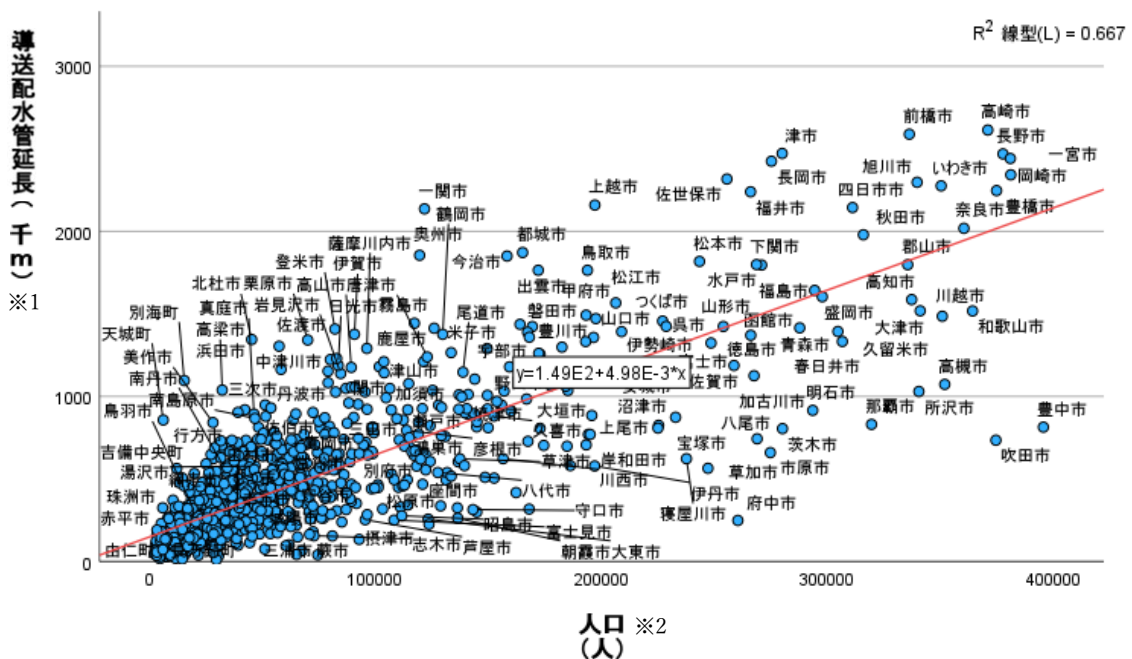
市公共施設白書（改訂版）に掲載されている維持管理費を参考とし、1kmメッシュ単位の将来人口予測の結果から都市施設の利用者数を推計して施設の統廃合を推定する。

最後に、都市のコンパクト化効果を測定するため、2080年時点の維持管理費をケース1の現状推移型とケース2の都市集約型の2パターンをそれぞれ算定し、その差額を削減効果として評価する。具体的には、図31に示す回帰式のxに1kmメッシュ別将来人口推計

または将来人口変動予測結果を代入し、yの1kmメッシュ別の延長数量を算出する。そして、延長数量に想定単価を乗じて得た維持管理費のメッシュ合計額を比較する。なお、ケース1現状移行型的前提条件として、ネットワーク型の都市施設は、2020年から2080年までの間に人口が減少しても延長数量に変化はなく、2020年の維持管理費が2080年の維持管理費にスライドする設定とする。また、ネットワーク型ではない都市施設については、人口減少に伴って利用者の減少が想定されるため、施設の統廃合の可能性を検証する。

a) 上水道

上水道は、2020（令和2）年度地方公営企業年鑑における水道事業（上水道事業及び簡易水道事業）の個表から、人口が40万人未満の都市を末端給水事業等と簡易水道事業に分け、導送配水管延長を抽出した。次に、2020年度の末端給水事業における都市の人口と導送配水管延長の関係を単回帰分析した。その結果を分布図で示す（図32）。



出典：筆者作成

※1：総務省（2020）「令和2年度地方公営企業年鑑」水道事業（23）施設・業務概況及び経営分析に関する調（法適用、事業別）

※2：総務省統計局（2015）「政府統計の総合窓口(e-Stat)」, 統計でみる市区町村のすがた（社会・人口統計体系）－国勢調査（総務省）A1101_総人口

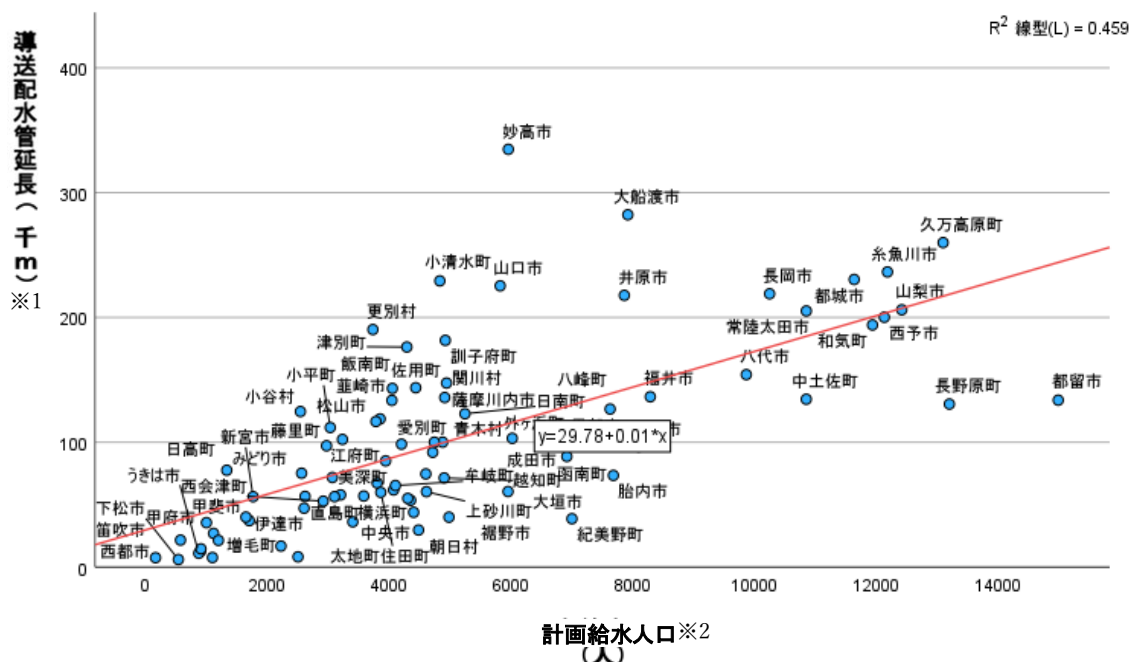
※3：簡易水道事業および一部の用水供給事業による市町村を除く

図32：導送配水管延長と人口（40万人未満の市町村）の関係

分析結果を見ると、決定係数(R²)が0.667であり、一般的な目安とされる0.5を超えていることから本回帰式の精度は良いと言える。この回帰式xに前橋市における2020年の1kmメッシュ別将来人口推計を代入し、yの1kmメッシュ別の導送配水管延長を算定した。そして、各メッシュの導送配水管延長の合計値を2020年の実績値と照合した結果から、その乖離が大きく、人口が数十万単位の都市のデータから1kmメッシュという極めて狭い範囲の導送配水管延長を算出することに限界があることが分かった。そこで、対象人口が

101人から5,000人以下の簡易水道事業のデータを用いて再検証する。

2020年度の簡易水道事業による都市の人口と導送配水管延長の関係を単回帰分析した。その結果を分布図で示す(図33)。分析結果を見ると、決定係数(R²)が0.459で一般的



出典：筆者作成

※1：総務省(2020)「令和2年度地方公営企業年鑑」水道事業(23)施設・業務概況及び経営分析に関する調(法適用, 事業別)

※2：同上

※3：簡易水道事業および一部の用水供給事業による市町村を対象とする

図33：導送配水管延長と計画給水人口の関係

な目安とされる0.5を下回っているが、対象とする人口規模との整合性を考え、引き続き検証する。この回帰式xに前橋市における2020年の1kmメッシュ別将来人口推計を代入し、yの1kmメッシュ別の導送配水管延長を算定した。2020年度の前橋市内の導送配水管延長の合計である実績値は2,588,410mであった。各メッシュの導送配水管延長の合計値を2020年の実績値と照合し、末端給水事業より乖離が小さい結果であったことから、図33に示す簡易水道事業の回帰式を採用する。また、推計値に対する実績値の割合を実績率として各メッシュの導送配水管延長に乗じることで補正し、1kmメッシュ別の導送配水管延長とした。1kmメッシュ内に想定される導送配水管延長の推計値は、下限が6km、上限が19kmであった。

推計式で得られた1kmメッシュ別の導送配水管延長に、単位延長当たりの年間の維持・管理・更新費(以下、維持管理費とする。)想定単価を乗じて前橋市におけるメッシュ別の維持管理費を算定する。上水道の維持管理費として『都市構造の評価に関するハンドブック⁵⁰』では3.4千円/mと設定されている。この値を想定単価として、1kmメッシュ別

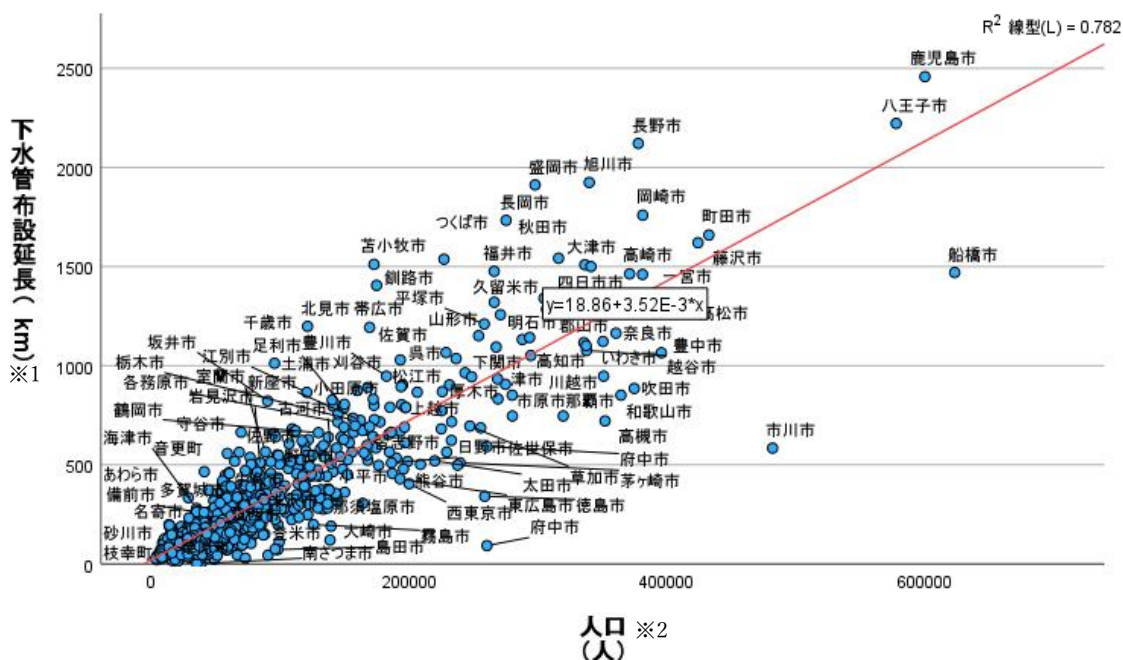
⁵⁰ 国土交通省都市局都市計画課(平成26年8月)『都市構造の評価に関するハンドブック』

の導送配水管延長に乘じ、各メッシュの維持管理費の合計値を算定した。算定結果を前橋市の「令和2年度水道事業及び下水道事業決算の概要」で示す水道事業決算の総費用と比較したところ、決算額より上振れしたため、各メッシュの維持管理費の合計値に対する決算額の割合を、実績率として各メッシュの維持管理費に乘じることで補正した。また、同様の方法によって、都市のコンパクト化ケース2集約都市型の維持管理費を算定する。

b) 下水道

下水道は、2020（令和2）年度地方公営企業年鑑における下水道事業（公共下水道）の個表から、人口が40万人未満の都市を対象に下水管布設延長を抽出した。次に、2020年度下水道事業における都市の人口と下水管布設延長の関係を単回帰分析した。その結果を分布図で示す（図34）。

分析結果を見ると、決定係数(R²)が0.782であり、一般的な目安とされる0.5を超えていることから今回回帰式の精度は良いと言える。この回帰式xに前橋市における2020年の1kmメッシュ別将来人口推計を代入し、yの1kmメッシュ別の下水管布設延長を算定した。2020年度における前橋市内の下水管布設延長の合計である実績値は1,509,000mである。各メッシュの下水管布設延長の合計値を2020年の実績値と照合し、推計値に対する実績値の割合を実績率として、各メッシュの下水管布設延長に乘じることで補正、1kmメッシュ別の下水道布設延長とした。1kmメッシュ内に想定される下水管布設延長の推計値



出典：筆者作成

※1：総務省（2020）「令和2年度地方公営企業年鑑」12個表（1）施設及び業務概況（その1）に関する調（法適用企業）（ア）公共下水道

※2：総務省統計局(2015)「政府統計の総合窓口(e-Stat)」, 統計でみる市区町村のすがた（社会・人口統計体系）－国勢調査（総務省）A1101_総人口より対数を算出

図34：下水管布設延長と人口（40万人未満の市町村）の関係

は、下限が4 km、上限が9 kmであった。

推計式で得られた1 km メッシュ別の下水管布設延長に、単位延長当たりの年間の維持管理費想定単価を乗じて、前橋市におけるメッシュ別の維持管理費を算定する。下水道の維持管理費として『都市構造の評価に関するハンドブック』では2.5 千円/mと設定されている。この値を想定単価として、1 km メッシュ別の下水道布設延長に乘じ、各メッシュの維持管理費の合計値を算定した。算定結果を前橋市の「令和2年度水道事業及び下水道事業決算の概要」で示す下水道事業決算の総費用と比較したところ、決算額より下振れしたため、各メッシュの維持管理費の合計値に対する決算額の割合を、実積率として各メッシュの維持管理費に乘じることで補正した。また、同様の方法によって、都市のコンパクト化ケース2集約都市型の維持管理費を算定する。

c) 道路

道路は、国土交通省が提供する国土数値情報から、道路密度・道路延長メッシュデータ（平成22年版データ）を用いる。本データは全国の道路整備状況について1 kmメッシュ毎の総延長距離（道路の幅員別）と道路密度を計算、集計して整備したものである。この1 kmメッシュ内の道路延長の合計（実延長）を使用する。

まず、総務省統計局統計データの市町村別メッシュコードを参照し、国土交通省が提供する国土数値情報から、前橋市のメッシュコード範囲を抽出する。次に、各メッシュの道路延長の合計値を実績値⁵¹と照合する。2015（平成27）年4月1日時点における前橋市が管理する市道は16,655路線で実延長は3,953,189mである。各メッシュの道路延長の合計値を2015年の実績値と照合し、推計値に対する実績値の割合を実績率として各メッシュの道路延長に乘じることで補正して1 kmメッシュ別の道路延長とした。

推計式で得られた1 kmメッシュ別の道路延長に、単位延長当たりの年間の維持・管理・更新費（以下、維持管理費とする。）の想定単価を乗じて前橋市におけるメッシュ別維持管理費を算定する。道路の維持管理費として『都市構造の評価に関するハンドブック』では0.3 千円/m²と設定されている。1 kmメッシュ別の道路延長を平均道路幅員6 mと仮定しm²換算した値に、この想定単価を乗じて各メッシュの維持管理費の合計値を算定した。算定の結果を団体別歳入歳出決算の状況⁵²から道路橋りょう費と比較したところ、歳出額とほぼ同額であったことから、『都市構造の評価に関するハンドブック』による0.3 千円/m²を採用した。また、同様の方法によって、都市のコンパクト化ケース2集約都市型の維持管理費を算定する。

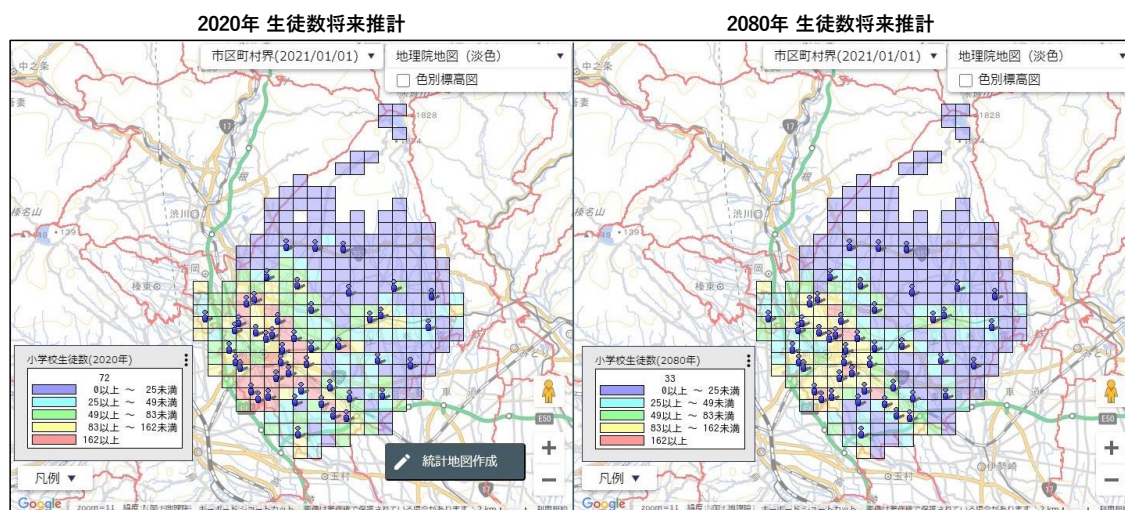
⁵¹ 「前橋市における道路維持管理～優先度と効率性を重視した安全安心で快適な道路交通環境の提供～」『道路行政セミナー』一般財団法人道路新産業開発機構，2015年度10月号，pp.1-5

⁵² 総務省(2020)「令和2年度地方財政統計年報」の普通会計決算の状況，団体別歳入歳出決算の状況，2-4-14表中核市別目的別歳出決算，八 土木費，2.道路橋りょう費

d) 小・中学校

小・中学校の利用圏域は学区単位であるが、通学距離は「義務教育諸学校等の施設費の国庫負担等に関する法律施行令」の第4条において小学校でおおむね四キロメートル以内、中学校で六キロメートル以内とされている。また、文部科学省の「公立小学校・中学校の適正規模・適正配置等に関する手引」では、徒歩や自転車による通学距離として小学校で4 km 以内、中学校で6 km 以内という基準は、およその目安として引き続き妥当であるとされ、適切な交通の手段が確保でき、かつ、遠距離通学や長距離通学によるデメリットを一定程度解消できる見通しが立つことを前提に、通学時間は1時間以内を目安に市町村の判断によるとしている。

そこで、前述した前橋市内の1 kmメッシュ別将来人口推計(2020年)と1 kmメッシュ別将来人口変動予測(2080年)の結果から、1 kmメッシュ別の小・中学校生徒数を算定し、通学圏域内の生徒数を予測する。具体的には、2020年における将来人口推計(5歳階級別)の5~14歳人口の合計値と住民基本台帳(年齢別人口表)の6~15歳人口の割合を補正率①、2015年における児童生徒数(立地適正化計画P.092)と住民基本台帳6~15歳人口の割合を補正率②、2015年における小・中学校生徒数合計に占める小学校生徒数・中学校生徒数の割合を補正率③として、1 kmメッシュ別人口に各補正率を乗じて算出した(図35)。



出典：筆者作成

※国土交通省 国土政策局 総合計画課(2019)「平成27年国勢調査を基準とした1 kmメッシュ別将来人口推計」および、筆者作成データより j STAT MAPで作成

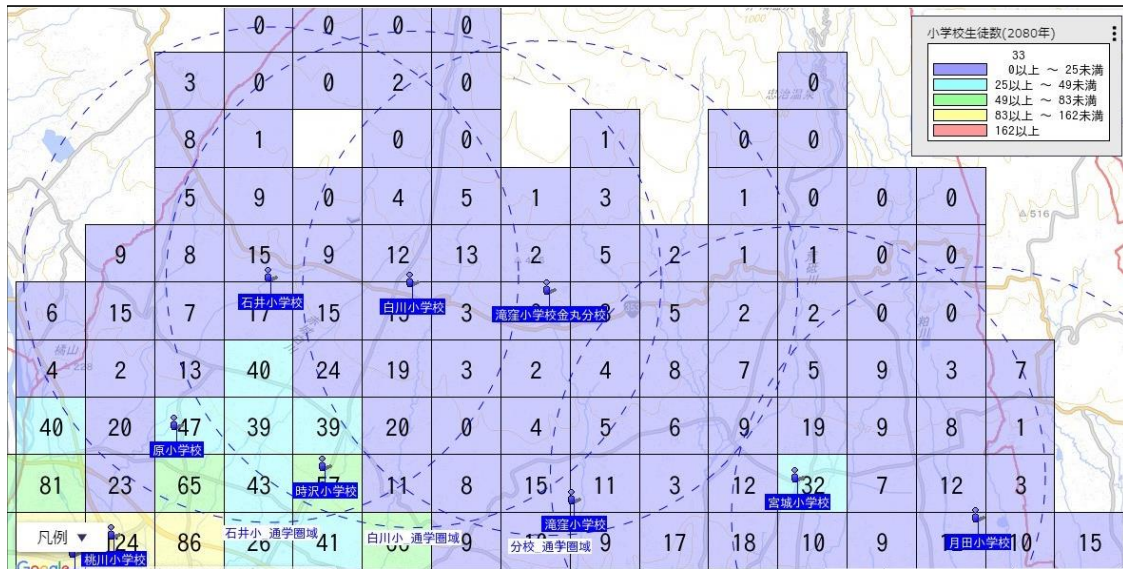
※青いプロットは前橋市内の小学校位置を示す

図35：前橋市における小学校生徒数の将来変動予測(2020年-2080年比較)

図35が示すとおり、小学校の生徒数は、人口推計・人口変動予測結果と同様に市内全域で減少傾向にあり、2020年を100とした場合に2080年は70程度となる予測結果となった。特に市北東地区において就学対象者数が少ないことから、将来に向けた小学校の統廃合の可能性を検証する。具体的には、人口密度が低い傾向にある市北東地区に位置する石井小学校・白川小学校・滝窪小学校金丸分校などを中心に、1 kmメッシュ別将来人口変動

予測（2080年）の結果から通学圏域内の生徒数を検証する（図36）。

前橋市公共施設白書（改訂版）によると、2016年時の石井小学校の生徒数147人、白川小学校は108人、滝窪小学校金丸分校は16人であり、1クラス30～40人で換算すると学校規模の標準とされる12～18学級を下回る状況にある。そして、2080年における生徒数



出典：筆者作成

※国土交通省 国土政策局 総合計画課(2019)「平成27年国勢調査を基準とした1kmメッシュ別将来人口推計」および、筆者作成データよりj STAT MAPで作成

※石井小学校・白川小学校・滝窪小学校金丸分校などを中心とした半径4kmの通学圏域（破線）を示す

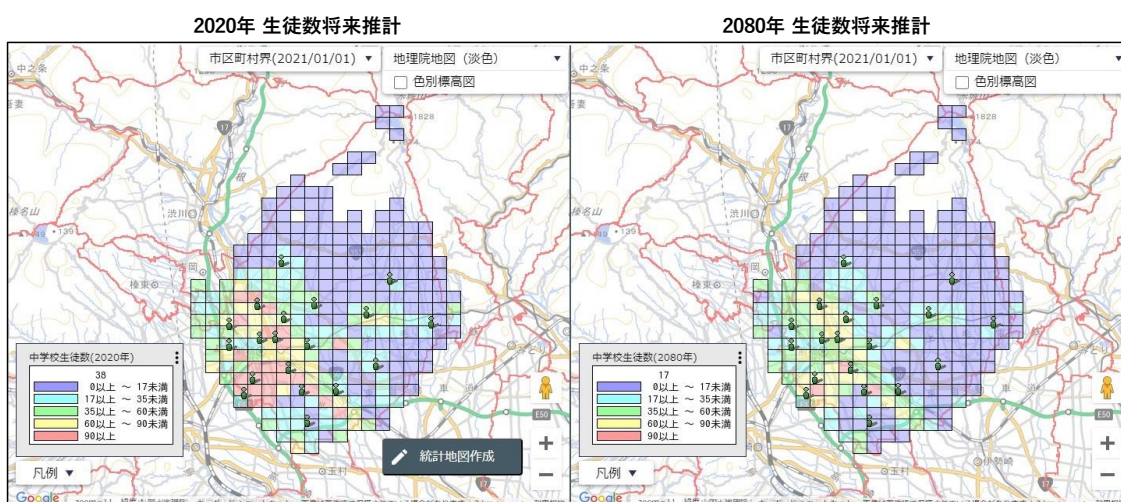
図36：前橋市北東部の小学校通学圏域と1kmメッシュ内の生徒数予測（2080年）

の予測結果を2020年時点と比較すると最大で3割減となる見込みであり、「さーちずまえばし」による通学区域と重なると滝窪小学校金丸分校に至っては12名程度となる試算結果である。しかしながら、2010年に滝窪小学校金丸分校適正規模地区委員会から、前橋市教育委員会委員長宛てに提出された、「滝窪小学校金丸分校適正規模地区委員会の検討結果について（報告）」において本校（滝窪小学校）への統合は行わず、本校と分校との交流教育の更なる充実と本委員会の解散について報告され、現在も分校として運用がされている。このような状況を鑑み、都市のコンパクト化ケース1現状推移型は、生徒数の減少に伴う前橋市内の小学校の統廃合は想定しないこととする。

都市のコンパクト化ケース2集約都市型の検証は、縮退化推奨区域から集約化誘導区域へ人の移動を誘導して、小学校の適切な統廃合を進め、社会資本ストック活用の合理化を図ることで維持管理費の削減効果を評価する。具体的には、人口密度が低い傾向にある市北東地区に位置する、石井・白川・滝窪小学校金丸分校・滝窪・宮城・月田小学校から北側エリアの生徒数が移転率10%から100%に変動した場合に、1校当たり35人のクラス数が1未満となるラインを統廃合の判断基準とした。検証結果では、移転率が50%以上で基準を満たすため、6校を廃校とする想定とした。また、50%未満では、6校のうち3校

を廃校として学区の変更で対応する想定とした。このように統廃合に伴う学区の変更やスクールバスによる対応が必要となる。なお、この6校以外の小学校は、生徒数の減少によって統廃合が進められる可能性は高いが、通学圏域が重複していることから学区の変更で対応できることが想定され、住民等の移転効果測定の対象外とする。

次に、中学校の生徒数について小学校と同様の試算方法によって予測結果を整理する。中学校の生徒数は、小学校生徒数の予測結果と同様に市内全域で減少傾向にあり、2020年を100とした場合に2080年は70程度となる予測結果となった(図37)。一方、2080年



出典：筆者作成

※国土交通省 国土政策局 総合計画課(2019)「平成27年国勢調査を基準とした1kmメッシュ別将来人口推計」および、筆者作成データよりj STAT MAPで作成

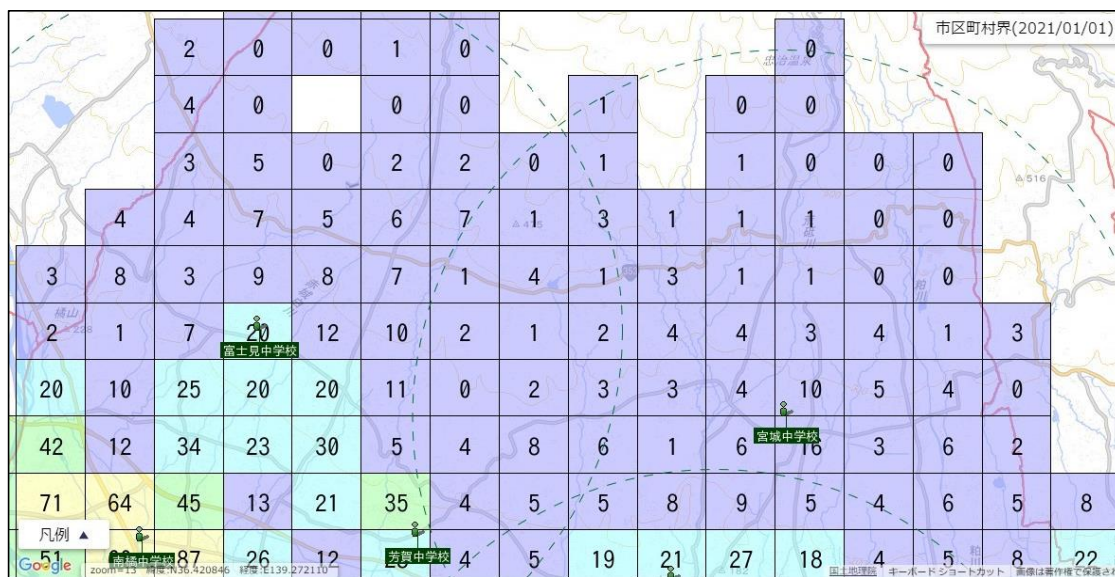
※緑のプロットは前橋市内の中学校位置を示す

図37：前橋市における中学校生徒数の将来変動予測（2020年－2080年比較）

の中学校生徒数の予測結果は、小学校生徒数の予測結果と比べると市北東地区において、生徒数の減少がより顕著に表れていることが窺える。これは、小学校と中学校の就学率を比較すると、中学校の方が低い傾向があるため、実態に近い結果と言えるかもしれない。特に市北地区において就学対象者数が少ないことから、将来に向けた中学校の統廃合の可能性を検証する。具体的には、人口密度が低い傾向にある市北地区に位置する富士見中学校・宮城中学校を中心に、1kmメッシュ別将来人口変動予測(2080年)の結果から通学圏域内の生徒数を検証する(図38)。

前橋市公共施設白書(改訂版)によると、2016年時の富士見中学校の生徒数は666人、宮城中学校は209人であり、宮城中学校は1クラスを30~40人で換算すると学校規模の標準とされる12~18学級を下回る状況にある。そして、2080年の生徒数の予測結果を2020年時点と比較すると最大で3割減となる見込みである。しかしながら、文部科学省が

各自治体へ通知した手引⁵³では、公立小中学校の統廃合に関するこれまでの基準を見直し、中学校は3学級以下（小学校は6学級以下）で統廃合を含めた検討を自治体に求める方針が示されている。2021年度末に統合された広瀬中学校・春日中学校の次に生徒数の少ない宮城中学校においても4学級を確保できる可能性があるため、2080年に想定する都市のコンパクト化ケース1では生徒数の減少に伴う前橋市内の中学校の統廃合は想定しないこととする。



出典：筆者作成

※国土交通省 国土政策局 総合計画課(2019)「平成27年国勢調査を基準とした1kmメッシュ別将来人口推計」および、筆者作成データよりj STAT MAPで作成

※富士見中学校・宮城中学校などを中心とした半径6kmの通学圏域（破線）を示す

図38：前橋市北部の中学校通学圏域と1kmメッシュ内の生徒数予測（2080年）

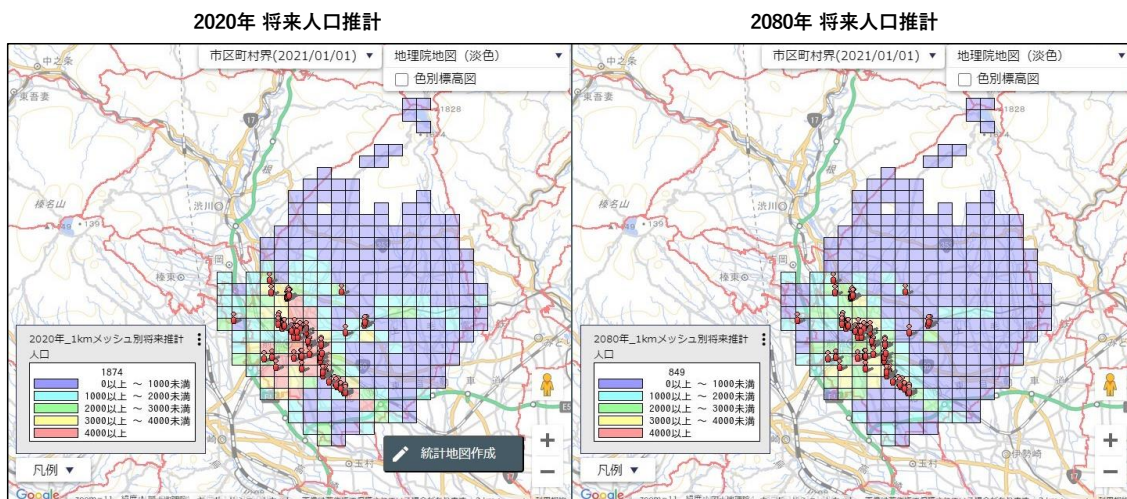
都市のコンパクト化ケース2集約都市型の検証は、縮退化推奨区域から集約化誘導区域へ住民等の移転を誘導し、中学校の適切な統廃合を進め、社会資本ストック活用の合理化を図ることで維持管理費の削減効果を評価する。具体的には、人口密度が低い傾向にある市北地区に位置する、富士見・宮城中学校から北側エリアの生徒数が移転率10%から100%に変動した場合に、1校当たり35人のクラス数が2未満となるラインを統廃合の判断基準とした。検証結果では、移転率が60%以上で基準を満たすため、2校を廃校とする想定とした。また、60%未満では、廃校はせずに学区域の変更を想定する。このように統廃合に伴う学区域の変更やスクールバスによる対応が必要となる。なお、この2校以外の中学校は、生徒数の減少により統廃合が進められる可能性は高いが、通学圏域が重複しており、学区域の変更で対応できることが想定されるため、住民等の移転効果測定の対象外とする。

⁵³ 文部科学省(2017)『公立小学校・中学校の適正規模・適正配置等に関する手引～少子化に対応した活力ある学校づくりに向けて～』

e) 市営住宅（市営団地）

前橋市は、市営住宅の住宅セーフティネットの役割とその必要性の検討を目的として、前橋市公営住宅等長寿命化計画(令和3年3月)を策定している。この計画はおよそ30年の中長期的な観点から、市営住宅の活用の考え方を明らかにするとともに、2020(令和2)年以降の10年間における具体的なストック活用計画を定めて、市営住宅需要を踏まえた供給のあり方の検討を行っている。そして、この検討の中で、市営住宅の需要が減少していく見通しから、15年後には供給が需要を上回る状況が想定されており、中長期的な視点で建替による戸数調整や用途廃止を進めていく必要性が示されている。

本計画で事業手法の選定フローが示され、第1次から第3次までの判定結果から、総計5,394戸のうち用途廃止と判断される住戸数は14戸であった。しかしながら、第1次判定指標にある需要は、応募状況や空家率などを判定基準としており、第2次判定指標にある将来のストック量は30年後の予測を基準としている。そこで、計画が策定された2020年とその60年後である2080年の1kmメッシュ単位の将来人口変動予測結果に市営住宅の現位置をプロットして市営住宅周辺の人口変動状況を確認した(図39)。



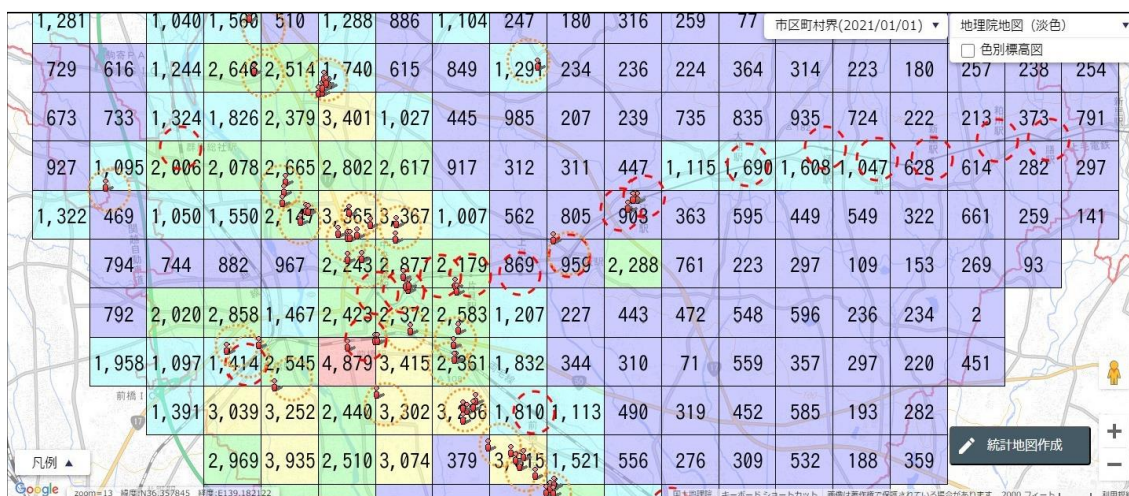
出典：筆者作成

※国土交通省 国土政策局 総合計画課(2019)「平成27年国勢調査を基準とした1kmメッシュ別将来人口推計」および、筆者作成データよりjSTAT MAPで作成

※赤のプロットは前橋市内の市営住宅(団地)の位置を示す

図39：前橋市の将来人口変動予測（2020年－2080年比較）と市営住宅の位置

図39が示すとおり、前橋市全域にわたり人口の減少傾向が確認できるものの、市営住宅の多くが、人口が集中する市南西部に立地していることから、人口の減少によって生じる利便性の低下など周辺環境から受ける影響は低い可能性がある。一方で、今後想定される高齢者人口の増加によって市営住宅利用者に占める高齢者割合の増加が予想されるため、高齢者を中心とする市営住宅の利用を想定し、交通利便性を担保する基準から将来の用途廃止の可能性について検証する(図40)。隣接する複数の市営住宅を1とした場合、2020年は市内全域に40ヶ所の市営住宅があり、事業手法の選定フローの第一次判定指標とし



出典：筆者作成

※国土交通省 国土政策局 総合計画課(2019)「平成27年国勢調査を基準とした1kmメッシュ別将来人口推計」および、筆者作成データよりj STAT MAPで作成

※数字表記は、2080年における1次メッシュ内の人口予測値を示す

※赤のプロットは前橋市内の市営住宅(団地)の位置を示す

※鉄道駅を中心とした半径400mの圏域(赤破線)とバス停を中心とした半径400mの圏域(橙点線)を示す

図40：前橋市の将来人口変動予測(2080年)および市営住宅の鉄道駅・バス停の利用圏域
 て、需要の判定基準である空家率が19%以上になる市営住宅は9ヶ所ある。また、立地の判定基準となる鉄道駅までの距離が400mを超える市営住宅は、バス停までの距離は400m以内にあり、一定の利便性が確保されていると言える。

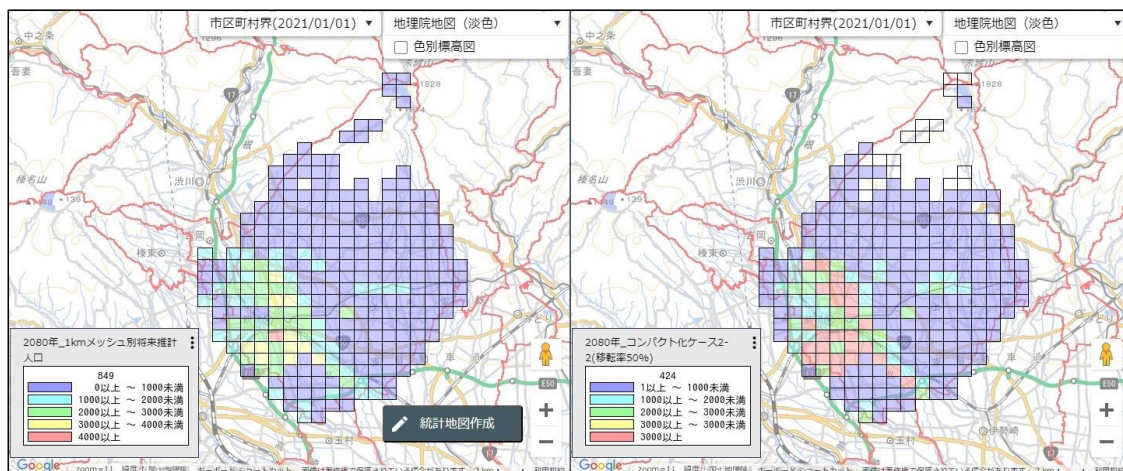
しかしながら、市営住宅の9割弱は、鉄道駅までの距離が400mを超えており、バスの利用が可能であっても生活利便施設などへのアクセスが可能となる運行本数や時刻設定であるかが問題となる。また、今後想定される人口の減少によって、市営住宅の需要が低下していく可能性が高いものの、高齢者人口の増加とともに平均世帯人数の減少・単身世帯の増加を要因とする市営住宅の需要の増加も否定はできない。加えて、経済市況の変化とこれに伴う要支援世帯数の変動が需要に影響するため、これらの将来予測が必要となる。このような状況から、将来の市営住宅の需要から用途廃止を想定することが難しいこと、また、現状の施設配置の状況から、都市のコンパクト化による効果(人の移転に伴う都市施設の削減)が期待できないことなどを踏まえ、市営住宅は効果測定の対象として想定しないこととする。

(4) 都市施設等における維持管理費の削減結果

対象とする都市施設等の維持管理費削減結果を整理する。2080年の1kmメッシュ別将来人口変動予測結果として、シナリオ1(現状推移型)とシナリオ2(集約都市型)の移転率50%に設定したケースを示す(図30)。シナリオ2は、市南西部の居住誘導区域を中心に人口の集積化と、市北部に人口ゼロとなるメッシュが一部確認できるものの、居住誘導区域外には依然として低密度化したエリアが広く存在しており、移転率が50%であっても

シナリオ1 (現状推移型)

シナリオ2 (集約都市型) ※居住誘導区域



出典：筆者作成

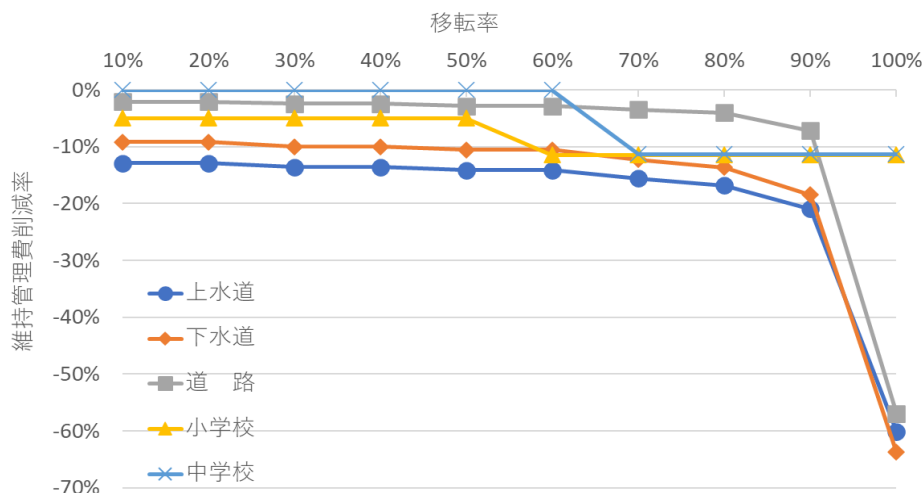
※国土交通省 国土政策局 総合計画課(2019)「平成27年国勢調査を基準とした1kmメッシュ別将来人口推計」および、筆者作成データよりjSTAT MAPで作成

図30：前橋市の1kmメッシュ別将来人口変動予測(2080年)シナリオ2 移転率50%

都市のコンパクト化による効果は限定的である。

そこで、住民等の移転率と都市施設等の維持管理費削減率を示す図41から、移転率が都市のコンパクト化効果に与える影響を考察する。ネットワーク型の都市施設は、移転率が80%を超えると維持管理費削減率が大きくなり、特に90から100%にかけてその効果が最大化する。一方、小・中学校などの公共施設は、居住誘導区域内の集約化を推進する区域に多く配置されていることから、都市のコンパクト化に伴って統廃合の対象とすべき学校は市北部エリアに限定されるため、維持管理費の削減効果は一定である。

次に、都市のコンパクト化効果として維持管理費の削減額について考察する(図42)。対象とする都市施設等の2020年維持管理費総額は約211億円である。2080年のケース1の現状推移型は2020年以降も同額で年間維持管理費がスライドする想定のため、2080年



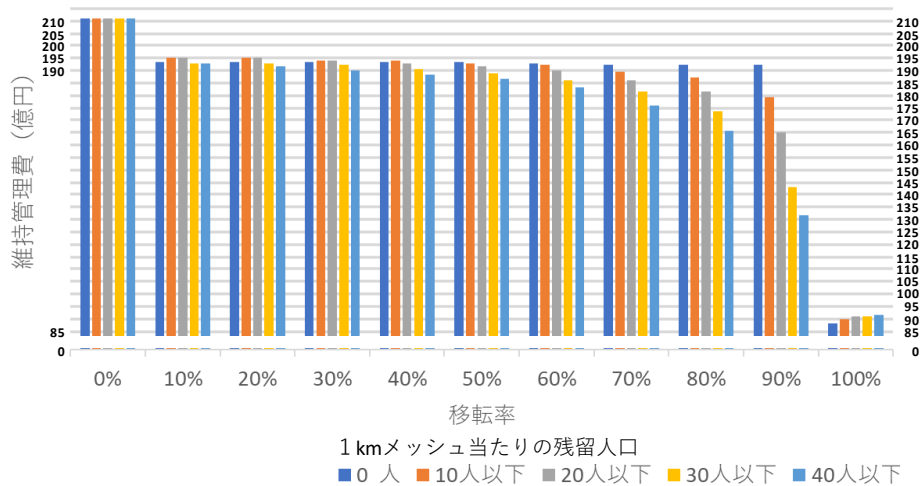
出典：筆者作成

図41：推計結果(移転率と都市施設等の維持管理費削減率)

までに都市のコンパクト化によって減少する維持管理費を削減額とする。

残留人口をゼロとした場合は、移転率に影響することなく、削減額は約 10 億円となる結果であった。一方、残留人口を一定数許容する場合は、移転率が上昇すると維持管理費は逡減傾向にあり、特に移転率が 50%を超え 90%まではこの傾向が顕著である。そして、移転率が 100%になると、残留人口に影響することなく、削減額は約 120 億円と効果は最大化し、維持管理費が約 90 億円となって現状推移型と比較すると半減する結果となった。

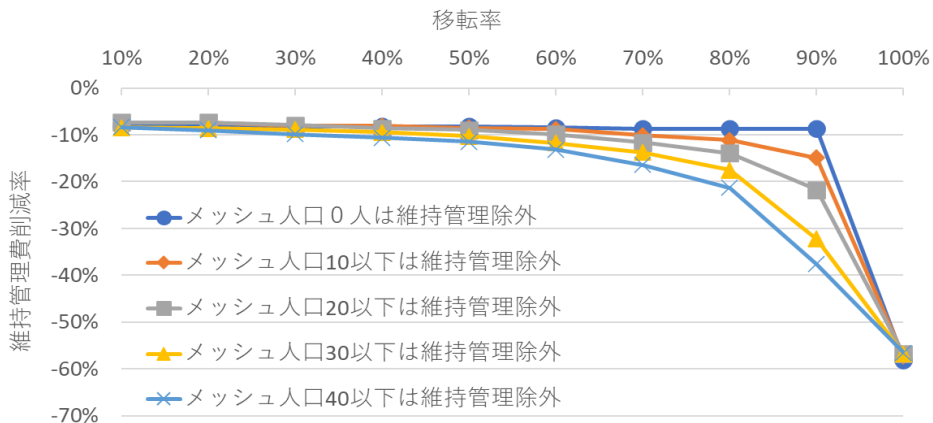
このような結果から、移転率の上昇に加え、1 km メッシュ内の残留人口を一定数許容することで維持管理費の削減効果が大きくなることが分かった。



出典：筆者作成

図42：推計結果（移転率と都市施設等の維持管理費）

図 43 に示すとおり、メッシュ内の残留人口をゼロとした場合は、移転率が 10 から 90%まで変動した場合でも、削減率は 5~6%程度であった。この要因は移転後であっても 1 km メッシュ内に 1 人でも存在する場合は、ネットワーク型の都市施設は廃止ができない前提としているためである。実際は、1 km メッシュ内人口が数人となった場合、ネットワーク型のインフラ施設では、本線（メイン管路）を残しながら、支線（サブ管路）を撤去することが可能であり、一定の削減効果は期待できるが、本試算では反映されない。



出典：筆者作成

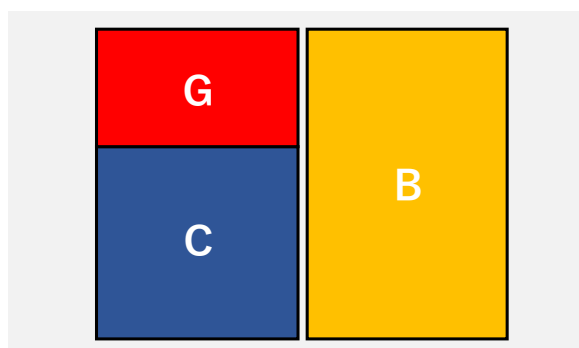
図43：推計結果（移転率と残留人口毎の維持管理費削減率）

5-4 前橋市のコンパクト化効果の還元検証

(1) コンパクト化効果の還元スキーム

都市のコンパクト化を図るケース2では、市街化調整区域・非線引き都市計画区域内の用途地域・用途地域指定のない区域・都市計画区域外の4地域（縮退化推奨区域①）から、市街化区域内（集約化誘導区域①）へ居住を誘導した場合と居住誘導区域外（縮退化推奨区域②）から、居住誘導区域内（集約化誘導区域②）へ居住を誘導した場合の2パターンで検証を行った。市街化区域と居住誘導区域を重ねると一部の地域でその範囲が異なるものの、市南西部の既成市街地を中心に概ね同じ範囲が指定されていることから、検証結果に大きな差異は見られなかった。そのため、前橋市の立地適正化計画に定められた居住誘導区域内に居住を誘導することを都市のコンパクト化効果として評価する。

都市のコンパクト化効果の還元方法として、都市のコンパクト化効果を都市の縮退化によって不要となる道路、上下水道等のインフラ施設、公共施設建物等の将来にわたる新規建設費や維持管理費用の減額相当分を総便益（Benefit：B）とする。そして、道路・インフラ施設・公共施設建物等の廃止撤去に係る費用と公園等への施設転換費用、隔地権利者が所有する建物の解体費等を総費用（Cost：C）とし、費用対便益比（ B/C ）は1以上を前提に、総便益（B）から総費用（C）を差し引いた還元費用（Gives back to society：G）を、当該土地所有者等の寄与度に応じて還元する（図44）。



B（Benefit 総便益）：縮退化によって不要となる道路、上水道・下水道等のインフラ施設、公共施設の将来にわたる新規建設費や維持管理費減額相当分

C（Cost 総費用）：道路・インフラ施設・公共施設建物等の撤去費、公園等の施設転換費、移転者に対する建物解体・補償費

G（Gives back to society 還元費用）：費用対便益比（ B/C ）を1以上、かつ、総便益（B）から総費用（C）を差し引いた分

出典：筆者作成

図44：都市のコンパクト化効果による費用・便益・還元イメージ

(2) 都市施設等の廃止に係る諸費用

都市施設等の廃止想定数量は、都市施設等における維持管理費の削減結果から、ケース2（集約都市型／居住誘導区域に集約）における2080年の1kmメッシュ別将来人口変動予測に相応する道路及び上下水道等のインフラ施設の削減数量を対象とする。また、廃止

に係る諸費用は、移転率 0～100%の間の 10%毎と、残留人数 0～40 人の間の 10 人毎の変動状況に応じた複数パターンによって検証する。

a) 上水道

都市のコンパクト化によって不要となる上水道の廃止方法は、地中内残置処理とする。道路の廃止が伴う場合であっても、廃道跡地は緑道などに転換し、構造物等は築造しない想定とする。残置上のリスクである、廃止した残置管が老朽化し、腐食することで生じる地盤沈下を防ぐため、廃止管モルタル充填工法等を想定した費用の算定を実施する。

まずは、廃止管の数量を想定する必要がある。前橋市の水道ビジョン 2015 改訂版⁵⁴から、導水管・送水管・配水管総延長のうち 97.2%を占め、市街地中心に敷設されている配水管数量を対象に配水管口径の平均値を算出する。具体的には、配水管口径別に延長を乗じて配水管の総容積を算出し、配水管の総延長で除した値を平均口径と設定する。次に、廃止管モルタル充填工法の価格表⁵⁵から、平均口径の近似値である ϕ 150、300m～400m の単価をベースに、同径の 900m～1000m 単価に換算⁵⁶し、都市のコンパクト化によって廃止が想定される配水管延長を乗じて廃止費用として算定する。

算定の結果、都市のコンパクト化によって廃止する上水道処理費用は、廃止を想定する配水管延長約 382～1592 kmを対象に約 4～18 億円であった。

b) 下水道

都市のコンパクト化によって不要となる下水道の廃止方法は、上水道と同様に地中内の残置処理とし、廃止管モルタル充填工法等を想定した費用の算定を実施する。

まずは、廃止管の数量を想定する必要がある。前橋市下水道ビジョン 2016 改訂版(2022 改訂版)⁵⁷から、管渠施設 1,486 kmの内訳は、汚水管約 1,445 km、雨水管約 41 kmである。柏市の報告書⁵⁸には、汚水 989,609m(85%)、雨水 115,485m、合流 54,969m、計 1,160,063m と汚水管を中心に小口径が 9 割以上 (94%) を占めるデータがある。前橋市は、下水管の管渠施設総延長の 97.2%が汚水管であるため、汚水管の小口径 (ϕ 200 mm 以上 800 mm 未満) が主であると仮定し、平均口径を小口径の中間値である ϕ 500 mm と想定する。

次に、廃止管モルタル充填工法の価格表から、 ϕ 300、300m～400m の単価をベースに

⁵⁴ 前橋市水道局「前橋市水道ビジョン 2015 改訂版 (2021 見直し)」p.8, 表 2-4 導水管・送水管・配水管の延長 (令和 2 年度末)

⁵⁵ 焼津市「令和 5 年度 廃止配水管モルタル充填工 価格表」

⁵⁶ 距離による単価逓増率 (100～200m/～100m、200～300m/100m～200m、300～400m/200m～300m) の加重平均値を単価に乗じる

⁵⁷ 前橋市水道局「前橋市下水道ビジョン 2016 改訂版(2022 改訂版)」p.7, 3) 下水道施設の概要

⁵⁸ 「平成 27 年度 柏市公共下水道管路施設ストックマネジメント実施計画及び中長期整備計画業務委託 (下水道管路施設ストックマネジメント実施計画)」報告書 p.9-10, 2) 管径の比率

φ500 の 900m~1000m 単価に換算⁵⁹し、都市のコンパクト化によって廃止が想定される污水管延長を乗じて廃止費用として算定する。

算定の結果、都市のコンパクト化によって廃止する下水道処理費用は、廃止を想定する污水管延長約 179~978 kmを対象に約 4~25 億円であった。

c) 道路

都市のコンパクト化によって不要となる道路の跡地は、緑道に転換して構造物等は築造しない想定とする。そのため、廃止に係る諸費用⁶⁰は、幹線道路以外の生活道路を主に平均幅員を 6m と設定して、アスファルト・路盤・路床を撤去した後の埋め戻しと整地までを想定する。なお、道路の跡地は粗仕上げとし、植栽、芝生、花壇、生垣などの修景施設や設備に係る整備費用は想定せず、地域住民や企業を中心としたエリアマネジメントによる維持・管理・運営を想定する。

算定の結果、都市のコンパクト化によって廃止する道路の処理費用は、廃止を想定する道路延長約 321,277~13,498,849 m²を対象に約 16~675 億円であった。

d) 小・中学校

都市のコンパクト化によって廃校を想定する小学校数は、都市施設等における維持管理費の削減結果から、移転率が 60%未満で 3 校、60%以上で 6 校とする。また、廃校を想定する中学校数は、移転率 70%以上で 2 校を対象とする。廃校に伴う除却費は、廃止が想定される小・中学校の延床面積に除去単価 80 千円/坪⁶¹を乗じて算出する。

都市のコンパクト化によって廃校となった地域では、学区域を変更して周辺にある小・中学校を利用するため、当該地域における小・中学校の更新費として建て替え（新規建設）費用が不要となる。文部科学省の調査によると学校施設が改築されるまでの全国的な平均年数は鉄筋コンクリート造の場合はおよそ 42 年であり、法定耐用年数は 60 年又は 47 年である。廃校を想定する小・中学校の建設年次を基に、2020 年から 2080 年までの 60 年間で改築平均年数で除すると平均 2 回の建て替えが必要となる。試算上は、1 回分の建て替え費用を対象に廃止が想定される小・中学校の延床面積に新規建設想定単価⁶²を乗じた費用を便益として算定した。

都市のコンパクト化による小・中学校の廃止に係る費用は、小学校で 3 から 6 校、中学校で 0 から 2 校を対象に、廃校に伴う除却費（コスト）と、更新費として建て替え・新規

⁵⁹ 径による単価逓増率（φ200/φ150、φ250/φ200、φ300/φ250）の加重平均値を単価に掛けて算出=φ500mm（300~400m）。距離による単価逓増率（φ300:(300~400m/200m~300m)/(200m~300m/100~200m)*(300~400m/200m~300m)）を単価に乘じる。

⁶⁰ 舗装切断・破碎・処分・整地費に工事経費を 60%とする 5 千円/m²を廃道費単価とする。

⁶¹ 群馬県内小学校の解体工事として旧岩島第一小学校等の値（落札額/延床面積）を参考とした。

⁶² 国土交通省都市局都市計画課（平成 26 年 8 月）「都市構造の評価に関するハンドブック」p.15（建替：330 千円/m²）を参考とした。

建設が不要となる費用の差額である、30～107 億円を便益として計上する。

e) 公園・緑地

都市のコンパクト化によって移転する隔地権利者の所有地は、集約化を推進する再開発ビルの床の権利と等価で交換された後、公共用地として公園や緑地に転換することを想定する。そのため、公園緑地の整備費用と施設転換以降の維持管理費を算定する。

公園緑地の整備費単価は、東京都練馬区の整備事例⁶³を参考に 20 千円/m²とした。また、維持管理費単価は中核市における公園緑地の平均費用⁶⁴を参考に 124 円/m²とした。なお、公園緑地の維持管理期間は、2020 年から 2080 年までの 60 年間を対象とする。

f) 総費用（C：コスト）の算定結果

都市施設等の廃止に係る総費用（C：コスト）の算定結果を表 10 に示す。建物除却整地費では、隔地権利者の所有建物を木造建築物と想定し、除去単価 40 千円/坪で計上する。

表10：都市施設等の廃止に係る総費用（C：コスト）

		(単位:億円)										
残留人数	移転率	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
	種別											
0人	上水道廃止費	4	4	4	4	4	4	4	4	4	4	18
	下水道廃止費	4	4	4	4	4	4	4	4	4	4	25
	道路廃止費	16	16	16	16	16	16	16	16	16	16	675
	小・中学校除却費等	-30	-30	-30	-30	-30	-30	-60	-107	-107	-107	-107
	建物除却整地費	0	0	0	0	0	0	0	0	0	0	0
	公園整備・維持費	0	0	0	0	0	0	0	0	0	0	0
	権利者移転補償費	-	-	-	-	-	-	-	-	-	-	-
	計	▲6	▲6	▲6	▲6	▲6	▲6	▲35	▲83	▲83	▲83	611
10人以下	上水道廃止費	5	5	5	5	5	5	5	5	6	7	18
	下水道廃止費	5	5	5	5	5	5	5	6	6	8	25
	道路廃止費	24	24	24	29	29	33	33	41	48	85	675
	小・中学校除却費等	-30	-30	-30	-30	-30	-30	-60	-107	-107	-107	-107
	建物除却整地費	0	0	0	0	0	0	0	0	0	0	0
	公園整備・維持費	0	0	0	0	0	0	0	0	0	0	0
	権利者移転補償費	-	-	-	-	-	-	-	-	-	-	-
	計	4	4	4	8	8	13	▲16	▲55	▲47	▲7	611
20人以下	上水道廃止費	5	5	5	5	5	6	6	6	7	9	18
	下水道廃止費	5	5	5	5	6	6	6	7	8	11	25
	道路廃止費	33	33	33	35	41	43	48	63	85	178	675
	小・中学校除却費等	-30	-30	-30	-30	-30	-30	-60	-107	-107	-107	-107
	建物除却整地費	0	0	0	0	0	0	0	0	0	0	0
	公園整備・維持費	0	0	0	0	0	0	0	0	0	0	0
	権利者移転補償費	-	-	-	-	-	-	-	-	-	-	-
	計	13	13	13	16	22	25	0	▲31	▲7	92	611
30人以下	上水道廃止費	5	5	6	6	6	6	6	7	8	12	18
	下水道廃止費	5	6	6	6	6	7	7	8	10	16	25
	道路廃止費	35	41	42	43	48	56	67	85	127	314	675
	小・中学校除却費等	-30	-30	-30	-30	-30	-30	-60	-107	-107	-107	-107
	建物除却整地費	0	0	0	0	0	0	0	0	0	0	0
	公園整備・維持費	0	0	0	0	0	0	0	0	0	0	0
	権利者移転補償費	-	-	-	-	-	-	-	-	-	-	-
	計	16	22	24	25	30	38	21	▲7	38	235	611
40人以下	上水道廃止費	6	6	6	6	6	7	7	8	9	14	18
	下水道廃止費	6	6	6	7	7	7	8	9	11	18	25
	道路廃止費	43	43	48	56	63	71	85	119	178	392	675
	小・中学校除却費等	-30	-30	-30	-30	-30	-30	-60	-107	-107	-107	-107
	建物除却整地費	0	0	0	0	0	0	0	0	0	0	0
	公園整備・維持費	0	0	0	0	0	0	0	0	0	0	0
	権利者移転補償費	-	-	-	-	-	-	-	-	-	-	-
	計	25	25	30	38	46	55	41	29	92	316	611

出典：筆者作成

⁶³平成 23～27 年度に練馬区が整備した主な公園の工事単価（工事費/整備面積）16～40 千円/m²

⁶⁴「平成 27 年度全国中核市等における公園緑地の課題に関する調査研究報告書〈概要版〉」（平成 28 年 3 月一般社団法人日本公園緑地協会）p.概要-8、表 II-4 平成 26 年度の維持管理費合計（66 都市平均＊）

また、除却対象床面積は、土地面積 100 m²の建蔽率 50%で2階建て 100 m²と設定する。
 なお、隔地権利者の移転に係る通常損失補償費は、個別事情を勘案した設定が困難である
 ことから、集約地の市街地再開発事業の事業費に計上する設定とした。

(3) コンパクト化効果の還元結果

都市のコンパクト効果の還元スキームとして総便益（B）から総費用（C）を差し引いた還元費用（Gives back to society：G）を当該土地所有者等の寄与度に応じて配分する。総便益（B）は、都市施設等における維持管理費の削減効果として、2020年から2080年までの60年間に継続して得られると設定した。土地や建物等の不動産一次取得者の年齢は30代が最も多く、日本人の平均寿命は概ね85歳であることから、土地や建物等の権利を取得後、最長で60年程度は所有権を保持していくことが考えられる。

還元費用（Gives back to society：G）を個々に配分するための土地所有者等の寄与度

表11：総括表（総便益・総費用・還元額）

隔地権利者が所有する土地面積： 100 m ²		(単位：億円※Gは円)										
還元率 0.000317%	移転率	残留人数										
		0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
0人	MC	11,609	11,609	11,609	11,609	11,609	11,609	11,577	11,550	11,550	11,550	5,301
	B	1,051	1,051	1,051	1,051	1,051	1,051	1,083	1,110	1,110	1,110	7,359
	C	▲6	▲6	▲6	▲6	▲6	▲6	▲35	▲83	▲83	▲83	611
	GΣ(B-C)	1,057	1,057	1,057	1,057	1,057	1,057	1,119	1,193	1,193	1,193	6,748
	G	334,613	334,613	334,613	334,613	334,613	334,613	354,232	377,672	377,672	377,672	2,136,858
10人以下	MC	11,702	11,702	11,702	11,627	11,627	11,569	11,537	11,363	11,237	10,760	5,396
	B	958	958	958	1,033	1,033	1,091	1,123	1,297	1,423	1,900	7,264
	C	4	4	4	8	8	13	▲16	▲55	▲47	▲7	611
	GΣ(B-C)	954	954	954	1,025	1,025	1,077	1,139	1,352	1,470	1,907	6,653
	G	302,136	302,134	302,131	324,601	324,592	341,169	360,774	428,289	465,654	603,938	2,106,908
20人以下	MC	11,714	11,714	11,714	11,645	11,563	11,514	11,403	11,178	10,891	9,898	5,458
	B	946	946	946	1,015	1,097	1,146	1,257	1,482	1,769	2,762	7,202
	C	13	13	13	16	22	25	0	▲31	▲7	92	611
	GΣ(B-C)	933	933	933	999	1,075	1,122	1,257	1,513	1,775	2,670	6,591
	G	295,377	295,362	295,347	316,409	340,322	355,185	398,024	478,987	562,225	845,591	2,087,153
30人以下	MC	11,663	11,581	11,555	11,532	11,453	11,342	11,164	10,907	10,425	8,574	5,466
	B	997	1,079	1,105	1,128	1,207	1,318	1,496	1,753	2,235	4,086	7,194
	C	16	22	24	25	30	38	21	▲7	38	235	611
	GΣ(B-C)	981	1,057	1,081	1,104	1,177	1,280	1,475	1,759	2,196	3,852	6,583
	G	310,651	334,663	342,338	349,543	372,862	405,338	466,962	557,111	695,571	1,219,725	2,084,614
40人以下	MC	11,586	11,586	11,507	11,395	11,307	11,193	10,985	10,565	9,956	7,891	5,491
	B	1,074	1,074	1,153	1,265	1,353	1,467	1,675	2,095	2,704	4,769	7,169
	C	25	25	30	38	46	55	41	29	92	316	611
	GΣ(B-C)	1,049	1,049	1,123	1,227	1,307	1,412	1,634	2,066	2,612	4,453	6,558
	G	332,233	332,178	355,706	388,472	413,856	447,077	517,563	654,102	827,154	1,410,045	2,076,901

MC（維持管理費）：都市の集約化前の維持管理費

B（総便益）：都市の集約化後の維持管理費等の削減額

C（総費用）：都市の集約化後に必要となるコスト（道路・インフラ施設・公共施設建物等の撤去費、公園等の施設転換・維持費）

GΣ（総還元額）：B - C

G（個別還元額）：隔地権利者として土地面積100m²の所有権を想定

出典：筆者作成

は、隔地権利者が所有する土地面積が居住誘導区域外の総宅地面積に占める割合とする。

具体的には、固定資産の価格等の概要調書⁶⁵の前橋市における地積・評価総地積から、田・畑・宅地・山地を分け宅地の地積を抽出する。次に、居住誘導区域外の宅地利用状況を1kmメッシュデータで把握するため、国土数値情報の土地利用3次メッシュデータ⁶⁶における建物用地のメッシュ区画を、固定資産の価格等の概要調書の宅地の地積と重ねて、居住誘導区域外の総宅地面積を算出する。この総宅地面積に占める隔地権利者が所有する土地面積の割合を寄与度・還元率とし隔地権利者に配分する還元額を算定した。(表11)

5-5 隔地間における権利変換計画の検証

(1) 権利交換対象地の設定

人や都市機能の集約を推進する区域として、前橋市の立地適正化計画における都市機能誘導区域内に市街地再開発事業の施行区域を設定する。具体的には、基幹公共交通の結節点である鉄道駅周辺の低未利用地等で、都市機能の更新を目的に複数街区に細分化された土地を集約する大街区化を想定する。大街区化によって街区間の道路は廃止し、行政財産を普通財産化することで前橋市が再開発ビルの権利床を取得する想定とする。これにより、廃道部分の維持管理費が削減されるとともに、廃道を種地(原資)とする新たな公共施設の整備が可能となる。

前橋市の立地適正化計画における居住誘導区域外に居住する市民に移転を促し、再開発ビルと権利を交換する隔地を設定する。具体的には、災害危険区域内や公共交通空白地域



出典：国土交通省 都市構造再生集中支援事業に係る概要資料を基に筆者が加工

図45：隔地間における権利変換イメージ

⁶⁵ 総務省「令和2年度 固定資産の価格等の概要調書(都道府県別表)」102016 群馬県前橋市

⁶⁶ 国土交通省「国土数値情報 土地利用3次メッシュデータ(平成28年度)」

などに居住する高齢者などが想定されるが、本稿の検証では、家屋の流出や倒壊のおそれがあり、避難が遅れると命の危険が非常に高いエリアとされる、家屋倒壊等氾濫想定区域（洪水氾濫・海岸浸食）内に居住する市民を対象とする（図45）。

（2）再開発事業計画の概要

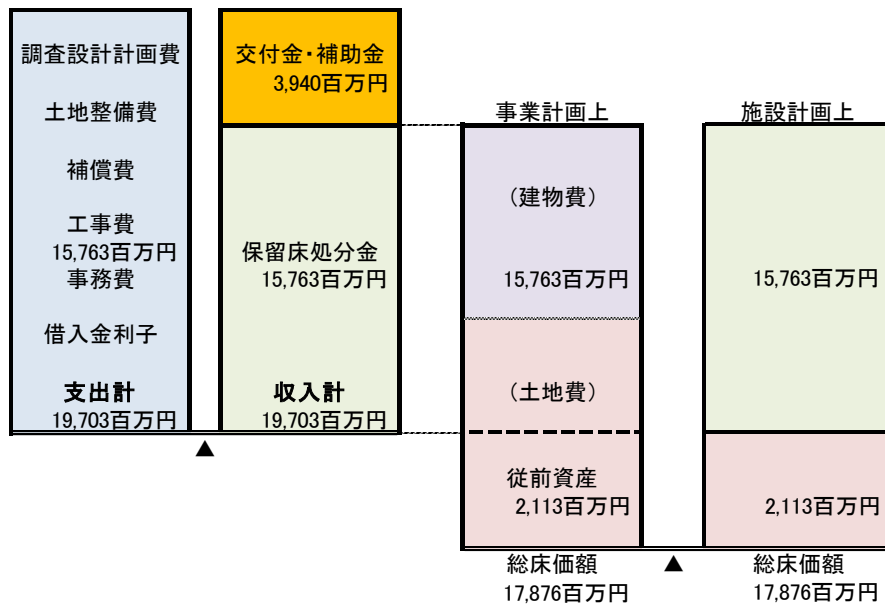
まずは、市街地再開発事業の施行区域における従前資産の簡易評価を実施する。土地の評価は、令和2年分財産評価基準の路線価を、0.8で除して1.2で乗じた価格を評価価格とした。また、奥行価格補正率や側方影響加算率を乗じて補正した。建物の評価は、用地対策連絡会（昭和38年3月7日決定・最近改正令和3年3月19日）の公共用地の取得に伴う損失補償基準細則、別表第3の等級別標準耐用年数表（第15関係）を参考として再築率を算出し、任意で設定した再築単価で乗じて再築補償費を算定した。また、現価率が0.2となる建物は現価価格を建物補償費とした。なお、算定根拠となる建物の構造種別や経過年数が不明の建物は、Googleマップの航空写真や国土地理院が提供する地理院地図の年代別空中写真を参考に想定した。

表12：再開発事業の計画・建築概要

計画概要		建築概要		高層棟	低層棟	基壇棟	計
建蔽率	50% ≤80	規 模		4~27F	4~12F	B2~3F	
容積率	572% ≤600	階 高	m	3.1	3.0	5.0	
敷地面積	6,700 m ²	最高高さ	m	97	47		
建築面積	3,338 m ²	構 造		SRC	RC	SRC	
容積対象面積	38,323 m ²	専有面積	m ²	15,120	4,860	14,238	34,218
延床面積	43,750 m ²	容積対象面積	m ²	17,280	5,130	15,913	38,323
容積/延床	80% 高層	延床面積	m ²	21,600	5,400	16,750	
容積/延床	95% 低層/基壇	専有/延床		70%	90%	85%	
工事費単価	1,191 千円/坪	想定市場単価	千円/m ²	666	458	602	
同 上	360 千円/m ²	床 単 価	千円/m ²	532	435	542	
対事業費 工事費割合	80%	床 価 額	百万円	8,050	2,113	7,714	17,877
対事業費 補助率	20%	工事費単価	千円/坪	1,350	900	1,080	
備 考		同 上	千円/m ²	408	272	327	
		棟別工事費	百万円	8,821	1,470	5,472	15,763
		権利床価額	百万円	—	1,744	370	
		権利床増床価額	百万円	—	369	—	
		保留床価額	百万円	8,050	—	7,344	

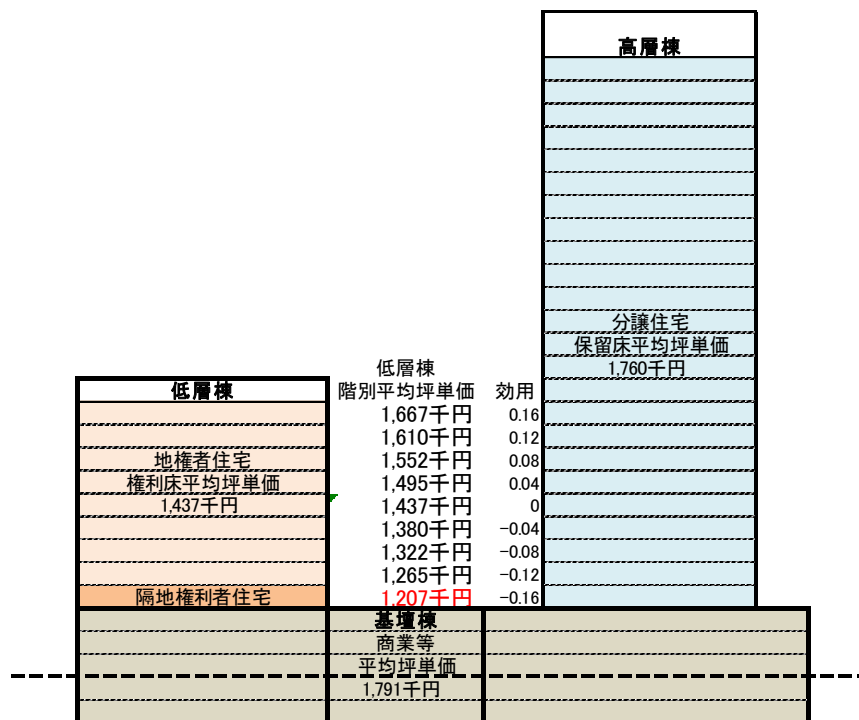
出典：筆者作成

次に、市街地再開発事業の施行区域における簡易事業計画を作成する。簡易事業計画の作成手順は、①施行区域内の施設建築敷地面積をCAD上で求積し、容積対象面積の限度を求め、②施設建築物の最高高さや設定階高から算出した階数を、各棟の水平投影面積に乗じて延床面積を算定、③延床面積に対する容積対象面積の割合を乗じて算出した各棟の容積対象面積の合計が限度内にあることを確認する。④各棟別の延床面積に工事費単価を乗じて工事費を算出し、⑤工事費を事業費に対する工事費割合で除して事業費を算定する。⑥事業費に補助率を乗じて交付金・補助金を算出、⑦事業費から交付金・補助金を減じて保留床処分金を算定する。⑧保留床処分額と従前資産額を合算して事業計画上の総床価額



出典：筆者作成

図46：再開発事業の収支と総床価額



出典：筆者作成

図47：施設建築物の概要（断面構成）

を算出した後、延床面積に対する専有面積割合を乗じて専有面積を求め、専有面積に各棟の用途別市場想定単価を基に設定した床単価を乗じて得た総床価額と、施設計画上の総床価額がバランスするか確認し、⑨地権者の現況の利用状況に応じた権利変換を設定して権利床と保留床を分け、市は、隔地権利者の受け皿とする権利者住宅を、低層棟の最下階に

増床負担金を投じて取得する。そして、⑩低層棟の階別効用比を設定し、隔地権利者住宅の床価額を下げ、隔地権利者が権利床を取得しやすいように配慮する。なお、施設建築物の建築計画における、建築基準法上の高さ制限は、鉄道駅に面して施行区域を設定していることから、駅前広場または鉄道線路敷による道路斜線制限の緩和を適用し、最高高さ100mまでの計画が可能であると判断した。また、前橋市内の市街地再開発事業で、同様の条件から高さ約93mの建物が計画されており、本計画における約97mの建物高さには妥当性があると考えられる。(表12及び図46、47)

都市再開発法施行令第27条1項一号に規定する過小な床面積の基準では、人の居住の用に供される部分については、30㎡以上50㎡以下とする必要がある。この過小床基準によって市街地再開発事業で整備する住宅面積は30㎡が下限値となり、過小床価額に満たない従前資産額である場合には、増床負担金を捻出するか、転出を余儀なくされる。

(3) 隔地間の権利変換シミュレーション結果

前橋市の立地適正化計画における居住誘導区域の外で、家屋倒壊等氾濫想定区域（洪水氾濫・海岸浸食）内を対象に、再開発ビルの権利と交換する隔地を設定する。また、市が所有する再開発ビルの権利と交換する隔地は、権利変換後に公園や緑地などの公共施設に転換することを想定する。

まずは、市街地再開発事業の施行区域と同様に、隔地を対象とした従前資産の簡易評価を実施する。土地の面積は100㎡とし、令和2年分財産評価基準の路線価を0.8で除して1.2で乗じて評価価格とした。建物は、住宅金融支援機構住宅程度の木造2階建築物とし、耐用年数を超過した現価価格の建物補償費とした。試算の結果、土地評価額7,200千円、建物評価額3,328千円、従前資産額の合計は10,528千円であった。

次に、従前資産額に還元額を加えた権利変換資産額と、権利床価額を比較して過不足を確認し、隔地間の権利交換の可能性を検証する。本検証では、還元額は移転率0～100%の間の10%毎と、残留人数0～40人の間の10人毎の変動状況に応じた複数パターンで実施する。なお、権利床価額は、低層棟4階で過小床基準の下限値である30㎡の住宅を取得することを想定し、坪単価1,207千円（365千円/㎡）で試算した。

隔地間の権利変換シミュレーションの結果では、表13に示すとおり、権利変換資産額と権利床価額の差額は還元額によって変動する。本結果は、移転率と残留人数によって便益（都市施設等の維持管理費の削減額）と、費用（都市施設等の廃止に係る諸費用）が変動することに起因している。このような結果から、一定の条件下において隔地間の権利交換の可能性について実証的根拠が確認された。

表13：隔地権利者のモデル権利変換

還元率：0.000317%

還元対象者の土地面積：100 m² (単位:円)

残留人数	移転率		還元率										
	移転率	還元率	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
0人	従前資産額 a		10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500
	還元額 b		334,613	334,613	334,613	334,613	334,613	334,613	354,232	377,672	377,672	377,672	2,136,858
	権利変換資産 c(a+b)		10,862,113	10,862,113	10,862,113	10,862,113	10,862,113	10,862,113	10,881,732	10,905,172	10,905,172	10,905,172	12,664,358
	権利床価額 d		10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919
	差額 e(c-d)		-94,806	-94,806	-94,806	-94,806	-94,806	-94,806	-75,187	-51,747	-51,747	-51,747	1,707,439
10人以下	従前資産額 a		10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500
	還元額 b		302,136	302,134	302,131	324,601	324,592	341,169	360,774	428,289	465,654	603,938	2,106,908
	権利変換資産 c(a+b)		10,829,636	10,829,634	10,829,631	10,852,101	10,852,092	10,868,669	10,888,274	10,955,789	10,993,154	11,131,438	12,634,408
	権利床価額 d		10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919
	差額 e(c-d)		-127,283	-127,285	-127,288	-104,818	-104,827	-88,250	-68,645	-1,130	36,235	174,519	1,677,489
20人以下	従前資産額 a		10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500
	還元額 b		295,377	295,362	295,347	316,409	340,322	355,185	398,024	478,987	562,225	845,591	2,087,153
	権利変換資産 c(a+b)		10,822,877	10,822,862	10,822,847	10,843,909	10,867,822	10,882,685	10,925,524	11,006,487	11,089,725	11,373,091	12,614,653
	権利床価額 d		10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919
	差額 e(c-d)		-134,042	-134,057	-134,072	-113,010	-89,097	-74,234	-31,395	49,568	132,806	416,171	1,657,734
30人以下	従前資産額 a		10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500
	還元額 b		310,651	334,663	342,338	349,543	372,862	405,338	466,962	557,111	695,571	1,219,725	2,084,614
	権利変換資産 c(a+b)		10,838,151	10,862,163	10,869,838	10,877,043	10,900,362	10,932,838	10,994,462	11,084,611	11,223,071	11,747,225	12,612,114
	権利床価額 d		10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919
	差額 e(c-d)		-118,768	-94,756	-87,082	-79,876	-56,557	-24,081	37,543	127,692	266,152	790,306	1,655,195
40人以下	従前資産額 a		10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500	10,527,500
	還元額 b		332,233	332,178	355,706	388,472	413,856	447,077	517,563	654,102	827,154	1,410,045	2,076,901
	権利変換資産 c(a+b)		10,859,733	10,859,678	10,883,206	10,915,972	10,941,356	10,974,577	11,045,063	11,181,602	11,354,654	11,937,545	12,604,401
	権利床価額 d		10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919	10,956,919
	差額 e(c-d)		-97,186	-97,241	-73,713	-40,947	-15,563	17,658	88,144	224,682	397,735	980,626	1,647,482

出典：筆者作成

5-6 考察

本章では、①都市における人や都市機能の集約・集積効果を評価するとともに、②住民等の移転推進方策について検証を行った。人が集約・集積することで得られる効果は還元率が高くなるごとに、また、一定の残留人口を許容することによって高くなることを確認した。このような結果から、住民等の移転を推進していくことが重要であり、そのために必要となる公的サポートを含めた制度化が必要であると考えられる。

住民等の移転推進方策としては、市街地再開発事業の手法を活用した都市機能の集約とアクセシビリティを向上させる、集約地（都市機能誘導区域内）と隔地（家屋倒壊等氾濫想定区域内）間の権利交換を検証した。集約地と隔地間には不動産価値の乖離（土地価額の差）が大きく、隔地間における等価交換を前提とした場合、土地所有者等の生活再建を図る権利変換は困難である。このような状況から、移転を推進する経済的支援方法として、定量化した都市のコンパクト化効果を、隔地の土地所有者等へ還元するスキームについて検証した。現状の居住地から移転せざるを得ない理由や新しい居住地に移転したいと考える動機に加え、移転に伴う経済的な支援などが後押しすることで都市の拠点へ人の移動を促し、その結果として、アクセシビリティを向上させることが可能だと考える。

一方で、都市のコンパクト化効果を還元すること、還元方法・還元額については、その是非が問われることになる。そのため、地方都市におけるコンパクトシティ政策の一環として、まちなか居住を目的に、移転を推進するための支援事業について整理する。

表14に示すとおり、まちなか居住を支援する事業では、現居住地について指定や制限の有無がある。これは、市内の居住誘導区域外から、居住誘導区域内の都心地区や公共交

通沿線地区への移転を推進して、コンパクト・プラス・ネットワークの形成を図る取り組みと解釈できる。また、支援内容には、住宅の新築等に関わる費用を補助金として交付する事業と、一定期間において固定資産税を免税する制度に分かれる。交付される補助金額は、30 から 200 万円と自治体毎の各種条件によって異なるが、概ね 50 万円が平均額であり、これは固定資産税の免除で得られる実質的な利益とほぼ同額である。

表14：まちなか居住に係る自治体の制度・事業

自治体	制度名称	現居住地の制限	集約化を推進する区域	支援対象	支援内容・補助金限度額
富山市	まちなか住宅取得支援事業 ※1	規定なし	まちなか都心地区	一定水準以上の住宅(75㎡以上)を新築・購入し居住	50万円
富山市	公共交通沿線住宅取得支援事業 ※2	まちなか外の地域	公共交通沿線地区	一定水準以上の住宅(100㎡以上)を新築・購入し居住	30万円
高岡市	たかおか暮らし支援事業 ※3	規定なし	まちなか区域	一定水準以上の新築住宅(75㎡以上)	60万円
金沢市	わがまち金沢住宅取得奨励金 ※4	原則まちなか外の地域	まちなか区域	個人住宅(75～280㎡)を新築し、又は購入した者	200万円
長岡市	まちなか居住区域定住促進事業 ※5	原則まちなか外の地域	まちなか居住区域	購入、新築、改築、増築、リフォーム、転入者等が居住	固定資産税を1/2に免除(3～5年)
岐阜市	まちなか居住支援事業 ※6	規定なし	まちなか居住重点区域	一定水準以上の新築住宅(75㎡以上)に居住	60万円

条件等

※1：建物の性能、緑化面積（敷地面積の5%以上うち接道部2%以上）など

※2：敷地面積200㎡以上、建物性能、緑化面積（敷地面積の10%以上うち接道部5%以上）など

※3：若年子育て世帯等の応援加算、緑化面積（敷地面積の2%以上）など

※4：45歳未満の若年者や建物の性能・外観意匠・内装、敷地内の緑被率30%以上、町会加入など

※5：専用住宅・併用住宅（居住割合1/2以上）が対象

※6：子育て世帯や建物の性能など

出典：筆者作成

本稿の分析で都市のコンパクト化効果の還元費用(G)は概ね30から200万円であり、まちなか居住に係る基礎自治体の制度・事業による補助金交付額とほぼ同範囲にあった。また、コンパクト・プラス・ネットワークの推進に向けた政策という点において一致しているが、市街地再開発事業による隔地間の権利交換スキームとすることで、まちづくり上の効果や多くのメリットが挙げられる。

1点目は、基幹公共交通結節点である鉄道駅等の周辺という好立地であって移動の制約がないアクセシビリティが担保できること。2点目は、市街地再開発事業上の工夫次第で権利が取得しやすい状況が創れること。3点目は、関係法令によって権利変換や通常損失補償などが担保され、安心した権利の交換ができることなどがある。そして、隔地権利者の受け皿として施設規模を拡大することで、隔地の対象を家屋倒壊等氾濫想定区域などのハザードエリア以外に、公共交通空白地域の移動が困難な高齢者や福祉・医療施設の利用が困難な人々などに対象を広げていくことも可能である。

最後に、隔地間の権利の交換に関する妥当性を考察する。都市計画基本問題小委員会の

資料⁶⁷において、「ハザードエリアに居住する住民が災害の発生前に当該エリアの外に集団で移転することについては、合意形成等の面から困難な場合が多いが、住民が災害から身を守る選択肢の一つとして、防災集団移転等の公的事業による移転に加えて、住民の自主的な移転の誘導・支援に取り組むべきである。その際、安全で豊かな生活を支えるコンパクトなまちづくりを進める観点から、移転先を居住誘導区域に誘導することにより、まちづくり政策全体の効果を高めるべきである。」とし、ハザードエリア内に居住する住民の移転誘導と支援、まちづくり政策全体の効果について示している。また、今後の市街地整備制度のあり方に関する検討会の資料⁶⁸では、「集約型都市構造の実現を実効性のある形で進めるためには、郊外市街地や集約市街地それぞれにおいて対策を講ずるだけでなく、「集約拠点の整備」と「郊外市街地のスマートシュリンク」とを一連の施策の中で一体的に取り組むことも有効と考えられる。」とし、「ツイン区画整理（集約拠点と郊外市街地の飛び施行区域）や複数の市街地整備事業を連携、連動させたパッケージ方策など、既存制度の充実・活用方策について検討が必要。」とし、土地区画整理事業の例ではあるが、集約拠点と郊外地の一体的整備について示されている。

以上の考察結果から、都市において人や都市機能を集約・集積させ、モビリティネットワークを補完してアクセシビリティ向上を図る、市街地再開発事業手法を活用した隔地間の権利の交換は、コンパクト・プラス・ネットワークに資する新しい制度・手法の一つとして有用であると考えられる。

⁶⁷ 都市計画基本問題小委員会(2019)「都市計画基本問題小委員会 中間とりまとめ～安全で豊かな生活を支えるコンパクトなまちづくりの更なる推進を目指して～」p.24

⁶⁸ 今後の市街地整備制度のあり方に関する検討会(2008)「今後の市街地整備の目指すべき方向－市街地整備手法・制度の充実に向けて－」p.26

第6章 結論と提言

6-1 全体のまとめ

コンパクトシティは、都市を構成する市街地の領域を小さく保ち、歩いて暮らせる範囲を生活圏として捉え、住みやすいまちづくりを志向する持続可能な都市として認識されている。このような都市構造を目指したコンパクト・プラス・ネットワークという国の政策方針について、これまで進められてきた政策上の問題に加えて、住民等の郊外居住志向やこれに伴う郊外開発の進展、そして、公共交通空白地域の拡大から見える公共交通ネットワークの機能不全などの課題を挙げ、本政策推進上の限界を指摘した。

次に、現にあるコンパクトシティ政策上の限界から、集約型都市の形成に向けた新しい政策を検討するため、集約型都市に資する方策と、市街地間の有機的なネットワーク化の方向性を検証した。都市の機能を集約することで、住民の負担軽減、経済・文化・産業・定住面から都市の活性化が図られることを定量的に整理した。また、都市機能の集約手法として、市街地再開発事業を例に、細分化された土地が多く都市機能の更新が難しい中心市街地の改善に有用である一方、制度上は街区単位の面的整備に留まることを確認した。そして、市街地間の有機的なネットワーク化として、あらゆる人の自由に移動できる権利を担保することは難しく、加えて、公共交通事業の維持が困難な状況にあり、今後、公共交通サービスを受けられない住民等が増加する危機的状況にあることを整理した。また、防集事業を例に現状の居住地から移転せざるを得ない理由や新しい居住地に移転したいと考える動機に加えて、移転に伴う経済的な支援などが後押しすることで都市の拠点へ人の移動を促すことができる可能性を確認した。

実証研究によって、①都市における人や都市機能の集約・集積効果を評価するとともに、②住民等の移転推進方策について検証を行った。人が集約・集積することで得られる効果は移転率が高くなるごとに、また、一定の残留人口を許容することによって高くなることを確認した。このような結果から、住民等の移転を推進していくことが重要であり、そのために必要となる公的サポートを含めた制度化が必要である。

6-2 政策の提言と研究の価値

(1) 政策の提言

持続可能な都市・社会の実現を目的としたコンパクト・プラス・ネットワークに資する新しい政策を提言する。

第一に、市街地再開発事業における隔地間の権利変換を可能にするなど、弾力的な運用を図ることを目的とした関係法令の改正である。第二に、災害ハザードエリア等の居住者や公共交通空白地域に居住する移動が困難な高齢者のほか、居住地から福祉・医療施設等の利用が困難な人々を対象とする受け皿の整備である。第三に、人の集約を推進する支援

の制度化である。

このような政策の提言にあたり、都市における人や都市機能の集約・集積効果を定量的に評価し、隔地間における権利交換と定量化した都市のコンパクト化効果還元スキームを用いた、住民等の移転推進方策の可能性について実証的研究を通じて明らかにした。

(2) 研究の価値

これまでの市街地開発事業は、右肩上がりの経済成長や人口増加を背景に、新市街地の形成や土地の利用転換・高度利用による都市機能の更新を目的として、都市を適正に発展させようとする方法や手段であった。しかしながら、近年の我が国における人口減少や、社会経済状況の急激な変化を踏まえ、今後は持続可能な社会を目指す上で都市のあるべき姿を規定し、そのために必要となる具体的な政策が求められている。

都市再開発法に基づく市街地再開発事業の一般的な考え方では、施行地区の区域設定において道路等の公共施設又は敷地によって連続している必要があり、飛び施行地区は認められていない。一方、時代や社会経済情勢の変化に対応できていない都市の機能や住環境の改善を図って、安心・安全なまちに再生することを目的とする事業として、今後新たな局面に移行する必要がある。

都市のコンパクト化効果を定量的に検証した研究としては、都市のコンパクト化の費用評価を目的としたものや、都市のコンパクト化の度合に着目した維持管理費削減効果に関する研究などがある。しかしながら、都市のコンパクト化効果を定量化してその効果を土地所有者等へ還元し、隔地間において権利を交換（縮退化誘導区域から集約化推進区域へ権利を移転する）することによって、立地の適正化を図る手法の開発を目的とした研究は、これまでにほとんど見られない。

現行の法制度を活かしながら、これまでなかった手法をつけ足すことで、新しい価値を生み出すことができると考えられる。このように、未来のまちづくりのあり方を提案し、真に価値ある社会の実現に貢献したいと強く切望する。

6-3 本研究の限界と課題

本研究では、①都市における人や都市機能の集約・集積効果を評価するとともに、②住民等の移転推進方策として、都市のコンパクト化による効果を定量化し、移転を推進する地域に居住する市民にその効果を還元することで、隔地間の権利交換による再開発ビルの権利取得の可能性を検証した。本研究における限界や課題を2点挙げる。

1点目は、還元原資となる道路や上下水道の1kmメッシュ内の削減数量の試算根拠と縮退過程における段階的な対応である。メッシュ内の居住者がゼロになっても幹線は削減できない可能性があり、メッシュ内の居住者がゼロにならなくても不要となる支線は削減できる可能性がある。本研究の試算方法では、これらの精緻な検証はできない。加えて、

利用者が徐々に減少していくことで利用効率は悪くなり、一定期間において負担の増大が想定される。このように、都市の縮退過程における利用効率の低下も評価に含める必要がある。そして、移転を推進する居住誘導区域外の居住者に対し、公共サービスの提供方法を段階的に見直していくことが求められる。

2点目は、権利交換の対象とする隔地地域の設定方法である。本稿では、隔地側の区域設定は想定せずにハザードエリアなどの居住者を対象としたが、集約地とする中心市街地へ移転する機会は、公平・公正に設定する必要がある。現行の都市再開発法に準拠すれば、隔地の区域を指定する都市計画を定めることも想定される。一方で、市街地再開発事業の施行区域内のように都市計画事業上の各種制限を課すことは現実的ではないが、公平・公正の機会を創るための制度設計が求められる。これらは今後の検討課題としたい。

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Title of Thesis: **A Study on the Factors Affecting Citizens' Trust in Local
Government: Case of Hetauda Sub-Metropolitan City
(HSMC) in Nepal**

Governance Program,
The Graduate School of Governance Studies

Name of Supervisor: Kimura Shunsuke and Nagahata
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Abstract

Objective: The study aimed to assess the factors affecting citizens' trust in LG, focusing on Hetauda Sub-metropolitan City (HSMC). The study centered on two research questions: (1) *How does the performance of LG impact citizens' trust in them?* and (2) *How do citizens' socio-demographic backgrounds influence their trust in LG?*

Methods: To explore the impact of institutional performance and citizens' socio-demographic backgrounds on trust, quantitative data were collected via a survey questionnaire from 179 respondents. Binary logistic regression was utilized to analyze the data and draw the findings.

Findings: The study showed that citizens' trust judgment in their LG depends on satisfaction with the public service provisions and transparency, whereas citizens' participation in the local government's decision-making process does not impact trust. Similarly, regarding the socio-demographic characteristics, only the citizens' education significantly influenced trust.

Limitations: Small sample size and exclusion of the aspects of government quality, political factors, ethnicity, and mass media influence to investigate their impact on public trust are the limitations of this study.

Originality/Significance: The study is the first attempt to analyze extensively the factors affecting citizens' trust in Nepal's LG in the post-federal context. As the LGs at present enjoy much larger authority and resources than in the past, citizens feel that LGs should improve public service provisions, ensure transparency, and increase citizens' satisfaction to garner citizens' trust. The study contributes to practitioners, academicians, and policymakers' knowledge in aspects of designing the policies to gather more support and compliance to the LG's activities by improving citizens' confidence in them.

Keywords: Citizens' trust, Institutional Performance, Local Government, Nepal

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List of Abbreviations

ACA	Anti-Corruption Agencies
DCC	District Coordination Committee
DDC	District Development Committee
GoN	Government of Nepal
HSMC	Hetauda Sub-metropolitan City
LG	Local Government
LGOA	Local Government Operation Act
LLRC	Local Levels Restructuring Commission
LSGA	Local Self Governance Act
MOFAGA	Ministry of Federal Affairs and General Administration
NASC	Nepal Administrative Staff College
NGS	Nepal National Governance Survey
NNRFC	National Natural Resource and Fiscal Commission
NPHC	National Population and Household Census
OAG	Office of the Auditor General
OECD	Organization for Economic Cooperation and Development
RCT	Rational Choice Theory
SPSS	Statistical Package for Social Sciences
TAF	The Asia Foundation
VDC	Village Development Committee
VIF	Variance Inflation Factor

CHAPTER ONE

INTRODUCTION

Summary

This chapter deals with the introductory aspects of the study. It includes the general background, problem statement, the scope of the study, research objectives, research questions and hypotheses, methodological overview, significance, limitations, and the overall structure of the thesis. With immense pressure to deliver effective services to fulfill the expectations of the growing population, LGs face tremendous challenges in performing accordingly. Poor performance of LG results in low citizens' confidence, eventually causing a threat to the government's legitimacy. Hence, this study aims to investigate the trustworthiness of LGs to the citizens and the factors affecting public trust. This study will contribute to the academics and policymakers to develop better strategies and focus their actions on garnering citizens' support and confidence in the government.

1.1. Introduction

The concept of *citizens' trust* in the government has drawn considerable concern to the research community worldwide. In recent years, trust has become a primary focus of study in political science, sociology, and organization theory (Kramer & Tyler, 1996). It has also been studied to understand social interactions and the interface between people and organizations (Fukuyama, 1995; Giddens, 1990; Gambetta, 1988). Similarly, the study on trust also focuses on how much confidence citizens have in the public institutions that are intended to deliver public services that meet the citizens' expectations (Wang, 2016).

Researchers claim that people trust those institutions that are good at fulfilling their promises (Bouckaert & van de Walle, 2003). Citizens have specific needs, desires, and expectations from public institutions. Based on these, they assess the institution's performance and develop their perceptions of trust in those institutions. Institutions having poor performance are negatively evaluated by the citizens' eventually possessing a lower level of trust (Jamil et al., 2016). Mishler and Rose (2001) agree that institutional performance directly or indirectly shapes the level of institutional trust. The level of trust in public institutions reflects citizens' satisfaction with the performance of those institutions regarding public services (Bouckaert & van de Walle, 2003). Additionally, people's trust in institutions is also affected by the information they get from other people in society, mass media, and the socio-cultural settings of the community.

The issue of citizens' trust in local government is critical. Given the proximity, citizens have a better and more rational understanding of their local political bodies.¹ This proximity makes them possess great faith and aspirations in those institutions to meet their needs (Fitzgerald & Wolak, 2016). Therefore, citizens tend to trust their nearby local public institutions and officials more than the distant ones (Christensen & Lægheid, 2005). High citizens' trust in LG fosters a close relationship between society and the local government, which will eventually help to accumulate more support and compliance toward LG's policies and actions (Askvik et al., 2011; Kim, 2005). In this context, this study aims to know the overall trustworthiness of the local government institution and the potential factors affecting it.

1.2. Background of Study

The issue of citizens' trust in public and political institutions is critical in the Nepalese context because of diverse and occasionally unstable political development (Whelpton, 2005). Nepal has faced political instability throughout history due to frequent government and governance system changes, with 28 government changes in the last 31 years². The instability has remarkably shadowed the country's development needs and citizens' welfare (Gupta et al., 2019; NASC, 2018; Askvik et al., 2011).

Regarding the local governance system before 2015, although the governance structure had ensured local autonomy through the 1999 Local Self Governance Act (LSGA), the two decades-long political vacuum at the local levels accompanied by the Maoist insurgency³ had tremendously hampered the pace of development with no visible results of economic and social growth during this period. Due to the absence of locally elected leaders, local levels were run by the administrative wing led by a centrally appointed civil servant. The low political will of these bureaucrats resulted in shadowing

¹ In the decentralized system, it is evident that most citizens are familiar with their local representatives, participate in community meetings, and depend upon the public services provided by the local government.

² Chaulagain, Deependra. "Nepal: political instability, growth, and the role of think-tanks." *Friedrich Naumann Foundation*, August, 5, 2021. <https://www.freiheit.org/south-asia/nepal-political-instability-growth-and-role-think-tanks>

³ The conflict between the state and the Communist Party of Nepal (CPN Maoist) started in 1996 after the CPN initiated an armed insurgency, known as Maoist insurgency, to abolish the monarchy and establish a people's republic. The conflict led to civil war for a decade, with an estimated 10000 people killed, leading to a breakdown of education, closure of businesses, weakening of local economies, and interruption of public services (RAOnline Nepal, 2006)

the local developmental needs, causing a lack of good governance and reducing democratic space for ordinary people (Bhatta, 2012).

“Local government representatives were last elected in 1997. Their five-year terms expired in 2002, at the height of the country's civil war, and their mandate was allowed to lapse. Bureaucrats have since filled those positions; many are appointed based on allegiance to the main political parties. Corruption has flourished, hampering the delivery of essential services - from healthcare to the appointment of teachers at government schools⁴.”

After adopting federalism in 2015, the constitution ensured three levels of government, i.e., Central, Provincial, and Local, with exclusive and concurrent rights (GoN, 2015). The constitution has clearly defined the legislative, executive, and judicial powers, including the exclusive functions and duties for the local levels. As the lowest tier of government and closest governmental body to the citizens, the local government has been given more autonomy and power than the then-local levels.

The constitution transferred the centrally controlled functions and authorities to the local government. After an almost two-decade-long political vacuum ended, the local levels got elected representatives in 2017 (Acharya, 2018). During the local-level election campaign in 2017, a famous expression –“*Gau Gau ma Singhadurbar*,” was used by almost every local politician, meaning that the tasks of central governments have been devolved to the local governments, and citizens can now receive all public services in their locality without the need of traveling to the central levels⁵. Hence, people had great hope and faith in the local governments, thinking that they would now get effective services at the local level and could enjoy the fruits of development.

It was certain that the elected body would take over the local government and complete its duties following the 2017 local-level election. Citizens could easily envision that the local government's role would involve addressing the needs and promoting the development of the local community. Just after the local election, Nepal Administrative

⁴ “Nepal votes in first local elections in 20 years.” *Aljazeera*, May 14, 2017.

<https://www.aljazeera.com/news/2017/5/14/nepal-votes-in-first-local-elections-in-20-years>

⁵ Rasaili, Samjhana, “Single public office working for six districts,” *The Kathmandu Post*, August 22, 2019. <https://kathmandupost.com/national/2019/08/22/single-public-office-working-for-six-districts>

Staff College (NASC) did the Nepal National Governance Survey (NNGS) 2017/18, which showed that the citizens had enormous aspirations and faith in local government compared to other public and political institutions in Nepal (NASC, 2018). Hence, the general people possessed the hope that the local governments would be able to improve the pace of development and fulfill their expectations after the election.

However, as an institution, local governments have established rules, regulations, and procedures with specific standards. Similarly, the conflicts between the central, provincial, and local levels regarding using concurrent powers and conflicts within local governments' administrative and elected wings can often hinder the LG's operations (Gupta et al., 2019; Paudel & Sapkota, 2018). As a result, they cannot operate or make decisions as an individual would. In contrast, citizens have a particular interest and desire to gain more benefits and facilities from their local governments. When evaluating the LG's performance, the citizens, being an individual, might focus more on whether the LGs have been able to fulfill their individual expectations and needs without considering the challenges and limitations LGs face during their operation. Therefore, evaluating how well local governments meet people's expectations and desires and how well they engage citizens in the development process is critical. These are the prevalent underlying issues in the current local political arena.

1.3. Statement of Problem

Nepal has a long-standing tradition of decentralization and local governance exercised through Panchayats⁶ from 1960 to 1990, decentralization reforms in 1992⁷, and local self-governance after 1999 (Gupta et al., 2019). However, despite a tremendous effort to enhance the decentralization and local governance system before 2015, little of the aim of those efforts was achieved (Shrestha, 2002; Khanal, 2006; Acharya, 2018).

After adopting federalism in 2015, the constitution introduced the local government as one of the three tiers of government of federal Nepal, incorporating the principles of

⁶ Panchayat system, also known as a party-less system in Nepal, was introduced by the late King Mahendra during the 1960s, when he abandoned all political parties, establishing a complete monarchy with all powers in the hands of the King. However, the local government practices were followed in this period by dividing the state into four Panchayats, i.e., 4000 villages, 75 districts, 14 zones, and a national Panchayat.

⁷ After the abolishment of the Panchayat system by the Peoples' Movement in 1990, the multi-party democracy was re-established. With this, in 1992, Nepal started decentralization reforms by enacting District Development Committee and Municipality and Village Development Committee Acts.

devolution of political power, resources, accountability, and responsibilities. The constitution has clearly defined the legislative, executive, and judicial powers, including the exclusive functions and duties for the local levels.

After the local elections in 2017, the two-decade-long political vacuum ended, establishing a foundation for LGs to function smoothly. Hence, people possess great faith in their local government, thinking they can now rely on their LGs to address their needs and expectations (NASC, 2018). How well have the local governments fulfilled those expectations of the public? The ability of local governments to meet the public's expectations is a fundamental question regarding their role. The local government is critical and vital in promoting public welfare and fulfilling citizens' expectations by mobilizing constitutionally provided responsibilities and resources. The influential role of local government in fulfilling citizens' expectations will help enhance citizens' satisfaction and acquire citizens' trust, eventually ensuring the government's legitimacy.

However, at present, local governments have not shown visible signs of improving local democracy and citizens' overall satisfaction, hence, accelerating the level of disappointment among the citizens. The elected representative and civil servants in the local governments lack the knowledge and technical skills to enact local laws and implement annual programs and budgets effectively, thereby facing tremendous challenges in fulfilling responsibilities provided by the constitution (Acharya & Scott, 2022).

In addition, many local governments still fail to present their annual budget on constitutionally given deadlines⁸. According to the Ministry of Federal Affairs and General Administration (MOFAGA)⁹, 71 local levels in the fiscal year 2021/22 could not pass their annual budget by the deadline, while other 24 local governments had not approved their annual budget even after the six months of the same fiscal year¹⁰. The delay in the annual budget hinders local developmental activities. On the other hand, it also affects the distribution of federal grants to the local levels as it is one of the preconditions set by the National Natural Resource and Fiscal Commission (NNRFC) for allocating fiscal grants¹¹.

⁸ According to the Intergovernmental Fiscal Arrangement Act (2017), local levels are required to present their annual budget by Ashad 10 (June 24) every year.

⁹ MOFAGA, a federal ministry, is the contact ministry of local governments, which facilitates the communication between local levels and central government.

¹⁰ Local government budget delays are impeding Nepal's COVID-19 response. Devpolicy blog - <https://devpolicy.org/local-government-budget-delays-impeding-nepals-covid-response-20220228/>

¹¹ NNRFC is a constitutional body established with the aim to ensure the just and equitable distribution of natural and fiscal resources among the federal levels.

Hence, the budget delays at local levels have severely impacted the operation and performance of the local public institutions.

Similarly, local governments are also seen as poor in maintaining accountability as the corruption and abuse of power have increased at local levels. The 59th annual report of the Office of Auditor General (OAG) has pointed out that 491 of the 753 local governments across the country have illegally distributed more than Rs. 886 million to various individuals and organizations. Moreover, among the three levels of government, the most financial irregularity, i.e., 5%, is seen in the local levels (OAG, 2022).

The incidents, reports, and studies show that local government bodies face challenges in performance, transparency, accountability, and institutional visibility which negatively impact citizens' faith in the local public institution and eventually cause a legitimacy crisis. Despite the new constitution's promise to ensure inclusive and participatory democracy, the aspirations of ordinary citizens towards the public and political institutions of the new federal Nepal have decreased (Acharya & Scott, 2022). Lower trust in public institutions always poses a significant threat to sustainable democracy. Losing citizens' trust results in lower support for the government, which will eventually make the government unstable and ineffective in producing public goods (Ahn & Kang, 2002).

In Nepal, the research on public trust has been primarily focused on various national and sub-national public organizations. However, there is a lack of study that concentrates extensively on analyzing the trustworthiness of local government institutions. On top of that, no studies focus specifically on the factors affecting citizens' trust in Nepal's LG in the present federal context. Since the local government is the closest governmental body to the citizens, it is essential to investigate how much citizens show confidence in their local public institutions and what factors affect their confidence level.

1.4. Scope of Study

Local levels in Nepal are classified as District Coordination Committee (DCC), Municipality, and Rural municipality. Municipalities are further classified into three categories; Metropolitan, Sub-Metropolitan, and Municipalities based on the population, income, and the availability of various urban facilities such as roads, hospitals, drinking

water, electricity, communication, etc.¹² This study focuses on the Hetauda sub-metropolitan city (HSMC), one of the urban local governments in Nepal. The reason behind choosing a single local government body as the unit of analysis is that it establishes homogeneity while analyzing citizens' confidence in the local government.

Hetauda has been rapidly growing in terms of both urban facilities and population during the last decade. Previously during the Terai-Madhesh movement¹³, many internally displaced population and middle-class people rapidly migrated to the hilly areas of Nepal; Hetauda being one of the significant places to be migrated (Shrestha, 2020).

In addition, Hetauda was declared the provincial capital of Bagmati province of Nepal in 2020, having major provincial administrative units in the city, which triggered the development of various urban facilities. The socio-economic and physical transformation of Hetauda during the post-federal period has incentivized the population growth in the town, making the population distribution diverse in terms of social class, caste, culture, and religion (Adhikari & Lal, 2021). Being declared the provincial capital with rapid population growth, HSMC has received increased attention and resources for infrastructure development in the city, bringing a vast range of economic opportunities to the area. This will undoubtedly lead the city towards urban transformation, where the city needs improved urban planning, revitalization of public spaces, and enhanced civic amenities. Therefore, investigating citizens' trust during this transformation phase will help assess the citizens' perception of the local government's ability to effectively manage these issues to bring positive changes in citizens' lives.

Moreover, HSMC has a diverse geographical feature consisting of urban, sub-urban, and rural areas (HSMC, 2017), which is similar to the context of Nepal's geographical characteristics. Plus, the demographic feature of HSMC generalizes the overall populace composition of the country. For example, the HSMC population's sex ratio¹⁴ of 96.22 (for Nepal, 95.59), the literacy rate of 78.2 (for Nepal, 76.2), the population between ages 15 to 59 of 63.4 (for Nepal, 61.96), and such are similar to the country's populace composition

¹² Local Self Governance Act (2017) defines the criteria for the classification of local levels.

¹³ *Terai-Madhesh* Movement is a political revolution started in 2007 in southern Nepal. The movement was launched by *Madhesh*-based political parties with the aim of establishing equal rights, identity, and dignity of the ethnic *Madhesi*, *Tharu*, *Muslim*, and indigenous groups of southern Nepal.

¹⁴ "Sex ratio" in this context means the number of males per 100 females.

(NPHC, 2022). This similarity regarding geographical and demographic features will help draw results relatable to the whole country's context.

Therefore, the growing population, increased range of governance brought through the declaration of the provincial capital, and the diverse demographic features of the population require the HSMC to efficiently gain citizens' trust by addressing that population's distinct demands and expectations regardless of their socio-economic backgrounds.

1.5. Research Objectives

The overall objective of this study is to understand how much citizens trust their LG in Nepal and what factors affect their trust. Specifically, this study has the following objectives:

- To investigate the relationship between institutional performance and citizens' trust in local government.
- To assess the relationship between citizens' socio-demographic backgrounds and their trust in local government.

1.6. Research Questions

To fulfill the abovementioned objectives, this research will seek the answers to the following questions:

- (1) How does the performance of LG impact citizens' trust in them?
- (2) How do citizens' socio-demographic backgrounds influence their trust in LG?

1.7. Research Methodology

The study primarily employs the Rational Choice Theory (RCT) as the theoretical framework. According to RCT, institutional trust depends on institutional performance. Hence, a few independent variables (Citizens' satisfaction with the public service provisions, Transparency, and Citizen's participation in the decision-making process) are taken as the indicators of the LG's performance. The model is considered most suitable for the present study because of its focus on individuals' rational judgment of institutional performance. Moreover, the socio-demographic characteristics of the citizens (education, gender, age, and income) are also taken from the Cultural Theory to assess its influence on institutional trust. The study utilizes a quantitative method. Data are collected through a questionnaire survey from 179 respondents of HSMC using a random sampling technique. In addition, the study utilizes SPSS version 26 to manage and analyze the quantitative data.

Factor analysis and binary logistic regression are employed to assess the relationship between independent variables and trust in HSMC and test the hypothesis.

1.8. Significance of Study

There is plenty of research on the local governments of Nepal, primarily focused on aspects such as institutional challenges, capacity, budgeting, financial elements, accountability, etc. Moreover, various literature focuses on trust in Nepal's public and political institutions as a whole. However, neither of these studies has focused extensively on the issues of citizens' trust in local government. Therefore, this study will specifically focus on the citizens' trust in their local government and the factors affecting it.

As the local levels in federal Nepal have got a wide range of responsibilities and resource authority through the constitution, providing essential public services such as health, education, water, and sanitation, etc., primarily depends on the local government.¹⁵ Since the local government is directly involved in providing essential services to the citizens, it is necessary to study how much citizens trust their closest governmental body and what factors determine the level of trust.

Kim (2005) opines that citizens' trust is one of the essential ingredients of good governance. Hence, gaining higher citizens' trust is essential to ensure good governance, especially at the local level, where citizens interact directly and regularly with the government. A low level of trust can create a vicious cycle.¹⁶ Therefore, being the closest elected body to the citizens, local government institutions should be able to recognize the factors that affect public trust, which will enable them to enhance the efficiency of the governance, eventually gaining more public support and compliance with public policies and programs. This study will be relevant to the local public institutions to develop better strategies to increase the level of trust and strengthen the legitimacy of the local government. Furthermore, this study will also help validate existing literature on trust and provide further insights into this field, which will be helpful for scholars and other researchers.

¹⁵ The constitution has ensured that the services, which are close to the citizens and related to their daily needs, should be provided through local government.

¹⁶ Low citizens trust will decrease the level of support and compliance in government policies and reduces citizens' participation in government activities which eventually hampers the operation of government programs, and again creating further distrust. This vicious cycle of low trust will slow down the growth of democracy and raises the question on government's legitimacy (Lamsal & Gupta, 2022).

1.9. Structure of Thesis

This thesis contains five chapters as follows.

Chapter One: The first chapter is the introduction which includes a brief introduction of institutional trust, the background of the study, the research problem, the scope of the study, research objectives and questions, methodological overview, and the significance of the study.

Chapter Two: The second chapter is the literature review. This chapter describes the conceptual overview of trust and its forms, a brief concept of institutional trust, and a summary of trust research in global and South Asian scenarios. Moreover, it also provides an overview of the local government of Nepal and an introduction to the HSMC.

Chapter Three: The third chapter, Methodology, starts with the theoretical model followed by the conceptual and research framework of the study. This chapter further explains the selected variables. It also gives an overview of the methodological aspects of the study, including the research approach, methods, population, and data analysis plan.

Chapter Four: This chapter includes the data analysis and interpretation. The chapter involves the presentation of the research results using SPSS.

Chapter Five: The final chapter discusses the research results and linkage with the conceptual framework, conclusion, limitations, and policy implications.

CHAPTER TWO

LITERATURE REVIEW

Summary

This chapter begins with the conceptual overview of trust, followed by the concept of institutional trust. The chapter further outlines the existing literature about citizens' trust in the global and South Asian scenario and provides a brief overview of Nepal's local government structure. Literature suggests that the citizens' institutional performance and socio-cultural attributes affect citizens' evaluation of public institutions, which ultimately impacts citizens' trust. The past studies about citizens' trust in Nepal's public and political institutions also support the findings of global literature, suggesting that public trust is primarily influenced by the effectiveness of public institutions' role in addressing citizens' demands. Similarly, citizens' trust is also partly influenced by citizens' socio-demographic backgrounds, such as gender, age, education, income, religion, etc. However, limited research extensively focuses on local government institutions of Nepal, especially in the post-federal context.

2.1. Conceptual Overview of Trust

2.1.1. Definition of Trust

Trust is an emerging concept in organization theory and behavioral science, which has been a significant area of research, especially since the past few decades of the twentieth century. Despite substantial research on trust, a commonly accepted definition cannot be identified (Lewis & Weigert, 1985; Möllering et al., 2004; Perry & Mankin, 2004, as cited in Pande, 2010). Consequently, there is conceptual ambiguity surrounding the idea of trust (Luhmann, 1988), and therefore, it is used in various perspectives (Kramer, 1999). Webster's dictionary has listed more than a dozen definitions of trust, where most definitions rely upon the context and situation in which the term is used.

The characteristics of trust can be understood in two ways, with one being dependent on something yet to come or contingent (Rotter, 1980; Rousseau et al., 1998) and the other being confident anticipation (Misztal, 1996).¹⁷ As trust relates to showing

¹⁷ In this context, both characteristics share the fundamental and essential rules to the extent that individuals and institutions put their faith in other persons, groups, communities, and organizations.

dependence on others, it always possesses a chance of uncertainty and risk (Hardin, 2006). Therefore, expectations and risks are closely related to the idea of trust (ibid.).

Given the complexity of the concept of trust, operationalizations of it typically vary depending on the context and subject of study, such as psychological, economic, sociological, etc. (Rousseau et al., 1998; Kramer, 1999). For example, from the psychologists' perception, trust is a cognitive interaction between two actors, i.e., trustors and trustees (Rotter, 1980). The economic perspective views trust as calculated or reasonable anticipation of results from another party (Williamson, 1993). Similarly, Coleman (1990) opines that trust is a rational person's consideration that s/he applies to calculate gain and loss while putting a bet. In contrast, sociologists possess a distinct idea where they see trust as a property of group characteristics among individuals or institutions (Lewis & Weigert, 1985).

2.1.2. Forms of Trust

Rousseau et al. (1998) provide three forms of trust that assist in understanding trust's concept and standard features. The forms he proposes are Calculus-based trust, relational trust, and institutional trust.

Calculus-based trust entails cost-benefit analysis in economic exchange relations and is based on logical decision-making. This type of trust develops when the person putting their faith in the other person (**trustor**) believes that the other person (**trustee**) has good intentions and their action is beneficial (Rousseau et al., 1998). The trustor puts positive expectations on the trustee by logically evaluating reliable information from various sources such as reputation, information from a third party, prior performances, etc. (Oomsels & Bouckaert, 2012). In this regard, there is always a chance of risk that comes along with trust. Similarly, there is always a risk of performance degradation when two parties engage in a financial exchange. And due to a particular situation, if the risk and uncertainty related to performance loss are reduced, it develops positive expectations in parties. When there is reliable information on the trustee's ability and motive, it encourages the development of interdependence between both parties. Thus, calculus-based trust considers 'risk' and 'interdependence' preconditioning elements.

Relational trust is developed due to frequent contact between the trustor and trustee throughout time (Rousseau et al. 1998). Repeated interaction incentivizes reliability and dependency between the trustor and trustee, eventually generating optimistic anticipations

among each other. Since this form of trust is founded based on experience, the emotional part of parties plays a more vital role than the rational one (Lewis & Weigert, 1985). Reliability and dependency established from healthy interaction enable the parties to generate interdependence, reducing hostile intentions and boosting trust. However, one should not be convinced that there is a null chance of risk in relational trust because the involvement of two parties always carries the uncertainty of not fulfilling the expectation. But the fact is that the extent of vulnerability and uncertainty is diminished because of recurrent interaction.

The third form of trust, i.e., **institutional trust**, is formed based on a particular institution's legal framework, control mechanisms, and the actors involved in delivering the institution's functions (Oomsels & Bouckaert, 2012). Based on these, people may extend their trust or distrust in such institutions. Given that this study aims to investigate trust in the local government, the conceptual understanding of institutional trust serves as the theoretical foundation for this study.

2.2. The concept of Institutional Trust

The institutional trust provides the base for understanding trust in government. Unlike a relational and calculus-based trust, this kind of trust neither emerges from recurrent interactions among parties nor from economic exchange relations. Instead, institutional trust is developed through the impersonal behavior of the institutions and their actors. Certain qualities like genuine dedication, honesty, competence, impartiality, justice, etc., must be present for institutional trust to be visible, particularly in public institutions. Kim (2005) argues that trust in public institutions is significantly influenced by its positive transformation and performance caused by the institution's framework and actors¹⁸ involved. This transformation helps improve citizens' satisfaction by fulfilling their expectations. Therefore, public employees must be competent, honest, and dedicated to their duties to enhance institutional trust (ibid.).

Rousseau et al. (1998) opine that although institutional trust does not contain the elements and features of relational and calculus-based trust, it can play a role in forming

¹⁸ Actors in this scenario refer to both political representatives and bureaucratic actors involved in delivering policies and services on the behalf of public organization.

these bases of trust.¹⁹ In addition, the legal frameworks encourage the institutions' rigidity, creating uncertainty in the actions and decisions, eventually increasing the possibility of risk. Still, the establishment of solid norms of impartiality can undoubtedly help to overcome the risk of uncertainty, hence, giving a proper foundation for the development of trust (ibid.).

Citizens' trust in public institutions reflects the good management and success of democratic governance (Askvik, 2007). Citizens perceive an institution as trustworthy if they think it performs efficiently. A high level of citizens' trust is considered evidence of the effective and efficient performance of the government (van de Walle & Bouckaert, 2003). Similarly, the level of trust also determines the closeness between the citizens and public organizations. The higher the citizens' trust in the process and functioning of the public institutions, the closer the relationship between the nation and communities (Askvik et al. 2011).

People extend their trust to the institutions regarding their norms, values, and system effectiveness.²⁰ Hence, people calculate their trustworthiness by assessing these aspects of an institution. Therefore, when asked how much the citizens trust their local government institution in this study, the author presupposes that they perceive the institutions as a combination of people (elected and civil servants), organizational norms, procedures, and processes. However, the author is aware that the citizens might have varied perceptions of each actor.

2.3. Institutional Trust in the global scenario

According to Fukuyama (1995), trust can be considered a relevant aspect of explaining and evaluating the global economic system. He also addressed that trust impacts both society and organizations.

In a study conducted by Vineburgh (2010), the focus was on trust within the workplace and how it can contribute to higher levels of organizational performance and competitiveness. He argues that there is a correlation between organizational trust and other

¹⁹ The argument posed here is that the institutions can build and strengthen the faith of the trustor through their fair and impartial actions, which eventually enables the trustor to engage in the repeated exchange of goods and services (Rousseau et al., 1998).

²⁰ General citizens see institutions as a combination of their norms, rules, roles, and actors involved in delivering the functions (Askvik et al., 2011).

important factors such as empowerment, support for innovation, resistance to change, interpersonal conflict, and demographic features. He concludes that organizational trust is positively related to organizational performance and competitiveness. Similarly, he further states that higher levels of empowerment and support for innovation and lower levels of interpersonal conflict can increase organizational trust.

According to Kim and Kim (2007), trust in the government is influenced by various factors. These factors include efficiency and effectiveness, integrity and accountability, openness, participation, and transparency. The authors specifically highlighted the importance of these factors in shaping trust in government.

In 2007, Askvik conducted a comparative study on trust patterns in the civil services of South Africa and Norway based on survey data collected on three different occasions between 1982 and 1996. The study's findings suggest that generalized social trust can only explain a slight variation in trust patterns within the civil service. The study also implies that perceptions of the trustworthiness of the public service are closely related to assessments of the political system as a whole and how people view national officeholders. Thus, it concludes that the level of social capital is not relevant. In contrast, the nature of the political regime is more important in explaining variations in trust within the civil service.

Grimmelikhuijsen et al. (2013) conducted a comparative study in the Netherlands and South Korea to explore the effects of policy transparency on trust in local government. They conclude that regardless of cultural and contextual variations, transparency in the government's policy determines the trustworthiness of government in both countries. However, they agree that different countries' cultural values can shape the effects' intensity.

In addition, regarding transparency and trust in government, Grimmelikhuijsen & Meijer (2014) found that people's perceived trustworthiness of government organizations is influenced by their prior knowledge of government policy outcomes. Their experiment showed that people with prior experience of policy outcomes perceived greater competence in government, while people with little experience perceived greater benevolence. The study suggests that transparency may negatively affect perceived competence and that the relationship between transparency and trust is influenced by prior knowledge and predisposition to trust.

Van Elsas (2014) conducted research in the Netherlands to determine if citizens with a higher level of education are more likely to have a rational attitude toward political trust. By utilizing data from the 2010 Dutch Parliamentary Election Survey, the study examined how citizens construct political trust with varying levels of education. The study assessed the consistency of political trust, its domain-specificity, and its relationship with political evaluations across educational groups. The results showed that political trust is not significantly different between people with higher or lower education levels. In fact, it is a rational attitude for all citizens to some extent.

Slomczynski and Janicka (2009) researched trust in parliamentary, political, and judiciary institutions in 25 European countries. They used socio-demographic factors such as education, occupation, and income using the data from the European Social Survey (Round 3, 2006). The study concluded that trust in democratic institutions was higher in established Western European democracies like the UK than in post-communist Eastern European countries like the Czech Republic, Hungary, Slovakia, and Slovenia. The study also found that in countries with a better economy, people's social status (such as wealth and social class) substantially influences their attitudes toward democracy.

2.4. Institutional Trust in South Asia and Nepal

Ramesh (2017) conducted a study in Sri Lanka to examine citizens' trust in public institutions. Results show that the ethnic majority²¹ trusts public institutions more than minorities. In addition, factors such as identity, language of administration, and unequal representation in the bureaucracy also influence the level of citizens' trust. He further found that political patronage and corruption have undermined trust in public institutions, while citizens who support the ruling party tend to have more trust in government. He recommends that efforts should be made to enhance transparency and accountability, develop the capacity of the political institutions, and ensure political neutrality to strengthen trust and the quality of governance.

Jamil and Askvik (2015) conducted a study to assess citizens' trust in public and political institutions in Nepal and Bangladesh. Here they identified that the quality of

²¹ The author surveyed three ethnic groups namely, Sinhalese, Tamil, and Muslim, where he found that Sinhalese, who are ethnic majority in the study area, possessed relatively higher trust than others.

government²² (performance and trustworthiness) matters most in trust formation, where citizens' social association has a much lesser impact on trust. They also explored that people from Nepal and Bangladesh have a variety of perceptions when it comes to trusting certain institutions. Nepalese people trust local government institutions such as the then Village Development Committees (VDCs) and District Development committees (DDCs). In contrast, Bangladeshi people trust the Higher Judiciary, Army, Parliament, Office of the Deputy Commissioner, etc.

Similarly, a study by Askvik et al. (2011) regarding patterns of popular trust in Nepalese public institutions focused on examining the variation in trust posed by institutional performance and citizens' social and political identities. They found that citizens highly trust professional institutions such as schools, colleges, universities, hospitals, mass media, and local public institutions.²³ They further found that demographic variables such as gender, age, education, and social-identity-based variables such as caste and religion do not influence public trust in Nepal. Through the study, the authors conclude that performance-based trust is more relevant in Nepal than social-identity-based trust.

Pande (2010), in his study about citizens' trust in one of the urban municipalities in Nepal, tested whether demographic features affect the trust level. He found some demographic features, namely, gender and indigenous²⁴ identity affecting citizens' trust. He explored women and non-indigenous communities showing comparatively higher trust in their local government. However, other features such as age, education, and income seemed less significant in affecting trust. Similarly, the local government's institutional performance greatly influenced the citizens' trust.

In a comparative study between Nepal, Bangladesh, and Sri Lanka, Baniamin et al. (2019) noted that increased visibility of activities can significantly impact trust. They found that the Nepalese Anti-Corruption Agencies (ACA)²⁵ enjoyed greater trust from citizens

²² Here, the authors have measured quality of government by (1) performance of public institutions, (2) how well they address several complex societal issues such as human security, poverty, corruption, etc., and (3) the trustworthiness of public officials, which is measured by their impartiality, friendliness, helpfulness, less indulgence in corrupt practices, etc.

²³ Local public institutions at the time of study refer to the then VDCs, DDCs, and Chief Administration Offices.

²⁴ Government of Nepal has defined and listed 59 ethnic groups as indigenous nationalities.

²⁵ ACA refers to Commission for the Investigation of Abuse of Authority and Department of Money Laundering Investigation.

compared to Bangladesh and Sri Lanka. This was attributed to the higher visibility of ACA activities, mainly their focus on addressing corruption issues at the lower levels of public officials.

To summarize, Fukuyama (1995) believes trust plays a crucial role in measuring progress in organizations and society. On the other hand, Vineburgh's (2010) perspective suggests that organizational trust is linked to how well the organization performs and competes. Kim and Kim (2007) maintain efficiency and effectiveness, integrity and accountability, openness, participation, and transparency influences trust in government. Askvik (2007) argues that the political regime rather than social capital determines trust in civil services. Studies conducted in Sri Lanka, Nepal, and Bangladesh have shown that various socio-economic characteristics have differing impacts on institutional trust, which may be due to cultural and contextual differences. The trust factors that are highly significant in one setting might not be relevant in another.

Generally, previous research done in Nepal indicates that although being a culture-rich country, institutional trust is highly influenced by the institution's performance rather than sociocultural factors (Askvik et al., 2011). However, Pande's (2010) research results diverge from other studies, as it concludes that women have higher levels of trust, and indigenous people have less institutional trust, which contradicts previous studies such as Askvik (2007).

The previous literature explains that public trust in Nepal is primarily based on the citizens' evaluation of the government's performance. However, past research has mainly focused on a variety of national and sub-national public organizations as a whole. Limited research is exclusively focused on understanding the determinants of trust in the closest governmental body to the citizens, i.e., local government. After the promulgation of the new constitution of federal Nepal, the local governance system differs from earlier regarding autonomy, resources, and responsibilities. In this context, NNGS (2017/18) admitted that the local governments possess higher trust (NASc, 2018). Still, there is no extensive analysis of what factors affect their trust level in the LGs operating in the present federal system.

With this note, the present study will focus on assessing the perception-based trustworthiness in the urban local government of federal Nepal by exploring the effects of

citizens' socio-demographic identities and the performance of the local government on public trust. This study can provide valuable insights into improving citizen-government relations. The findings could inform policy decisions that address the gaps in trust between citizens and their local government.

2.5. Institutional Overview of Local Government in Nepal

The present local government system came into effect after the formal adaptation of the federal system through the new constitution in 2015. The constitution has given recognition to the local government as one of the three tiers of federal units, which shows a strong indication of the significance of local government for the democratic and socio-economic advancement of the nation (Acharya, 2018). Previously, the local levels were running under the legal framework of the LSGA (1999), having 3,157 VDCs and 217 municipalities. After the federal system came into effect, following the recommendation of the Local Levels Restructuring Commission's (LLRC²⁶) recommendation, the Government of Nepal (GoN) determined 753 local levels.²⁷ Similarly, as the closest unit of LG to the citizens, a total of 6,743 ward units are established under the local government units to bring public services to citizens' doorstep (Acharya, 2018). Hence, the local governments established after federalism are consequently more extensive regarding territory, population, and responsibilities.²⁸

2.5.1. Functions and Duties of Local Government

The constitution has vested legislative, executive, and judicial powers at the local levels. These powers are categorized as exclusive and concurrent in the schedules of the Constitution.²⁹ In this sense, the local levels have both exclusive powers and shared powers with other levels of government. The functional assignment of responsibilities is primarily done in the principle of subsidiarity, cooperation, coordination, and coexistence among the

²⁶ LLRC was established by the Government of Nepal in 2016 as per the constitutional requirement of a mechanism to study and determine the new structure of local government in the federal context. The commission provided recommendations to the government regarding the new numbers and borders of the present local governments.

²⁷ These 753 local levels consist of 6 metropolitan cities, 11 sub-metropolitan cities, 276 municipalities, and 460 rural municipalities.

²⁸ The rationality for this transformation is three-fold; (1) bringing democracy to the citizen's doorstep, (2) deconcentrating more authorities and powers to the local levels, and (3) making the local bodies the central point of public service delivery and socio-economic development (TAF, 2017).

²⁹ Schedules 5, 6, and 8 of the constitution specify the exclusive powers of federal, provincial, and local levels, respectively, whereas schedules 7 and 9 specify the concurrent powers of federal and provincial, and federal, provincial, and local levels, respectively.

government. The following table shows the criteria for allocating the functions across the level of government.

Figure 1: Criteria for functional assignment between federal levels

Level of Government	Criteria for functional assignment
Federal level	Tasks related to national integrity, currency, monetary affairs, national security and defense, foreign affairs, setting of national standards, inter-provincial nature of tasks, including projects and infrastructure, research, and development, etc.
Provincial level	Tasks related to infrastructural development, implementation of developmental programs and projects, regulations of functions assigned to the provincial level, coordination among local levels within the province, and programs related to more than one local level, etc.
Local Level	Tasks related to public service delivery, implementation of local development programs and projects, regulation of local services and affairs, etc.

Source: Acharya et al., 2020

Local Government Operation Act (LGOA)³⁰ further defines the multi-dimensional functions, duties, and authorities of local government. Section 11 of LGOA divides the LG's functions into two broad categories: (1) authorities of local levels having 22 groups of functions under it and (2) authorities of local levels based on federal and provincial legislation having 14 groups of functions under it. Figure 2 presents a glimpse of the overall functions, duties, and authorities of LGs.

³⁰ LGOA is promulgated in 2017 to implement the constitutional provisions related to the authority of local levels. Based on the constitutional mandate, it includes the multidimensional functions, duties, and authorities, which are the guiding provisions for the functional operation of local governments.

Figure 2: Functions, duties, and authorities of LGs



Source: Developed by the author based on LGOA, 2017

2.5.2. Introduction to Hetauda Sub-metropolitan city (HSMC)

Hetauda sub-metropolitan city is one of the 11 sub-metropolitan cities in the country. Currently, the city is the headquarters of *Makawanpur* district, and it was declared the provincial capital of Bagamati province in 2020. Being one of the largest cities of Nepal and situated at the crossroads of two national highways, i.e., Tribuwan Highway and Mahendra (east-west) Highway, it is home to one of the eleven industrial estates (Hetauda Industrial Estate).

HSMCs’ total area is 261.58 square kilometers. It situates between 85 degrees 57 minutes 27 seconds to 85 degrees 11 minutes 24 seconds northern latitude and 28 degrees 32 minutes 31 seconds to 27 degrees 19 minutes 58 seconds southern longitude, with the elevation of 300 to 390 meters above sea level. HSMC is surrounded by *Bakaiya* rural municipality in the east, *Manahari* and *Raksirang* rural municipalities in the west, *Makawanpurgadhi*, *Bhimphedi*, and *Kailash* rural municipalities in the north, and *Bara* district in the south. The total population of HSMC is 152,875, having a sex ratio of 96.22 and a population growth rate of 2.72. The three highest religions in HSMC are Hindu (48.25%), Buddhist (45.56%), and Christian (4.85). Except for these three, less than one

percent of people from other religions exist in HSMC. The highest population in terms of age group is from 10-14 (11.9%), followed by 15-19 (11.8%) and 20-24 (10.5%). Similarly, the literacy rate of HSMC is 78.7%, where the male literacy rate counts to 85.7% and that of females counts to 72.1% (HSMC, 2017). The socio-demographic data of HSMC indicates that the city represents the overall populace composition of the country.

Initially, Hetauda was recognized as a city by the municipal Panchayat in 1969. Later in 1991, it was declared a municipality and upgraded to a sub-metropolitan city through LLRC's recommendation in 2016 (HSMC, 2017). The organization of HSMC consists of Municipal Assembly, Municipal Executive, Mayor, Deputy Mayor, Ward Chairpersons, and Chief Executive Officer. It is divided into 19 wards having one ward chairperson and other ward members in each of them. To provide public services to the citizens, HSMC has a total of 10 divisions, namely, General Administration Division, Revenue and Fiscal Administration Division, Urban Infrastructure Development Division, Economic Development Division, Social Development Division, Forest, Environment and Disaster Management Division, Land Management and Building Regulation Division, Law, Justice and Human Rights Division, Planning, Monitoring and Evaluation Division, and Information, Communication and Records Division. Respective divisions are further divided into sub-divisions and departments. Employees from administration, non-technical and technical groups are deployed to carry out the activities designated to each division and department.

CHAPTER THREE

METHODOLOGY

Summary

This chapter first explains the theoretical model, which is later utilized to develop the study's conceptual framework. Secondly, it describes the methodological aspects of the study, including the research framework, research approach and design, population and sampling, and data analysis plan. The study primarily employs Rational Choice Theory (RCT) as a theoretical backup. RCT assumes that institutional trust emerges from citizens' rational assessment of public institutions' performance, which they calculate based on how well the public institutions perform to fulfill their expectations. Besides institutional performance, citizens' socio-demographic characteristics are also taken from Cultural Theory to investigate its influence on institutional trust. Quantitative data were collected using a survey questionnaire from 179 respondents. The questionnaire includes citizens' demographic information, citizens' confidence in their LG, and three aspects of institutional performance, i.e., citizens' satisfaction with public service provision, transparency, and citizens' participation in the decision-making process.

3.1. Theoretical Models

Although previous research on trust suggests multiple theories be applied, such as Social Capital Theory, Cultural Theory, Institutional Performance Theory, Rational Choice Theory, etc., no universal theory can be used as the only foundation for carrying out the research on trust. These theories provide different perspectives, approaches, and ideas to describe the relationship between generalized trust and public institutions. However, previous literature sources emphasizes two broad theoretical approaches to explaining citizens' trust in public institutions, i.e., **the institutional and cultural approaches** (Mishler & Rose, 2001).

First, the institutional approach adherents argue that trust in government is based on public institutions' performance which can be understood as performance-based trust (Askvik et al., 2011). Researchers such as Mishler & Rose (2001) argue that the explanation of performance-based trust is rooted in the **rational choice theory**. According to rational choice theory, trust in public institutions is determined through citizens' rational responses to the political institutions' performance and current policy achievements (Mishler & Rose, 2001). This theory emphasizes that public trust is not solely based on blind faith or

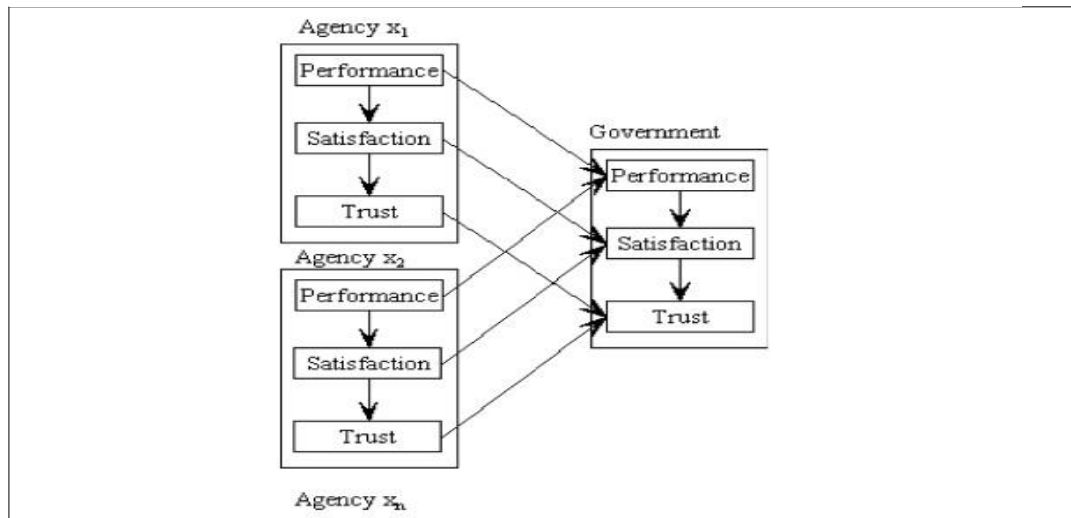
emotional factors. Instead, it argues that every citizen evaluates public institutions' performance rationally, relating it to whether these institutions have been able to address their interests and expectations, which shapes their trust in public institutions.

The rationalist approach to institutional trust assumes that the actor's rational calculation of their material interest in exchange for the services provided by the public institution results creation of the institutional trust (Baniamin, 2019). Actors in this scenario analyze social transactions using a cost-benefit approach (Campbell, 2004). By evaluating public institutions' performance, citizens calculate the potential benefits and costs of trusting or distrusting them. They assess the government's performance factors, such as its track record of public service delivery, transparency, fairness, responsiveness, citizens' participation in decision-making, etc. If they think the government is consistently acting in citizens' best interest and fulfilling its promises, they are more likely to trust it. Therefore, rationalists argue that an institution's trustworthiness will increase if it performs better than previously; conversely, citizens may lose faith in it if it doesn't deliver on its promises (Baniamin, 2019).

In line with the argument of the rational choice approach, Mishler and Rose (2001) maintain that performance-based trust depends on how citizens evaluate public institutions' performance based on their individual expectations and experiences. The individual evaluation of institutional performance is conditioned by every individual's taste and experiences with public institutions, which Mishler and Rose (2001) explain as the micro-institutional theory of institutional performance. For instance, if a person thinks satisfaction with public services, transparency, and citizens' participation in decision-making is more important, that person's personal experiences with these aspects will more likely impact his or her decision of trusting or distrusting that particular institution.

In addition, van de Walle & Bouckaert (2003) suggest that performance-based trust depends on citizens' satisfaction with the public institutions' performance. They argue that the government's performance is the summation of its' agencies' performance, and to garner citizens' trust in the government, its agencies must perform according to the citizens' expectations. Figure 3 shows the relationship between the performance of government agencies and trust, as proposed by van de Walle & Bouckaert (2003).

Figure 3: Micro performance approach of institutional trust



Source: van de Walle & Bouckaert (2003)

The figure illustrates the micro-performance approach of citizens' trust in government. The government's performance depends on its agencies' performance, which eventually shapes the attitude of citizens towards the government in general. Well-performing agencies will help increase citizens' satisfaction, finally improving overall trust in the government and vice versa.

More importantly, when evaluating the government's performance, Van de Walle & Bouckaert (2003) suggest considering both the **process (how?)** and **output (what?)** of the performance. Citizens evaluate the government's performance based on how the government is behaving during the service delivery process, such as impartiality, transparency, citizens' participation, responsiveness, etc. Similarly, they also develop perceptions about the government organization based on the government's output, such as the services related to education, health, infrastructure, etc.

Researchers propose multiple perspectives to assess institutional performance. For instance, political evaluation may focus on the implementation of democratic norms and principles, protection of human rights, free and fair elections, etc. On the other hand, the economic assessment covers the area of the government's performance in promoting economic growth and well-being (Askvik et al., 2011). Espinal et al. (2006) argue that the visible performance of the institutions, such as improved security, enhanced policy initiatives, policy responsiveness, effective public services, transparency, reduced

corruption, etc., enhances policy achievements of the government, which is assumed as a strong anticipator of institutional trust. Thus, performance-based trust is primarily based on citizens' assessment of the government's policy achievements (Van de Walle and Bouckaert, 2003). When citizens think the public institutions can fulfill their expectations and needs, they positively assess the government's policy achievements, eventually generating high trust and vice versa.

In contrast with the institutional approach, the cultural approach of institutional trust suggests that trust in political institutions comes from cultural values and beliefs that people learn early in life rather than being determined solely by political factors (Mishler & Rose, 2001). According to culturalists, people's reactions to policy outcomes are shaped by different cultural perspectives that assign meanings and values to events (*ibid.*). This means that people with different cultural orientations may respond to the same policy outcomes differently. While culturalists acknowledge that institutional performance can affect people's perceptions, they argue that changes in cultural values may not necessarily align with changes in political institutions. Therefore, cultural orientations can independently influence people's evaluations of political institutions (Wong et al., 2011).

Delhey and Newton (2003) identify culture-related theories and their determinants to evaluate the impact of these theories on trust formation. Through the survey done in seven countries, i.e., Germany, Spain, Switzerland, Hungary, Slovenia, and South Korea, between 1999 and 2001³¹, they suggest six cultural theories, i.e., Societal Theory, Success and Well-being Theory, Individual Personality Theory, Social Network Theory, Social Voluntary Organization Theory, and Community Theory.

These theories associate trust with an individual's traits and socio-demographic characteristics. The societal theory explains trust differences in income, social class and groups, and satisfaction with public organizations. Similarly, the success and well-being theory analyzes the relationship between socio-demographic features such as gender, age, income, education, satisfaction with life, etc., and trust. The empirical evidence suggests that institutional trust develops from cultural orientations. This is also supported by Christensen and Lægheid (2005), who point out that institutional trust is also influenced by

³¹ The authors kept East and West Germany separate during the survey because of different socialization experiences and living conditions, where they consider these two as separate countries to make the analysis simple.

a person's political and demographic characteristics, such as gender, age, education, and income.

Besides the government's performance, cultural factors, such as citizens' socio-demographic characteristics, may affect citizens' evaluation of government institutions from functional, ethical, and institutional perspectives (Blind, 2007). Citizens also assess the institutions' activities relating to whether the public institutions are seen responding to their priorities, expectations, and values in their policies and actions (Askvik et al., 2011). After all, people's impression of a government's performance is heavily influenced by whether it offers services that fulfill the demands of that particular individual (Job, 2005). Thus, examining the relationship between individual demographic factors and trust in government can help anticipate long-term patterns in trust (Christensen & Lægheid, 2005).

Clearly, the approaches for investigating institutional trust can be ideally divided into two types: rational and cultural. However, neither of these approaches can fully explain trust or distrust. Instead, the two approaches complement each other and help explain different parts of the picture (Mishler & Rose, 1997; Sztompka, 1999, as cited in van Elsas, 2014).

Education and Rational Institutional Trust

Every person's perception of trust in public institutions has some rational basis, but education can influence how rational their trust is. Literature sources suggest that an individual's education level is likely to be an effective determinant of rational institutional trust (Van Elsas, 2014). A considerable level of education enables people to escape the traps of naive, blind trust or obsessive, paranoid distrust (Sztompka, 1999). Education can improve political knowledge, which helps people judge whether political institutions will act in their interests, enabling them to use their knowledge to evaluate policies more rationally (Popkin & Dimock, 1999, as cited in Elsas, 2015).

Indeed, higher knowledge produces a more critical attitude in citizens, which enables them to evaluate government organizations using more demanding standards (Christensen & Lægheid, 2005). The rise of these critical citizens primarily signifies a substantial growth in individuals who openly express themselves and are significantly critical of their government's actions and achievements (Baniamin, 2019).

As mentioned above, rationalists agree that institutional performance is a major factor in determining the trustworthiness of public institutions (Mishler & Rose, 2001). However, institutional trust can also be affected by the variation of assertiveness people possess due to their critical mindset developed through increased knowledge. Hence, critical citizens with greater assertiveness might hold higher expectations and exhibit more demanding behavior due to the awareness of their rights and self-expressive values (Baniamin, 2021).

3.2. Research Objectives and Questions

Based on the reviewed literature and theoretical model discussed above, the study has identified the following research objectives and questions:

Research Objectives: The primary objective of this study is to examine the citizens' trust in LG of Nepal and the factors affecting trust. Therefore, this study has the following objectives:

- To investigate the relationship between institutional performance and citizens' trust in local government.
- To assess the relationship between citizens' socio-demographic backgrounds and their trust in local government.

Research Questions: The study will seek answers to the following research questions to fulfill the research objectives:

1. How does the performance of LG impact citizens' trust in them?
2. How do citizens' socio-demographic backgrounds influence their trust in LG?

3.3. Variables Explanation and Hypothesis Development

3.3.1. Dependent Variable: Citizens' Trust in LG

The above-mentioned theories and analysis depict that trust is the consequence of institutional performance.³² Since the local government institutions, i.e., municipalities, are the closest government body to citizens and are responsible for improving citizens' lives

³² Trust could, of course, also be a cause of the performance. The general attitude of citizens towards the government significantly affects the functions of those institutions and the quality of public services, ultimately affecting the performance of public institutions (Bouckaert & van de Walle, 2003). However, this study treats trust as the consequence of performance because the argument author presents here is performance can be a significant predictor of public trust.

by providing effective service and fulfilling citizens' expectations, these institutions need special attention to see how much citizens trust them. Citizens' confidence in public institutions such as LGs reflects the legitimacy of those institutions. Therefore, the local government institutions must be responsive and trustworthy to the citizens they intend to serve (Fitzgerald & Wolak, 2016). For this reason, this study has taken **citizens' trust in local government** as the dependent variable.

3.3.2. Independent Variables

3.3.2.1. Performance of Institution

Performance-based trust evolves from the citizens' rational assessment of public institutions' performance. The evaluation is based on how well the public institutions are performing to fulfill the expectations of the general citizens. Since the studies have shown that both process and outcomes of the performance affect the level of citizens' trust, this study expects that citizens' satisfaction with the public service provisions, transparency, and citizens' participation in the decision-making process positively impacts institutional trust.

Satisfaction with public service provisions

First, the study expects that citizens' satisfaction with the public service provisions of LG impacts institutional trust positively. A vast body of research suggests that if citizens feel satisfied with the public service provisions, their trust in public institutions increases (Van de Walle & Bouckaert, 2003).

Based on this, the study first examines the citizens' satisfaction with LG's service quality. Researchers such as Parasuram et al. (1988) argue that citizens assess the quality of public service based on fairness, impartiality, responsiveness, respect, and honesty. They tend to be satisfied if they find these inherent qualities while encountering public services, which builds trust in those institutions.

Secondly, researchers claim that citizens generally care more about ends than means and judge public institutions by their results (Goldfinch et al., 2022). Therefore, the study also makes a straightforward attempt to examine the citizens' satisfaction with five primary public services³³ to see their effect on trust.

³³The five primary public services included in the study are health, education, infrastructure development, garbage management, and administrative services.

H1: Citizens' satisfaction with the service provisions of LG positively influences trust.

Transparency

The second expectation regarding the performance variables is that transparency positively correlates with citizens' trust. Researchers believe that disclosure of information from government organizations lets external actors monitor and assess public institutions' activities and accomplishments, which helps spread the perception that the government is honest in its activities. Accurate information about the government's intentions and performance outcomes significantly increases citizens' trust (Grimmelikhuijsen, 2012). The practice of transparency allows citizens to increase their knowledge of public institutions' processes and performance, which enables multiplying citizens' understanding and trust in government (Grimmelikhuijsen & Porumbescu, 2013).

H2: Transparency in LG's activities positively influences citizens' trust.

Citizens' Participation in Decision-making

Finally, the study also expects that citizens' participation in the decision-making process of government significantly helps build citizens' trust. Citizens' participation in government institutions is an effective strategy to offer a chance for citizens to provide essential feedback and influence policy decisions. It is widely believed that citizens' participation is an excellent strategy for building citizens' trust because it will help increase government performance and public satisfaction and enhance transparency and openness in the policy-making process (He & Ma, 2020). If public institutions emphasize citizens' involvement in their activities, citizens will perceive the respective institution to be democratic, legitimate, and accountable, and hence citizens are more likely to trust those institutions (Ma & Christensen, 2019).

H3: Citizens' participation in the decision-making process of LG positively influences trust.

3.3.2.2. Socio-demographic Variables

Besides the public institutions' performance, researchers also believe that cultural attributes and citizens' individual characteristics, such as socio-demographic backgrounds, influence the citizens' evaluation of public institutions, eventually impacting public trust (Blind,

2007). Hence, this study expected a significant influence of citizens' socio-demographic characteristics, i.e., education, gender, age, and income, on trust.

Level of Education

The study expects that higher education leads to lower trust in the LG. Studies suggest that a high level of knowledge develops a critical mindset in people, enabling them to critically assess the roles and performance of public institutions and posing fewer chances to get easily convinced by traditional hierarchical cultures (Christensen & Lægheid, 2005; Baniamin, 2019). Hence, highly educated people have less trust than less educated people.³⁴

Gender

Ma & Christensen (2018) argue that females have more support in LG than men because of the proximity factor. The argument is that females are more likely to be involved in local affairs, have more access and information to services provided by local public institutions, and are more dependent in public sector for their employment.

Age

While younger people have greater experience with a public sector that is shrinking or blending with the private sector, older people have seen how the public sector has evolved through time, including the welfare state (Christensen & Lægheid, 2005). Therefore, older people score higher on trust than their younger counterparts because of their collective sentiments based on long-term experience.

Income

Finally, studies find that people with higher income trust more in their LG. The assumption is based on the 'winner hypothesis,' which suggests that economically and socially successful people show greater trust in the government (Medve-Bálint & Boda, 2014).

Based on these arguments, the study expects a significant effect of socio-demographic variables such as education, gender, age, and income on shaping the citizens' trust.

³⁴ There is also a counterargument that highly educated people trust more on the government because they possess more complex models of thought which enables them to better understand the complexity of local public policy and activities (van de Walle & Bouckaert, 2003). However, the authors' argument here, is that in low performing country like Nepal, highly educated people, probably tend to be more skeptical about government's activities.

H4: Highly educated people show less trust in their LG than lower-educated people.

H5: Females show more trust in their LG than men.

H6: Older people show more trust in LG than their younger counterparts.

H7: People with high income show more trust in their LG than the people with low income.

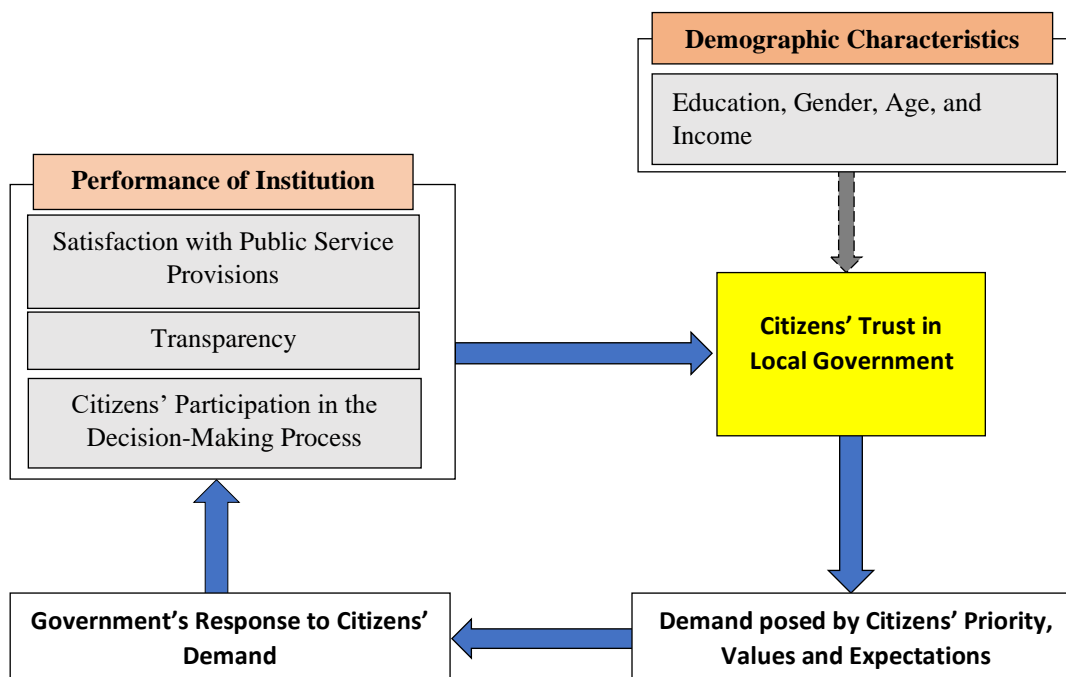
3.4. Conceptual Framework

Literature shows that through better performance, public institutions can address the distinct demands of the citizens posed by their priorities, values, and expectation. Hence, the first set of independent variables involves local government performance, including citizens' satisfaction with public service provisions, transparency, and citizens' participation in the decision-making process. The study expects these variables to directly and robustly affect institutional trust. If citizens are satisfied with the public service provisions of local government, perceive the local government institutions as transparent, and get the opportunity to participate in the local government's decision-making process, they will have more trust in it.

In addition, the second set of independent variables includes citizens' socio-demographic characteristics, such as education, gender, age, and income, which are expected to partially impact citizens' trust. Scholars also argue that besides performance, these socio-demographic characteristics can affect citizens' evaluation of their local government according to the context of the study area. Therefore, the study expects that citizens' socio-demographic characteristics partly influence the citizens' perceptions of confidence in their local government institutions.

Based on the discussion above, the author builds the conceptual framework for the study, which is presented in Figure 4.

Figure 4: Conceptual Framework of the Study



Source: Developed by the author based on literature review

3.5. Research Approach and Design

The research approach and design include the plan to conduct research, including the methods of data collection, analysis, and interpretation. Creswell and Creswell (2018) explain that the nature of research problems and underlying issues primarily shapes the research's approach and design. He further categorizes social science research approaches into quantitative, qualitative, and mixed methods. Quantitative research involves numerical measurements and statistical methods to study specific aspects of a phenomenon (King et al., 1994). On the other hand, qualitative research aims to investigate individuals' or groups' attributes to a social or human issue, exploring feelings, perceptions, and experiences through naturalistic inquiry in real-world settings (Creswell & Creswell, 2018). Mixed methods research collects both quantitative and qualitative data, integrates them and uses distinct designs that may involve philosophical assumptions and theoretical frameworks (ibid.). Depending upon the gap in the previous research, research objectives, and research questions, the author has opted for a quantitative approach to carry out this study.

Previous research on institutional trust has primarily utilized a quantitative research approach. Hetherington (1998) argued that assessing trust requires understanding people's normative expectations. Therefore, surveys are an effective way to gather numerical data on perceived opinions.³⁵ The present study focuses on a specific sample of an urban municipality whose analysis and findings could be generalized to all local governments in Nepal. Hence, the use of a quantitative analysis approach is appropriate for this generalization.

The study uses a descriptive cum analytical research design. First, through the descriptive research design, citizens' trust in their local government has been described. Secondly, analytical research design has been used to understand the relationship between independent and dependent variables.

3.6. Data Collection

3.6.1. Pilot Study

Before sending the survey questionnaire to the target population, the author conducted the pilot survey with thirty-two (32) respondents to ensure the reliability of the questionnaire. With the pilot survey, the author realized some modifications to be made in the questionnaire to avoid misunderstandings with the actual respondents. For example, one of the questions used to measure transparency was how transparent you think your local government is. The author later realized that this question caused misunderstanding among the respondents. Therefore, the author revised the question and included some sentences as indicators to measure the level of transparency in LG. Furthermore, the consent letter was also modified to ensure the confidentiality of the study and make the respondents feel more confident and comfortable. In sum, the pilot survey helped the author to make the questionnaire reliable and free from misunderstandings.

3.6.2. Survey Instrument

Since the primary objective of this study is to identify the factors affecting citizens' trust in public institutions such as local government, this study has opted to use a closed-ended survey questionnaire with a five-point Likert scale, for instance, "*not at all, a little confidence, moderate confidence, a great deal of confidence, and don't want to answer.*"

³⁵ Christensen and Lægveid (2005) used a mail survey to study Norwegian citizens' trust in the government. Similarly, Askvik et al. (2011) used a questionnaire survey from 1836 households in Nepal to analyze institutional trust in public institutions quantitatively.

The survey questionnaire includes the variables taken as the analytical framework of this study. The questionnaire was developed by adopting and modifying the indicators based on previous studies on institutional trust. A cross-sectional design³⁶ was used to collect the data.

The survey was conducted using a hybrid method.³⁷ The developed questionnaire was carefully translated into Nepali and proofread before sending it to the respondents to avoid any mistakes. Since the author could not go back for the data collection, he took help from his colleagues and family members to collect the data.

3.6.3. Population and Sampling

The population for this study encompasses adult citizens residing in HSMC. HSMC has 19 wards having urban, suburban, and rural characteristics in each ward. Therefore, a total of six wards representing core, moderate, and peripheral city areas are chosen based on the population ranking³⁸: two wards having the highest population density (wards 2 and 4), two wards having the moderate population density (wards 6 and 7), and two wards having the lowest population density (wards 18 and 19).

The desirable sample size for the quantitative data collection varies according to the nature of the study. Steven (1996) points out that each independent variable is required at least 15 samples in social research. With seven (7) independent variables, this study required at least 105 samples. Similarly, using the Tabachnick & Fidell (2018) formula “ $N > 50 + 8M$ ”, where M represents the number of predictors in the analysis, this study required 106 samples.

A total of 204 questionnaires were distributed to the respondents living in the abovementioned wards of the study area, i.e., 34 sets of questionnaires in each ward. Since every member of the population was a service seeker of the HSMC, the author adopted a random sampling method while choosing the respondents. Adults aged 18 years or above

³⁶ The data was collected at one point in time (within one month), which assisted in providing the necessary information quickly (Creswell & Creswell, 2018).

³⁷ Hybrid method, here, means that data was collected using both face-to-face and methods. The respondents who were familiar with using google forms were sent the online forms. In contrast, respondents with little knowledge of information and technology (especially the illiterate and senior citizens) were provided with hard copies of the questionnaire.

³⁸ The wards are chosen based on a report of HSMC in 2017 that illustrates the wards' ranking according to their population density.

were chosen randomly from selected households to ensure a representative cross-section of the total population. However, the author acknowledges that efforts were made to ensure respondents' involvement regarding gender, age, education, and income, which are the significant socio-demographic variables of the study. A total of 179 responses were received, of which only 171 were usable for the analysis.

The questionnaire covers three sections, as mentioned below:

Section A: This section covers the demographic information of the respondents, such as Gender, Age, Education, and Income.

Section B: This section measures respondents' confidence level in the HSMC.

Section C: This section measures the performance variables of HSMC to see its influence on trust levels. Specifically, it includes questions about citizens' perception of the service quality of HSMC, satisfaction with services, transparency, and citizens' participation in the decision-making process.

3.7. Variable Coding

3.7.1. Dependent Variable: Trust in LG

According to OECD (2013), trust replicates the positive attitude of citizens toward the government. It is primarily measured by a perception survey asking the citizens how much 'confidence' they have in a particular public institution. Similarly, Svedin (2012) also maintains that trust can be translated as 'confidence' while measuring citizens' trust in the government. In this context, this study measures citizens' trust in HSMC by asking their perception based on the question: "In general, how much confidence do you have in HSMC that it honestly does what is right for the citizens?" The response set consists of five categories, i.e., (a) *Not at all*, (b) *Only a little confidence*, (c) *Moderate confidence*, (d) *A great deal of confidence*, and (e) *Don't know*. Responses (c) and (d) refer to **high trust**, whereas responses (a) and (b) refer to **low trust**. Response (e), i.e., don't know, has been omitted during the data processing and analysis.

3.7.2. Independent Variables

3.7.2.1. Performance of Institution

The questionnaire was adopted and modified from previous studies. Respondents were asked several questions for each variable used to measure their perceptions of the

performance of HSMC using a four-point Likert scale, ranging from *strongly disagree* to *strongly agree*.

Five statements were used to measure public service quality, adopted from Parasuram et al. (1988) and Lamsal & Gupta (2022) and modified accordingly. Similarly, inspired by Nguyen et al. (2022), five primary services were included to measure satisfaction with specific services, and respondents were given to rate their satisfaction level with each service. A differentiated variable related to particular services is used in this context, not the generalized satisfaction variable. The advantage of this is that one can get a picture of citizens' varied experiences and perceptions regarding various services provided by the public institution (Christensen et al., 2020). However, the author is aware that differentiated variables might not give an overview of citizens' aggregated satisfaction with the overall services.

Moreover, four statements used to measure transparency were adopted from (Grimmelikhuijsen et al. (2013) and modified according to the study context. Finally, four items for citizens' participation in the decision-making process were adopted from NASC (2018) and modified accordingly.

As mentioned above, four answers for each item, i.e., (1) *strongly disagree*, (2) *partly disagree*, (3) *partly agree*, and (4) *strongly agree*, were used to measure citizens' perceptions. However, the question related to service satisfaction used different answers than the above. Four answers, i.e., (1) *no satisfaction at all*, (2) *low satisfaction*, (3) *moderate satisfaction*, and (4) *high satisfaction*, were used to measure the question – “*How do you perceive your satisfaction level with the following services delivered by the municipality?*”

3.7.2.2. Socio-demographic Variables

The second set of variables is the socio-demographic backgrounds of the respondents, which the author used to investigate its influence on trust in LG. The demographic features include gender, age, education, and income. The respondents chose the provided answers concerning their basic information. The sociodemographic variables were coded as dummy variables during the analysis process. The male was coded as 0, while the female was coded as 1 (male=0, female=1). During the survey, respondents were asked to choose their age groups from the available four groups, which were 18 to 30 years, 31 to 40 years, 41 to 50

years, and more than 50 years. To determine the young and old age groups, the author coded young as 0 and old as 1, where the respondents up to the age of 40 were categorized as young, and the respondents above 40 were categorized as old (Young=0, Old=1).

Similarly, respondents filled in information regarding their education, choosing from five categories, i.e., illiterate, primary education, secondary education, higher secondary education, and university and above. Education up to the secondary level was categorized as low education, whereas education above the secondary level was categorized as high education. The author coded low education as 0 and high education as 1. (low education=0, high education=1). Finally, for income, respondents chose from four categories: having income less than NPR 100,000, 100,000 to 250,000, 251,000 to 500,000, and more than 500,000. These were later categorized into low income (up to 250,000) and high income (more than 250,000) and coded 0 to low income and 1 to high income (low income=0, high income=1).

The data collection process started from November 15, 2022, to December 20, 2022. The respondents joined the survey voluntarily with no pressure.

The author followed the following steps to conduct the survey:

- a. Formulated questionnaire and received approval from the supervisor to start the survey.
- b. Proposed request letter to the administration division of HSMC.
- c. Submitted the questionnaire to two representatives as the supporters in data collection: one, an employee working in the administration division of HSMC, and the other, a member of a community group of HSMC.
- d. Google questionnaire links were sent through the supporters for those who filled out the survey online.

3.8. Data Processing and Analysis

The author used SPSS (Statistics Package for Social Science) program version 26 to analyze the quantitative data. The data obtained from the questionnaire was encoded into numbers and processed through SPSS for statistical analysis. The study applied descriptive analysis for all dependent and independent variables. Cross tabulation involving frequencies and percentile distribution is used for descriptive analysis.

Since the study's dependent variable is categorical, multiple regression analysis was unsuitable for exploring the relationship between dependent and independent variables. Therefore, the study carried out binary logistic regression to assess the influence of predictor variables on the dependent variable, i.e., citizens' trust in HSMC. The results of the analysis are presented in the following chapter.

CHAPTER 4

DATA PRESENTATION AND INTERPRETATION

Summary

This chapter presents the data and results. It outlines the general results obtained from SPSS to answer the study's research questions. First, it illustrates the descriptive analysis of all variables and tests the reliability and validity of all items. Lastly, it provides the correlation and binary logistic regression results. The descriptive findings revealed that although citizens are concerned about LG's performance, more than half of the respondents (55%) find their LG, i.e., HSMC, trustworthy. The findings showed that citizens' satisfaction with the service quality, satisfaction with general services, and transparency are statistically significant. In contrast, citizens' participation is not found to be significant in influencing trust. Regarding the socio-demographic variables, only the education level was found to be statistically significant. Hence, the results proved that institutional performance has a robust significant effect on institutional trust, whereas citizens' socio-demographic background has minimal impact.

3.1. Descriptive Analysis

As mentioned in the methodology section, 179 responses were received from the survey, with a response rate of 87.74%. However, eight respondents answered "don't know" to the question used for determining their confidence in the HSMC. Since the study's main aim is exploring the citizens' level of trust by measuring their confidence in the HSMC, these eight responses were not taken for further analysis, which makes the usable responses 171. Therefore, the valid response rate of the survey counts for 83.82%. The descriptive analysis of the collected data is presented in the following sections.

3.1.1. Respondents' Socio-Demographic Distribution

Table 1 represents the demographic profile of the participants. The male respondents are comparably higher, which counted for 57.3%, whereas female respondents counted 42.7%. Regarding age, most respondents are 31-40 years (34.5%), whereas respondents from 41-50 years seemed to be the lowest (12.9%). Similarly, the majority of the participants have acquired education up to higher secondary (35.7%), while the illiterate respondents are the lowest percentage (7.6%). Furthermore, high-income people with a yearly income of more than 500,000 NPR covered 49.1% of the respondents. The lowest responses from the

income category are seen from the low-income participants having an annual income of less than 100,000 NPR (6.4%).

Table 1: Socio-demographic distribution of the respondents (n=171)

Socio-demographic characteristics	N	(%)
GENDER		
Male	98	57.3
Female	73	42.7
AGE (Years)		
18-30	52	30.4
31-40	59	34.5
41-50	22	12.9
50 and above	38	22.2
RELIGION		
Hindu	153	89.5
Buddhist	11	6.4
Muslim	4	2.3
Christian	3	1.8
Others	0	0
EDUCATION		
Illiterate	13	7.6
Primary	29	17
Secondary	46	26.9
Higher Secondary	61	35.7
University and above	22	12.9
INCOME (NPR)		
Less than 100,000	11	6.4
100,000-250,000	44	25.7
251,000-500,000	32	18.7
More than 500,000	84	49.1

Regarding the respondents' religion, almost 90 percent are from the Hindu religion. In contrast, other religions share a tiny portion of the total respondents, as shown in Table 1, which is insufficient for the analysis. For this reason, the author decided to exclude religion from the socio-demographic variable for the analysis.

3.1.2. Dependent variable: Citizens' Trust in HSMC

The suitable measure available to explore trust in public institutions is translated as 'confidence' (Svedin, 2012). The respondents were asked how much confidence they have in the HSMC, providing them to pick one of the four options to measure their confidence. Table 2 shows that 45% of the respondents have moderate confidence and 9.9% have a great deal of confidence in the HSMC. Similarly, 34.5% of the respondents have only a little confidence, whereas 10.5% of respondents showed no confidence at all in the HSMC.

Table 2: Percentile distribution for Dependent variable: Confidence in HSMC

n=171	N	(%)
In general, how much confidence do you have in HSMC that it honestly does what is suitable for the citizens?		
Not at all (a)	18	10.5
Only a little confidence (b)	59	34.5
Moderate confidence (c)	77	45
A great deal of confidence (d)	17	9.9

The respondents are further divided into two categories, i.e., high trust and low trust, shown in Table 3. The low trust consists of the respondents having low confidence, including the responses (a) and (b), i.e., "not all" and "only a little confidence." Similarly, the **high trust** consists of the respondents with high confidence who answered (c) and (d), i.e., "moderate confidence" and "a great deal of confidence." Table 3 shows that 55% of the respondents show high trust in HSMC, while 45% have low trust.

Thus, the result from the descriptive statistics indicates that a slight majority of the respondents possess **high trust** in their local government, i.e., HSMC.

Table 3: Percentile distribution of Level of Trust in HSMC

Level of Trust	N	(%)
Low Trust	77	45
High Trust	94	55
Total	171	100

Note 1: Low Trust = Low confidence [Not at all (a) and Only a little confidence (b)]

Note 2: High Trust = High confidence [Moderate confidence (c) and A great deal of confidence (d)]

3.1.3. Socio-demographic variables

Table 4 shows the percentile distribution of the relationship between socio-demographic variables and the level of institutional trust in HSMC. Regarding gender, the table shows that both males and females possess high trust in their municipality, where 51% of males and 60.3% of females show high trust. However, the data suggest that most females expressed more trust than their male counterparts. Similarly, the majority of young-aged respondents (18-40 years) showed low trust in HSMC (52.3%), whereas most of the old age respondents (41 years and above) seemed to have high trust in their local government (71%). Furthermore, 67% of the low-educated respondents possessed high trust, while most highly-educated respondents showed low trust in HSMC, i.e., 57.8%. Lastly, the table shows that from both low-income and high-income groups, most respondents showed high trust in their local government, which is 54.5% and 55.2%, respectively.

Thus, the descriptive statistics of socio-demographic variables and their relationship to the trust level show that females, old-aged people, low-educated people, and high-income people possess more trust in HSMC than their counterparts. However, the statistical significance of these differences is tested through logistic regression analysis in the later section.

Table 4: Relationship Between Socio-demographic Features and Level of Trust (percentile distribution)

Socio-demographic Variables (n=171)	Low Trust (%)	High Trust (%)	Total Percentage (%)	N
GENDER				
Male	49	51	100	98
Female	39.7	60.3	100	73
AGE (YEARS)				
Young age (18-40)	54.1	45.9	100	111
Old age (41 and above)	28.3	71.7	100	60
EDUCATION				
Lower Education (illiterate to secondary level)	33	67	100	88
High Education (Higher secondary and above)	57.8	42.2	100	83
YEARLY INCOME (NPR)				
Low income (up to 250,000)	45.5	54.5	100	55

High income (251,000 and above) 44.8 55.2 100 116

Note: Respondents were asked: How much confidence do you have in HSMC that it honestly does what is suitable for the citizens? [Answer options: Not at all (a), Only a little confidence (b), Moderate confidence (c), and A great deal of confidence (d)]

3.1.4. Service Quality

The descriptive statistics for citizens' perception of HSMC's service quality are presented in Table 5. Here, the overall mean service quality score is 2.68 (0.691), which shows that citizens think the service quality of the municipality is quite strong. Five indicators were used to test the quality of services provided by HSMC. The highest index lies at 2.78 (0.878), where the citizens agree that they usually get the services independently without using personal connections. Similarly, the second indicator has the same mean score of 2.78 (0.969), supporting the statement that compliance with the rules and procedures prevails in the municipality. Moreover, with a mean value of 2.68, most citizens positively perceive the timeliness of services and employee responsiveness of the municipality. However, citizens have little agreement with the statement that they have never paid the employees extra money (bribe) to get services. The mean score for this indicator is slightly below average, i.e., 2.48 (1.065).

Table 5: Descriptive Statistics for Service Quality of HSMC

Indicators	Mean	S.D.
a. I usually get the services on my own without using a personal connection (<i>afno manchhe</i>) and by just approaching the municipality's employees.	2.78	0.878
b. The works are usually get done with established rules, procedures, and norms of the municipality	2.78	0.969
c. The works are done in a timely manner, as mentioned in the citizens' charter of the municipality.	2.68	1.003
d. The employees of the municipality are helpful and responsive while providing the services	2.68	1.072
e. I have never bribed the employees to get the services of the municipality	2.48	1.065
Overall Service Quality index (Weak-Strong)	2.68	0.691

Note 1: Respondents were asked: To what degree do you agree with the following statements? [Answer Options: Strongly Disagree (1), Partly Disagree (2), Partly Agree (3), and Strongly Agree (4)]

Note 2: Minimum Value (1) and Maximum Value (4)

3.1.5. Citizens' Satisfaction with General Services

The study has attempted to measure the citizens' satisfaction with the five primary services delivered by HSMC. Table 6 shows that the overall index for satisfaction with the services has a mean score of 2.56 (0.498), which indicates that the citizens are satisfied with the overall services provided by the municipality. The highest satisfaction lies in the Garbage Disposal services, with a mean value of 2.79 (0.705). Respondents are also quite satisfied with the services such as administrative services, local infrastructure development, and public education system (secondary), as the mean scores count to 2.62 (0.679), 2.53 (0.577), and 2.5 (0.645), respectively. However, citizens' satisfaction regarding health care services is below average and lowest on the list, with a mean score of 2.36 (0.621).

Table 6: Descriptive statistics for citizens' satisfaction with general services

Public Services	Mean	S.D.
Public Education System (secondary)	2.5	0.645
Health Care Services	2.36	0.621
Administrative services (such as vital registration, recommendation letters, issuing various certificates, etc.)	2.62	0.679
Local Infrastructure Development	2.53	0.577
Garbage Management	2.79	0.705
Overall Satisfaction Index (Low-High)	2.56	0.498

Note 1: Respondents were asked: How do you perceive your satisfaction level with the following services delivered by the municipality? [Answers Options: No satisfaction at all (1), Low Satisfaction (2), Moderate Satisfaction (3), and High Satisfaction (4)]

Note 2: Minimum Value (1) and Maximum Value (4)

3.1.6. Transparency

The overall mean value of the transparency in HSMC is seen as 2.49 (0.885) in Table 7, which is slightly lower than the average. It indicates that the respondents slightly lean towards not believing that HSMC is fully transparent in its activities. Although the respondents partly or strongly agree that citizens can ask for and get relevant information from the municipality, with a mean value of 2.74 (1.015), and municipal administration is transparent enough, with a mean value of 2.65 (0.979), the respondents do not agree with rest of the statements (indicators). The respondents do not believe that the municipal government provides enough information about the proper use of public tax, which has a mean value of 2.17 (1.074). Similarly, they seem to doubt the transparency in the execution

of municipal plans and programs. The mean value for this indicator has a low score of 2.43 (0.964).

Table 7: Descriptive Statistics for Transparency of HSMC

Indicators	Mean	S.D.
a. Your municipal government provides enough information about how it spends public tax.	2.17	1.074
b. The citizens can ask for and quickly get information about the procedure and activities of the municipality.	2.74	1.015
c. The municipality implements its plan and programs transparently.	2.43	0.964
d. The citizens can clearly see the progress and situation of the municipal administration.	2.65	0.979
Overall Transparency index (Low-High)	2.49	0.885

Note 1: Respondents were asked: To what degree do you agree with the following statements? [Answer Options: Strongly Disagree (1), Partly Disagree (2), Partly Agree (3), and Strongly Agree (4)]

Note 2: Minimum Value (1) and Maximum Value (4)

3.1.7. Citizens' Participation in Decision Making Process

With an overall mean score of 2.45 (0.856), the level of citizens' participation in the decision-making process of HSMC is seen as low (Table 8). The only indicator having a score above average is regarding citizens' initiation to notifying community problems and proposing solutions, with a mean value of 2.73 (0.940). However, they disagree that the municipality invites them to the planning and budget meetings. The index shows a mean score below average, i.e., 2.42 (1.050). Similarly, they disagree that HSMC addresses their concerns in their budgets, having a mean below-average score of 2.37 (0.957). Lastly, regarding the indicator of the municipality's initiation to enhance citizens' participation, the score shows a mean value of 2.30 (1.079). This indicates that the respondents do not believe the municipality is actively engaging citizens in the decision-making process.

Table 8: Descriptive Statistics of Citizens' Participation in Decision Making Process of HSMC

Indicators	Mean	S.D.
a. Your municipal council provides opportunities for the citizens to participate in ward/village meetings, local government planning/ budget meetings, etc.	2.42	1.050
b. Your municipal government addresses the citizens' voices, demands, and suggestions in the local planning and budget.	2.37	0.957
c. The citizens can notify the municipality about the community's problems and propose solutions to those problems.	2.73	0.940
d. The municipality is actively trying to involve citizens in the decision-making process.	2.30	1.079
Overall Citizens' Participation Index (Low-High)	2.45	0.856

Note 1: Respondents were asked: To what degree do you agree with the following statements? [Answer Options: Strongly Disagree (1), Partly Disagree (2), Partly Agree (3), and Strongly Agree (4)]

Note 2: Minimum Value (1) and Maximum Value (4)

3.2. Reliability and Validity

3.2.1. Reliability

The internal reliability of the overall scale of the questionnaire used to measure the performance variables has been tested using Cronbach's alpha tool. Table 9 presents Cronbach's alpha score for each set of performance variables.

Table 9: Cronbach's alpha score

Variables	Number of Items	Cronbach's Alpha
Service Quality	5	0.727
Satisfaction with Services	5	0.828
Citizens' Participation in Decision-making Process	4	0.871
Transparency	4	0.900

It is suggested that Cronbach's alpha of 0.7 or more is acceptable in social science research (George and Mallery, 2008). As seen in Table 9, Cronbach's alpha for the instrument used to measure performance variables is higher than the standard value, which is acceptable.

3.2.2. Validity

Necessary statistical tools were applied to test the validity of the questionnaire. The Kaiser-Meyer-Olkin (KMO) test for the factors delivered a score of 0.871, above the standard value of 0.6, which shows that the variables used for the study are appropriate to run factor analysis. Similarly, Bartlett's Test of Sphericity showed a significant result, i.e., $\chi^2(n=171) = 1762.250$ ($p < 0.001$), which indicates the suitability for factory analysis. Furthermore, overall reliability has been tested through Cronbach's alpha, which scored 0.872.

Finally, the divergent validity of the questionnaire was tested with Exploratory Factor Analysis (EFA). EFA was used to determine how the 18 questions relate to each factor by limiting factors based on the four elements of the institutional performance approach. These four factors explained 68.28 of the total variances. However, one item (i.e., "SQ5: I have never bribed the employees to get the services of the municipality") failed to load on any dimension significantly. Hence, item SQ5 was deleted from further analysis.

3.3. Factor Analysis

The author repeated the EFA without including the deleted item. The results of this new analysis confirmed the four-dimensional structure theoretically defined in the study. The new KMO test showed a similar score of 0.871, and Bartlett's sphericity test proved significant. The four factors accounted for 71.48% of the variance among the items.

The Varimax factor rotation identified four factors that aligned with the theoretical assumptions of this study. Factor 1 includes five items ranging from SS1 to SS5, representing Satisfaction with Services. Factor 2 gathers four items (T1 to T4), referring to Transparency. Factor 3 involves four items (CP1 to CP4) representing Citizens' Participation. Finally, factor 4 includes four items, SQ1 to SQ4, referring to Service Quality. Table 10 demonstrates the correlations of the factor rotation indicated by the Varimax rotation method.

Table 10: Factor rotation

Items	Factor 1	Factor 2	Factor 3	Factor 4
Satisfaction with General Services				
SS1	.812			
SS2	.703			
SS3	.867			
SS4	.874			
SS5	.852			
Transparency				
T1		.834		
T2		.813		
T3		.844		
T4		.806		
Citizens' Participation in Decision-Making Process				
CP1			.762	
CP2			.784	
CP3			.812	
CP4			.807	
Service Quality				
SQ1				.676
SQ2				.732
SQ3				.755
SQ4				.729

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

3.4. Correlation Analysis

The study employed bivariate correlation analysis and Variance Inflation Factor (VIF) before running the binary logistic regression to test the threat of multicollinearity. The correlation analysis showed a significant relationship among most of the explanatory variables. However, since the highest score of VIF is 1.648 in the collinearity test, which is below 10 ($VIF < 10$), there is no problem with multicollinearity to run the logistic regression.

Table 11: The correlation matrix

	Quality	Satisfaction	Transparency	Participation	Gender	Age	Education	Income
Quality	1							
Satisfaction	.361**	1						
Transparency	.370**	.259**	1					
Participation	.407**	.217**	.577**	1				
Gender	-0.068	-0.023	0.034	0.080	1			
Age	0.051	.220**	0.042	0.074	0.059	1		
Education	0.024	-.226**	0.038	-0.031	-0.129	-.444**	1	
Income	0.099	0.098	0.014	0.097	-0.064	-.176*	.268**	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

3.5. Binary Logistic Regression Results

The study first conducted a regression analysis, including only the socio-demographic factors as the independent variables to see their influence on the citizens' trust in HSMC. Secondly, it includes both sets of independent variables, i.e., socio-demographic and performance variables, to explore their impact on citizens' trust.

3.5.1. Effect of Socio-demographic Variables on Citizens' Trust

The study first attempted to explore the relationship between demographic variables and trust in HSMC without including performance variables. The results from the binary logistic regression, as shown in Table 12, revealed that only two socio-demographic variables, i.e., age and education, have significantly influenced the trust in HSMC. In contrast, although the gender and income of the citizens have a positive influence on trust in local government, they are not statistically significant.

Firstly, the results show that age significantly impacts citizens' trust (OR=2.249, $p < .05$), meaning that older people are more likely to trust their local government than younger ones. The finding is similar to the study conducted in Norway in 2001, which showed that out of all government institutions, age had the most robust and significant effect on trust in local councils (Christensen & Læg Reid, 2005).

Secondly, the result also showed that the education level of the respondents has a significant negative effect on trust in HSMC (OR=.451, $p < .05$). The result indicates that highly educated people are less likely to trust their local government than low-educated. The finding is consistent with the study by Kumar et al. (2020) in India and other studies such as van de Walle & Bouckaert (2003), which found that the trust level toward the local government institution decreased when the education level of the respondents increased.

Table 12: Logistic regression results for demographic variables

Dependent Variable	Citizens' Trust in LG			
	B	S.E.	Exp(B)	Sig.
Socio-demographic Variables				
Gender (ref: Male)				
Female	.289	.330	1.335	.382
Age (ref: young)				
Old	.811	.382	2.249	.034
Education (ref: lower education)				
High Education	-.797	.365	.451	.029
Income (ref: low income)				
High Income	.440	.367	1.552	.231

Nagelkerke R Square = .128

3.5.2. Main Results of the Logistic Regression Analysis

Table 13 shows the logistic regression analysis's main results, including socio-demographic and performance. The results show that all performance variables positively impact trust in local government. However, only three variables have a significant effect, i.e., service quality, satisfaction with general services, and transparency. The value of OR is 2.529 for the **service quality**, which is significant at $p < 0.05$. This implies that citizens who positively perceive the municipality's service quality are 2.529 times more likely to lean towards high trust in local government.

Similarly, **satisfaction with the general services** significantly positively impacts citizens' trust in HSMC (OR = 2.657, $p < .05$). The result indicates that the citizens who are satisfied with the services the municipality provides are 2.657 more likely to generate high trust in the municipality. Moreover, **transparency** has a solid and significant positive relationship with citizens' trust in HSM (OR = 4.222, $p < .001$). This suggests that citizens

who perceive that HSMC is transparent in its activities are 4.222 times more likely to trust it more. **Citizens' participation in the decision-making** of the HSMC is statistically insignificant in affecting the level of citizens' trust in HSMC.

Regarding the sociodemographic variables, only the **education** level of the citizens significantly affects the level of citizens' trust in HSMC ($p < .05$), while gender, age, and income are statistically insignificant. The result shows that **education** negatively affects trust, implying that highly educated citizens tend to have less trust in HSMC than low-educated citizens. To sum up, the predictor variables explained a 58.3% variation in the outcome variable in the model.

Table 13: Main Result of the Logistic regression for all independent variables

Independent Variables	Trust in HSMC			
	B	S.E.	Exp(B)	Sig.
Performance Variables				
Citizens' Satisfaction with public service provisions				
Service Quality	.928	.328	2.529	.005
Satisfaction with General Services	.977	.493	2.657	.047
Transparency	1.440	.314	4.222	< .001
Citizens' Participation in Decision-Making	.236	.301	1.266	.432
Socio Demographic Variables				
Gender (ref: male)				
Female	.479	.447	1.615	.283
Age (ref: Young)				
Old	.673	.513	1.959	.190
Education (ref: Lower education)				
Higher Education	-1.543	.542	.214	.004
Income (ref: Low income)				
High Income	.375	.503	1.455	.455

Nagelkerke R Square = .583

CHAPTER FIVE

DISCUSSION, CONCLUSION, LIMITATIONS AND POLICY IMPLICATIONS

Summary

This chapter does an in-depth analysis of the results illustrated in the previous chapter. The results are discussed, relating them to the findings of earlier studies and contextualizing them in the case of Nepal to answer the research questions and verify the study's hypothesis. In addition, the chapter also includes a summary of the key findings, the linkage between the conceptual framework and theory chosen., the conclusion, limitations, and policy implications.

5.1. Discussion on the findings

5.1.1. The Level of Citizen's Trust in HSMC

The study first explored the extent of citizens' trust in LG. The findings show that a slight majority of the respondents trust their local government institution, i.e., HSMC. Specifically, the results show that 55% of the respondents possessed high trust in their LG. The findings indicate that citizens do have concerns over some specific services, their participation in the decision-making process of LG, and the transparent flow of information about LG's activities. Despite these concerns, more than half of the respondents are confident that their local government does the right thing to fulfill citizens' expectations and improve their lives. The result is consistent with the findings of the Nepal National Governance Survey (NASG, 2018) and A Survey of the Nepali People (Giri et al., 2020), which showed that the majority of Nepalese citizens trusted their local government institutions.

5.1.2. Impact of LG's Performance on Trust

The study expected that LG's performance positively impacts trust. The results showed that citizens' satisfaction with services and transparency positively influence trust, whereas citizens' participation is not significantly associated with citizens' trust. The effects of performance variables on citizens' trust are discussed below.

5.1.2.1. Satisfaction with Public Service Provisions and Trust

Firstly, the study expected that citizens' satisfaction with LG's service provisions positively impacts citizens' trust (*H1*). The findings show a significant and positive association between citizens' satisfaction with public services and trust in LG. Lamsal and

Gupta (2021) found that Nepalese citizens feel satisfied with public services when they perceive their local government complies with the legal procedure, maintains impartiality and responsiveness, and ensures prompt and hassle-free services. This study also found similar results where the descriptive statistics show that most respondents have positive perceptions of the public service quality of HSMC, with a mean value of 2.68.

Most survey respondents believe the municipality promptly provides public services following the citizens' charter and established rules and procedures. Furthermore, they also believe that the municipality's employees are helpful and responsive, which enables the citizens to easily receive public services without the help of '*afno manchhe*' (personal connections)³⁹. Similar results were observed in the survey of the Nepali people in 2020, which revealed that an overwhelming majority of respondents said they felt it easy to receive public services from their local government (Giri et al., 2020).

In Nepal, various reforms have been done to improve the public service provisions and enhance the citizens' overall satisfaction by making the services fast, easy, and effective. Various legal and policy documents⁴⁰ have envisioned the public administration to be fair, competent, impartial, accountable, participatory, and result oriented. Hence, public institutions, including LGs, have been focused on providing speedy, cost-effective, and accessible public services with various provisions such as citizens' charter, use of information technology, improvement of grievance handling mechanisms, the establishment of help desks, etc. These provisions have helped to upgrade the overall service quality of the public offices, improving the citizens' experience with public services. Studies show that when people are satisfied with their experience while receiving public services, they tend to trust the service provider, i.e., the government, more (Kumlin, 2002; Rothstein & Steinmo, 2002, as cited in Christensen & Læg Reid, 2005).

The study further explored citizens' satisfaction with specific services. This was a straightforward attempt to examine whether the citizens' satisfaction with the general local services influences the level of trust in LG. The public services included in the study

³⁹ '*Afno manchhe*,' a well-known term in Nepal, refers to personal connections. It is prevalent in Nepal that citizens with personal connections in public institutions can use those connections to get services promptly and easily without any hassles.

⁴⁰ The major legal and policy documents that emphasize effective service delivery include the constitution, 15th periodic development plan, Good Governance Act (2008), and Local Government Operation Act (2017). These documents have provisions to continuously reform public services in national and subnational public organizations to make them effective and citizens friendly.

were the general ones that affect the citizens' daily lives, such as education, health, administrative services, infrastructure development, and garbage management. The results show that citizens' satisfaction with the five primary services included in the study significantly correlates to the level of trust. This indicates that the more citizens are satisfied with the general services they receive from LG, the more they trust it. The result is consistent with previous studies such as Goldfinch et al. (2022).

Generally, citizens also calculate the performance of public institutions based on the services they provide. As long as the provision of public services can fulfill their expectations, they tend to be satisfied, resulting in high trust (Lamsal & Gupta, 2021). This is more relevant to the locally based services because citizens are aware and familiar with the local public institutions and the services they provide, which eases them in assessing institutions' performance. Thus, local public services could provide more satisfaction to the citizens and improve institutional trust (Christensen & Lægreid, 2005). Hence, it can be argued that citizens' satisfaction with LG's service provisions significantly impact institutional trust, which is widely supported by previous studies such as van de Walle & Bouckaert (2003).

5.1.2.2. Transparency and Trust

The study expected transparency in LG's activities positively influences citizens' trust (H2). The findings show that transparency significantly impacts the citizens' trust in HSMC. The descriptive statistics of the indicators used to measure transparency suggest that citizens don't believe HSMC proactively flows information about the use of public tax and the execution of plans and programs. A similar result was presented by Giri et al. (2020) in their survey of Nepali People, where nearly 72 percent of respondents responded that they were unaware of the local projects and budget plans. However, the citizens believe they can ask for and quickly receive information about HSMC's procedures and activities. This could be because of the country's strict legal and institutional mechanisms regarding the right to information, such as the Right to Information Act and National Information Commission⁴¹.

⁴¹ Right to Information Act (2007), in its section 5, urges public institutions to update and publish the information in a timely manner. Similarly, it gives citizens the right to ask for and get the information about public institutions' activities. An independent commission named National Information Commission has been established with an aim to exercise the provisions mentioned in Right to Information Act and to protect, promote and practice the citizens' right to information.

Similarly, citizens also believe they can see the progress and situations of the municipal administration. Since LG's significant progresses and activities can be seen via its website, citizens might believe that the municipal administration is open in such ways. Researchers believe that using information and technology positively affects the citizens' perception of public institutions' transparency, eventually improving the government-citizens relationship (Grimmelikhuijsen, 2012). Although the descriptive statistics show that citizens' perception of HSMC's transparency is slightly lower than the average, the regression result established a significant association between transparency and citizens' trust in HSMC.

The results show that citizens expect openness in LG's activities and like to have access to information on how their local public institutions are functioning. If public organizations can inform citizens about how and what decisions are made by the public organizations and what outcomes are achieved, the citizens will undoubtedly trust the government (Grimmelikhuijsen, 2012). When government actions and decision-making processes are open and easily accessible to the public, citizens believe their leaders are accountable and act in the people's best interests. Moreover, transparency can help build trust by increasing citizens' understanding of the government's complex workings and the challenges officials face (Grimmelikhuijsen et al., 2013).

5.1.2.3. Citizen's Participation in Decision-making Process and Trust

The third expectation regarding the performance-related variable was that citizens' participation in the decision-making process of LG positively influences trust (*H3*). However, contrary to the various studies (for example, Ma & Christensen, 2019), the study surprisingly did not find any significant effect of citizens' participation on trust in HSMC.

One possible explanation for this finding could be that citizens feel that their participation is tokenistic or ineffective and therefore do not see it as a meaningful way to influence the decisions that affect their lives. Local governments in Nepal are seen adopting only minimum practices of citizens' participation in their planning and development activities just to fulfill the legal requirements, which is not substantial enough to address ordinary citizens' voices. The study's descriptive statistics show that the overall citizen's participation index is below average, i.e., 2.45. Similar results have been observed in the Nepal National Governance Survey (NNGS), where only 20% of the respondents reported that they participated in local-level planning and budget meetings (NASC, 2018).

Similarly, people also do not have much awareness about the participation process in their local government as a survey study of Nepali people shows that only 23% of the respondents are aware of the public hearing programs, and only 17% are aware of the public audit programs in their local government (Giri et al., 2020). These findings show that people get few opportunities to give their voices and inputs in the local decision-making process. On the other hand, their voices are not replicated in the local government's policies either. This trend of low awareness of the participation process among citizens and symbolic participation practices followed for a long time might have led people to disregard their level of participation in the local government activities while making the decision of trust.

Another possibility is that trust in institutions is influenced by a broader range of factors beyond citizen participation, such as the quality of public services, satisfaction with the available services, and their faith in elected officials. Even if citizens feel that their participation is not valued and effective, they may still trust the government if they feel these other factors are more important to them.

After the local elections in 2017, citizens possessed great faith in their local government, especially in the head of the LG, such as the mayor. A survey done in 2020 shows that nearly 81 percent of Nepalese citizens trust their Mayor (Giri et al., 2020). Their high trust in the local elected executive might have led people to give less importance to the aspects of citizens' participation. Studies also show that if people trust the government, they see less reason to participate in its activities; instead, they leave the responsibility upon their representative to deliver what is 'best' (Kamin, 2010, cited in Goldfinch et al., 2022).

Similarly, the descriptive statistics of the study show that citizens' overall satisfaction with the service provisions of HSMC is high. In this sense, it is possible that if citizens are satisfied with the public service provisions of their LG, they don't feel it necessary to influence the policies through direct participation. As a consumer of local public services, citizens' expectations of LGs are more significantly related to receiving high-quality public services rather than influencing local political decisions (Baldersheim et al., 2011, as cited in Gustavsen et al., 2017). In sum, the results from the survey show an insignificant association between citizens' participation in the decision-making process and trust in HSMC, which is consistent with a competing body of research, such as Reitan et al. (2015).

5.1.3. Impacts of Citizens' socio-demographic backgrounds and Trust

The adherents of the rational choice theory of institutional trust argue that institutional performance significantly impacts in explaining the level of trust in public organizations (Mishler & Rose, 2001). However, a competent body of research such as Blind (2007) also suggests that performance is not the only factor that influences public trust; instead, cultural attributes and citizens' individual characteristics influence the citizens' evaluation of public institutions, which eventually impacts public trust.

In this context, this study also explored the influence of citizens' socio-demographic characteristics on their level of trust with the expectation that citizens' education level, age, gender, and income influence institutional trust. However, except for education, other socio-demographic characteristics were not found significant in influencing citizens' trust in HSMC. The results are discussed below.

Education and Trust

Firstly, the study expected highly educated people to show less trust in their LG than lower-educated people (*H4*). The descriptive statistics show that most less educated people showed high trust (67%) while most highly educated people possessed low trust (57.8%) in HSMC. The logistic regression results also showed a significant negative effect between education level and trust in HSMC, which supports *H4*. The results indicate that people with a low level of education seem to be happy with what they are getting from their local government. In contrast, most highly educated people are not confident that their local government acts in people's best interests.

The study's results support previous researchers' argument that education is often considered a significant predictor of institutional trust in established democracies (Mishler & Rose, 2001). Highly educated people have more political knowledge, understanding, and engagement, especially in local governments with high proximity. Citizens who are well-informed about politics are more likely to rationally evaluate political institutions' performance and hence develop informed opinions and judgments about political leaders and institutions (Hardin, 1999). In contrast, citizens with limited political knowledge and understanding may rely on general sentiments or emotions to guide their political trust making their trust more vulnerable to fluctuations based on superficial or fleeting factors, such as media coverage or partisan rhetoric (van Elsas, 2014).

Because highly educated people care more about the performance of public institutions, they show high trust in the government in stable and well-performing democracies. In contrast, in countries with high corruption, people with high education tend to have low trust in the government (Hakhverdian & Mayne, 2012). Here, the argument is that in countries with high corruption, governments find it incredibly challenging to produce citizen-oriented public policies and services, thereby affecting the government's overall performance. Citizens with high education can identify and process the information regarding these malpractices in the government that affects its smooth functioning. At the same time, they are more likely to be troubled by such practices (ibid.). This leads them to negatively evaluate public institutions, enabling them to distrust the government. Given that Nepal remains in the category of countries with rampant corruption, ranking 110th in the Transparency International Corruption Perception Index 2022⁴², the results from the study support the notion that highly educated people are likely to have low trust in Nepal's public institutions, which might have been reflected in the local public institutions too.

In addition, improved knowledge helps generate critical attitudes in citizens while assessing the capabilities of the government's functioning, which enables them to judge whether political institutions are acting in their best interests. These critical citizens evaluate the government's policies and performance more rationally using more demanding standards (van Elsas, 2014; Baniamin, 2019; Ma & Christensen, 2019). Therefore, highly educated people expect high-quality public services and better performance from public organizations, and their confidence in the government declines if their expectations are not met.

In the context of Nepal, the constitution provides a vast range of responsibilities ranging from daily administrative services to local infrastructure development and innovation. However, studies show that because of various legal, structural, and ethical obstacles, local governments have yet to be fully capable of carrying out their functions effectively, which has significantly impacted the performance of LG (Acharya & Scott, 2022). Highly educated people tend to follow and process the information about governments' performance through newspapers, other mass media sources, and their encounters with government institutions. They critically assess the quality of government

⁴² "Nepal ranks 110th in Corruption Perceptions Index." *The Kathmandu Post*, January 31, 2023. <https://kathmandupost.com/national/2023/01/31/nepal-ranked-110th-in-corruption-perceptions-index>

based on their duties and actual performance. Rich information drives citizens to accumulate high expectations of the government's performance. Therefore, if the increase in citizens' expectations is greater than the performance of the government, trust may decline (OECD, 2013).

Gender and Trust

Secondly, the study expected that females trust more in their LG than males (H5). In this context, the descriptive statistics show that 60.3% of females and 51% of males showed high trust in HSMC, indicating that many females showed higher trust than their male counterparts. Past studies such as Christensen & Laegried (2005) have found similar results where they found women supporting more to the public sectors than men. This is because women have greater access to information and services provided by public institutions and rely more on the public sector for employment (ibid.).

In Nepal, over the last two decades, various significant initiatives at national and sub-national levels have been taken by the government for the empowerment of women. Gender-responsive budgets have been implemented since 2007 for direct, indirect, and neutral benefits for women (Rajkarnikar, 2019). Similarly, to ensure women's participation and inclusion in public sectors, the constitution and other legal provisions oblige to reserve one-third of seats for women in public employment and political representation, including the local council. Because of these provisions, 14,407 female representatives were elected in the last local elections held in 2022⁴³. Furthermore, the local governments, including HSMC, provide various skill training yearly for women's employment and empowerment. It is possible that because of these women-friendly policies and programs adopted by the public institutions, most women might have developed a positive attitude toward their LG, which encouraged them to trust in it more.

However, despite the high number of females showing high trust in HSMC, the main result from logistic regression analysis did not find any significant relationship between gender and trust in HSMC, meaning that gender is not a significant determinant of institutional trust. Hence the *H5* is rejected. The result aligns with many studies, such as Askvik et al. (2011), who provided evidence that gender does not significantly impact trust in Nepal's public institutions. Similarly, Mahmud (2021) did not find gender and

⁴³ Pradhan, Tika R. "How women candidates fared in local polls." *The Kathmandu Post*, May 28, 2022. <https://kathmandupost.com/politics/2022/05/28/how-women-candidates-fared-in-local-polls>

institutional trust significantly associated with each other in Bangladesh. Given the identical demographic attributes between Nepal and Bangladesh, similar results can be expected in Nepal. With this result, it can be argued that the institutional trust level in Nepal is randomly distributed among males and females, which rejects H5.

Age and Trust

Thirdly, the hypothesis regarding citizens' age and institutional trust was that older people possess higher trust than younger ones (H6). The descriptive statistics of the study show that only 46 percent of young respondents show high trust in HSMC, whereas the count for older people having high trust in HSMC is almost 72 percent. The descriptive findings align with previous studies such as Christensen and Læg Reid (2002), which suggest that older people trust in government more than younger ones.

In Nepal, the younger generation has been growing with free access to global information through media. They can see and observe positive changes in public services in many developed countries. Therefore, they demand new and innovative public services from local public institutions (Pande, 2010). However, the local governments have not been able to fulfill these younger generations' expectations because of various financial and structural problems. This might create frustration among young people and eventually generate less trust (ibid.).

In contrast, older people have long experience with the public sector and have seen how public sectors have been evolving throughout time. Similarly, they have been involved in different activities and movements to establish democratic institutions in the country by fighting with autocratic systems.⁴⁴ Therefore, it is possible that their collective contribution to building the present system encourages them to have positive sentiments toward public institutions. Plus, the older generation might find the public institutions in the current democratic system comparatively better than they used to be in autocratic regimes. Hence, they might be satisfied with the services they are receiving so far from

⁴⁴ The country has witnessed three revolutions in the past seven decades which helped to bring the present democratic system in Nepal: first, the 1950 revolution to throw out 104 years old autocratic *Rana* regime, second, the 1990 revolution against the King to bring multiparty democracy with constitutional Monarchy, and third, the 2006 people's movement, to establish federal democratic republic by abolishing Monarchy completely. These movements have a huge contribution to bringing present democratic system in Nepal, of which the major credit goes to the citizens who wanted positive changes and were actively involved in this process (Ghimire, 2018).

public institutions such as local government, resulting in building positive perceptions of their LG.

However, although the descriptive statistics show that a high percentage of older people possess higher trust than younger ones, the main logistic regression did not find any significant relationship between age and trust in HSMC. With this result, it cannot be proved that trust in LGs of Nepal is significantly affected according to the age group of the citizens; instead, it shows that people from either age group trust public institutions randomly. The result aligns with previous studies such as Askvik et al. (2011), who find that age has no significant impact on trust in public institutions in Nepal. Similarly, Mahmud (2021) also finds the same result in Bangladesh. Thus, the level of trust in local government is distributed without any clusters regarding age perspective in Nepal. Hence, H6 is rejected.

Income and Trust

Finally, the study assumed that high-income earning people might possess high trust in their LG (H7). The assumption is based on the so-called ‘winner hypothesis,’ explained by Medve-Bálint and Boda (2014), who suggest that economically successful people tend to be relatively happier and more satisfied with their life as they feel comfortable about their household income and can fulfill various requirements more easily as compared to the people with economic difficulties. This happiness and well-being are associated with a trusting attitude. Therefore, people with high income might perceive that the policies adopted by the political institutions have directly or indirectly contributed to their wealth, which drives them to demonstrate positive perceptions towards those institutions (ibid.).

However, the results from the survey did not show statistical significance between household income and trust in HSMC. The descriptive statistics show that the majority of both the high and low-income groups showed high trust in their LG. This could be caused by the fact that citizens assess the overall socio-economic performance of public institutions rather than their own income while developing the perception of public institutions (Mishler & Rose, 2001). Similar results have been presented by Lee et al. (2020) in their study of 14 Asian countries, where they found no significant effect of personal income on political trust; instead, the perceived economic performance of the country played a vital role in determining trust. Therefore, the result shows that citizens’ individual income is not significantly associated with their perception of trust in LG, which rejects H7.

Table 14 shows the results of the hypothesis taken for the study.

Table 14: Hypotheses Results

Hypothesis	Results
H1: Citizens' satisfaction with the service provisions of LG positively influences trust.	Supported
H2: Transparency in LG's activities positively influences citizens' trust.	Supported
H3: Citizens' participation in the decision-making process of LG positively influences trust.	Rejected
H4: Highly educated people show less trust in their LG than lower-educated people.	Supported
H5: Females show more trust in their LG than men.	Rejected
H6: Older people show more trust in LG than their younger counterparts.	Rejected
H7: People with high income show more trust in their LG than the people with low income.	Rejected

5.2. Summary of the Key Findings

The survey results of the study suggested that a slight majority of the respondents (55%) had a positive perception of HSMC. Despite the low level of satisfaction with health care services and some concerns about citizens' participation and transparency, more than half of respondents possessed high trust in their local government, i.e., HSMC. Most of the respondents showed a positive perception regarding satisfaction with the public service provisions of HSMC. In contrast, the majority did not agree that HSMC gives them a fair chance to participate in the decision-making process and that the municipal government is transparent enough, with the mean value falling slightly below average, i.e., 2.45 and 2.49, respectively.

The citizens evaluate their local government with respect to its performance regarding satisfaction with LG's service provisions and transparency, which significantly influences their trust in the local government. Thus, the results proved the significance of customer satisfaction and transparency as predictors of trust in the local government in Nepal. The results are consistent with various studies conducted in Asia, such as Bangladesh (Mahmud, 2021), Nepal (Askvik et al., 2011), and other parts of the world,

such as Norway (Christensen & Læg Reid, 2005). However, the result showed that citizens' participation in the decision-making process of LG did not significantly affect the citizens' trust in the case of Nepal. The result contradicts the findings from Japan (Goldfinch et al., 2022) that suggest civic participation significantly affects the citizens' trust in local government.

On the other hand, the only significant socio-demographic variable with the influence of institutional performance factors is education, i.e., highly educated respondents, meaning that as people get more educated, their trust in the government decreases. The result indicates that citizens develop a critical attitude toward the government with increased knowledge, reducing trust (Kumar et al., 2020). However, this result contradicts the findings from some studies, such as Japan (Christensen et al., 2020), which found no significant relationship between education and trust in local government. In sum, the findings suggest that the performance approach is more relevant than the cultural approach in determining institutional trust in Nepal.

5.3. Linkage Between Conceptual Framework and Theory Chosen

The validity of the research questions justifies and establishes the relationship between variables, making the conceptual framework appropriate for this study under the chosen theory. The study primarily employed Rational Choice Theory (RCT) as a theoretical backup. Based on RCT, institutional trust depends on institutional performance and the government's quality. According to Ostrom (1998), RCT involves individuals pursuing their self-interest to achieve objectives, and this study's findings and conclusions support this view. The responses throughout the survey indicated that every individual has self-interest and calculative behavior.

Firstly, the study revealed that citizens calculate the trustworthiness of LG, relating it to whether LG can provide high-quality public services that fulfill their needs and expectations. Every citizen has specific interests and expectations from public institutions. With their experience while receiving public services, if they believe that the government addresses their demands and provides services that meet their expectations, their satisfaction with the public service provisions will increase. This satisfaction will lead citizens to perceive the government as attentive and responsive to their preferences and concerns. As a rational individuals, satisfactory experiences with public services will make citizens trust the government (van de Walle & Bouckaert, 2003).

Additionally, rational citizens understand that public service provisions depend on collective resources. Therefore, if the citizens believe their contributions are utilized to enhance public service provisions, they view their interests aligned with the public institutions' interests. This will help increase support in the government, which in turn, makes citizens more inclined to cooperate and comply with government activities and policies (Baniamin, 2019). The study results also support this argument as it is seen that the more citizens feel satisfied with the public services, the more they accumulate positive perceptions towards their local government.

Similarly, citizens expressed the opinion that the transparent flow of information about LG's decision-making processes and actions enables them to trust more in LG. Transparency in public institutions more likely enables citizens to perceive that the risk of corruption or abuse of power is low, which helps generate high trust. When information is more freely available and accessible, rational individuals can make more informed decisions that align with their self-interest.

Moreover, the study's findings also revealed that the education level significantly negatively affects institutional trust. This indicates that highly educated people would base their trust on a more rational evaluation of public institutions, whereas low-educated people rely more on a general attitude towards the government. Indeed, higher education improves citizens' political knowledge and critical ability, which enables them to rationally assess public institutions' performance relating it to whether they have been able to address their interests and demands (van Elsas, 2014).

Overall, the study found that citizens have evaluated their local government's capabilities in terms of public service provisions and its' transparency level. The study's findings proved the significance of citizens' satisfaction and transparency as crucial factors in an individual's decision to trust the government. By providing high-quality public services and being transparent in their actions, governments can increase citizens' perceptions that the benefits of trusting the government outweigh the costs, eventually leading to higher trust.

5.4. Conclusion

In the present study, the major problem is LG's inability to perform effectively with respect to citizens' expectations. LGs face tremendous challenges in performance-related aspects, such as effective service delivery, transparency, accountability, and citizens' meaningful

participation, which severely hinder the fulfillment of citizens' needs and expectations, eventually posing a threat to citizens' trust. Due to the proximity of LG to ordinary citizens, it is essential and relevant to study how much citizens trust their closest governmental body. Thus, this study has investigated the citizens' trust in local government institutions and the factors affecting trust.

The study centers on two research questions as follows:

- 1. How does the performance of LG impact citizens' trust in them?**
- 2. How do citizens' socio-demographic backgrounds influence their trust in LG?**

To answer the research questions, two sets of independent variables are taken: the institution's performance and the citizens' socio-demographic characteristics. The findings suggest that despite slight dissatisfaction over some public services and concerns over transparency and citizens' participation, more than half of the respondents possess high trust in their LG. It shows that a slight majority of the citizens (55%) positively evaluate HSMC.

In response to the first research question, "**How does the performance of LG impact citizens' trust in them?**" the study found that among the three performance indicators, 'citizens' satisfaction with service provisions' and 'transparency' significantly influence trust. In contrast, 'citizens' participation in the decision-making process' does not influence their trust in LG.

The findings suggest that, during their experience with public services, Nepalese citizens care most about receiving high-quality public services from their local government. They expect fair, compliant, responsive, hassle-free, and cost-effective public services. Similarly, citizens expect transparent information about the service receiving process, competent staffs and well-maintained infrastructure in the public offices, which helps them access public services more easily. Citizens hold these expectations with every type of public service that impact their lives and are related to their interests such as education, health, garbage management, administrative services, etc. While encountering the public services, they compare their expectations with the actual experience, and if they feel their expectations are met with the public service quality, they tend to be satisfied (Parasuraman et al., 1985). Therefore, by ensuring a better quality of public services, public institutions can enhance citizens' satisfaction, thereby fostering citizens' trust.

In addition, citizens base their trust level in accordance with the level of transparency public institutions offer them. Citizens value access to information on public institutions' activities and want public institutions to proactively communicate with citizens about the decisions made and outcomes achieved. Nepalese citizens mostly demand public institutions to ensure transparency regarding public procurement procedures, budgeting and financial management, service delivery, and decision-making (Giri et al., 2020). When the information regarding these aspects is transparent and easily accessible to the public, citizens perceive the public institutions are accountable and functioning in their best interests, which ultimately builds a sense of trust between citizens and the government (Grimmelikhuisen, 2012)

Furthermore, the result shows that citizens' participation in the local government's decision-making process does not influence their trust in it. Studies show that citizens' participation in Nepal's public institutions' planning and decision-making processes have been tokenistic for the past several years, where the ordinary citizens lack the awareness and motivation to participate in public institutions' activities and influence the policy decisions (NASC, 2018; Giri et al., 2020). The study's descriptive statistics also show that, on the one hand, citizens think that LG does not proactively involve citizens in its decision-making process, while at the same time, they also think that LG does not reflect citizens' voices and demands in the annual budget and plans. Despite this, citizens do not seem to base their trust on the level of participation in LG's activities.

In this context, the citizens might think that the participation process is not substantial for them since they do not get many opportunities to participate and influence the policy decision by putting their demands and suggestions. The ineffective participation process and low awareness may have led citizens to give less importance to the aspects of citizens' participation. Indeed, in the rational choice approach, an individual's evaluation of institutional performance is conditioned on what aspects of the governance are more important to that individual (Mishler & Rose, 2001). The descriptive statistics of this study show that citizens give massive importance to satisfaction with public services and transparency in government activities, which are seen as significant determinants of institutional trust. For this reason, the aspects of citizens' participation might not be as appealing as the aspects related to quality public services and transparency to the citizens. However, because of the limited data, an extensive analysis of why citizens' participation

is not related to public trust in Nepal could not be done in this research. Hence, a more complex and comprehensive analysis of this issue may be needed in future studies.

Regarding the second research question, “**How do citizens’ socio-demographic backgrounds influence their trust in LG?**” the study found that among these four socio-demographic variables, only the level of education significantly affects citizens' trust in LG. With this result, it can be argued that high education helps citizens develop the critical ability to evaluate government functions more rationally. Therefore, they can make more informed decisions using more demanding standards than low-educated people. This ability developed with high knowledge leads highly educated people to be more skeptical, eventually posing low trust in the government (Christensen & Læg Reid, 2005).

Besides education, the study found that other demographic characteristics, i.e., age, gender, and income, are insignificant in influencing individuals' trust in their public institutions. The results challenge conventional assumptions that social identities and backgrounds of the citizens, such as gender, age, and income, have a robust effect in shaping citizens’ trust in government, as various studies have identified their impact on public trust (Christensen & Læg Reid, 2005). Results suggest that Nepalese citizens base their confidence more on the government’s performance rather than their social identity and status. In fact, the government’s performance affects citizens randomly, resulting in the random distribution of trust amongst the population regardless of gender, age, and income (Newton & Norris, 2000).

Regarding the effects of citizens' socio-demographic characteristics in Nepalese public institutions, Jamil et al. (2011) found no impact of gender, age, and education on public trust. The authors investigated trust in various public institutions, including political parties, the King, central and local public institutions, educational institutions, etc., giving an overall picture of public trust in the Nepalese context. However, the present study is different in the sense that it does an extensive analysis of a single local government intending to draw significant findings which can be relatable to the public institutions that are supposed to provide public services at citizens’ doorstep. Therefore, the study expected different results, assuming that the citizens might have a better and more rational evaluation of the local government because of its proximity. Nevertheless, the study concludes with similar findings to the previous research except for education, where the level of citizens’ education is seen as a significant predictor of trust in the local government.

In the present study, the results provide a solid foundation to believe that citizens' trust in Nepal is more likely dependent on how well the governance system is managed to address the citizens' expectations and promote citizens' satisfaction with its performance. For instance, through the findings, citizens' satisfaction with the public services, good quality of public services, and transparency, which are critical factors of a well-managed governance system, are found to be essential for building and maintaining citizens' trust in the government. An efficiently managed governance system can fulfill citizens' needs by ensuring the effective implementation of public policies and the just and fair allocation of public resources. This leads to improved outcomes of public policies and programs and increased citizens' satisfaction, ultimately contributing to building citizens' trust.

In addition, citizens want their needs, expectations, and concerns from the government to be addressed at any cost. If citizens count low trust in their public institutions, it means that these institutions' performance is not satisfactory as they have not been able to fulfill citizens' desires, which ultimately raises the question of public institutions' legitimacy. Therefore, public institutions should be competent, fair, accountable, transparent, and responsive to build public confidence in them and maintain legitimacy. If citizens trust their government, they are more likely to participate in the democratic process, support government policies, and follow the rule of law, which is a primary and mandatory requirement for sustainable democratic governance.

Overall, the findings from the study offered various similar results to previous studies on institutional trust and its determinants. However, it also highlighted some different and unique results in the case of HSMC. The results showed that, except for education, other demographic variables such as gender, age, and income have a weak impact on trust in HSMC. The findings reveal some good news for HSMC in the sense that trust is not dependent on social identity and groups. Instead, the significant explanatory power of performance variables suggests that public institutions' performance is critical in determining and building citizens' trust. People trust public institutions when they interact and have positive experiences with them, which helps the growth of democratic institutions. Therefore, the findings have significant implications for policymakers of HSMC which suggest that in order to gain citizens' trust, public institutions should not focus their strategies solely on specific social identities and backgrounds of the citizens; instead, they should be aimed at improving their performance by addressing broader factors such as service delivery, accountability, transparency, and effective governance.

5.5. Limitations and Implications for Future Research

The study has investigated the major factors affecting citizens' trust in local government institutions, focusing on HSMC. Even though the study has explored significant findings, various limitations exist.

First, because the survey was limited to a single local government unit with a small number of samples, it may not be suitable to generalize the results to the whole country's population. Therefore, further research is suggested that includes more cases with larger samples to explore the generalizable findings. Similarly, more in-depth research supplemented by interviews and focused group discussion should be conducted to validate the findings from the survey.

Second, the RCT of institutional trust suggests that trust is based on the performance of the institutions and the quality of government. However, this study only investigated the performance factors because of time and resource constraints. Hence, future research should focus on including the indicators of government quality, such as corruption control, promotion of social inclusion, etc., which helps to validate the broader aspects of RCT.

Third, Studies such as Askvik et al. (2011) suggest that various political factors, such as satisfaction with democracy, political ideology, civic associationism, etc., and the influence of mass media significantly influence citizens' trust in public institutions. However, the present study did not include these factors. Therefore, future research should also focus on these political variables and media influence to investigate their impact on public trust in Nepal.

Fourth, previous studies have shown contrasting results regarding the relationship between ethnicity and public trust.⁴⁵ Hence, it would have been worth investigating the relationship between ethnicity on institutional trust in the case of HSMC. Since ethnicity is a multifaceted and complex variable encompassing a wide range of social, cultural and historical factors that can significantly vary across regions and populations, research on ethnicity requires adequate data, time, resources, and careful consideration of ethical issues to avoid prejudice, bias, or stereotypes during analysis. However, the author decided not to include ethnicity in the present study due to the limited data and the time

⁴⁵ Researchers such as Askvik et al. (2011) did not find any relationship between caste and trust, whereas Pande (2010) found a significant relationship between indigenous identity and trust.

and resources-related constraints. Therefore, by eliminating these constraints, future research should focus on extensively investigating the impact of ethnicity on public trust in Nepal.

Lastly, the study investigated the citizens' level of trust in local government institutions considering the 'institution' as the combination of people (elected and civil servants), procedures, and norms. However, many studies show that citizens might have varied perceptions of each of these actors, especially elected officials, and bureaucrats. Therefore, future research should focus on how much variations in trust occur in the local public institutions regarding the trust in political representatives and civil servants.

5.6. Policy Implications

The survey results indicated that the citizens positively perceive their LG. Their trust depends on satisfaction with public service provisions and transparency in the local government institutions' activities. The research findings have several policy implications for policymakers and local government officials of HSMC. The study revealed that to gain citizens' trust, LG should focus on strengthening its performance, which enables it to identify and fulfill citizens' interests and expectations.

Firstly, since citizens' satisfaction is a primary criterion of government performance, local government institutions should prioritize improving service provision to increase citizen satisfaction. This could involve building a proper and sustainable mechanism to maintain impartiality, making services easy and accessible, ensuring compliance, and enhancing staff competence and responsiveness to provide citizens with hassle-free and accessible services. Additionally, LGs should prioritize improving basic service provisions, such as education and healthcare, to ensure that citizens have easy access to quality services.

Secondly, LGs should prioritize enhancing transparency in their decision-making processes. This could involve establishing mechanisms for citizens to participate in decision-making, such as public consultations and hearings. Additionally, LG should ensure that government activity and decision information is publicly available and easily accessible to citizens. Furthermore, policymakers and local government officials should make efforts to promote accountability and transparency in local government by strengthening institutions responsible for monitoring and regulating local government activities and promoting the use of open data and technology.

In conclusion, the study's findings have several policy implications for policymakers and local government officials of HSMC. By prioritizing service provision, transparency, citizen engagement, and accountability, officials can increase citizens' trust in local government institutions, thereby enhancing the effectiveness of local governance and improving overall citizen well-being. Thus, despite certain limitations of the present study, the findings have significant implications for HSMC.

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Appendix A
Descriptive Statistics of Dependent and Independent Variables

Descriptive Statistics (n=171)				
Variables	Mean	Std. Dev.	Min.	Max.
Citizens' Trust in HSMC	.55	.499	0	1
Service Quality				
SQ1	2.78	.878	1	4
SQ2	2.78	.969	1	4
SQ3	2.68	1.003	1	4
SQ4	2.68	1.072	1	4
Satisfaction with Services				
SS1	2.50	.645	1	4
SS2	2.36	.621	1	4
SS3	2.62	.679	1	4
SS4	2.53	.577	1	4
SS5	2.79	.705	1	4
Transparency				
T1	2.17	1.074	1	4
T2	2.74	1.015	1	4
T3	2.43	.964	1	4
T4	2.65	.979	1	4
Citizens' Participation in Decision-Making				
CP1	2.42	1.050	1	4
CP2	2.37	.957	1	4
CP3	2.73	.940	1	4
CP4	2.30	1.079	1	4
Socio-demographic Information				
Gender	.43	.496	0	1
Age	.35	.479	0	1
Education	.49	.501	0	1
Income	.68	.468	0	1

Appendix B

Survey Questionnaire

Meiji University

Graduate School of Governance Studies

Consent to Participate in Research Project

Research Title: **‘A Study on the Factors Affecting Citizens’ Trust in Local Government: Case of Hetauda Sub-Metropolitan City (HSMC) in Nepal’**

Self-introduction: My name is ASHISH ACHARYA, a graduate student in the Graduate School of Governance Studies, Meiji University, Japan. As the fulfillment of my degree requirement, I am conducting a research study on the factors affecting citizens’ trust in local government institutions in Nepal, taking HSMC as my study area. Therefore, being a permanent resident of HSMC, I would like to request your participation in this research survey.

About the survey and duration: Upon your agreement to participate in this survey, I will ask you to respond to the questionnaire related to the citizens’ trust in HSMC and the factors affecting trust. It will take approximately 10 minutes for you to respond to the questionnaire.

Benefits and Risks: I would like to let you know that there is no direct benefits and compensation for the participation in this survey. However, your valuable participation will be of great use for this research, and the findings could eventually lead to a greater public understanding on building citizens’ confidence in public institutions. In addition, I would like to guarantee that participating in this research will not bring any risks or trouble to you.

Privacy: The respondents' personal information will be kept confidential and will not be made public in any way. The collected data will only be used for analysis purposes. In addition, if you want a copy of this study’s findings, please feel free to contact me. I would be happy to provide it to you.

Voluntary Participation: I would like to ask for your voluntary participation in this research study. Moreover, I would also like to let you know that you have the right to withdraw from the survey without any preconditions and consequences. After reading the statements above, do you agree to participate in this survey?

Yes No

Questions: If you have any questions regarding this research study, please feel free to contact me through my WhatsApp contact number: +977 9855086234 or my email address: ashish.acharya977@gmail.com

I strongly hope to receive your cooperation throughout the survey. Thank you.

QUESTIONNAIRE SURVEY

Section A: Demographic Information

(Please select the appropriate answer)

1. Name (Optional):

2. Gender

- Male
- Female

3. Age

- 18-30 years
- 31-40 years
- 41-50 years
- 51 years and above

4. Education

- Illiterate
- Primary (upto class 5)
- Secondary (Upto class 10)
- Higher secondary (Upto class 12)
- University and above

5. Income (NPR)

- Less than 100,000
- 100,000 to 250,000
- 251,000 to 500,000
- More than 500,000

Section B: Citizens' trust in HSMC

- 6. In general, how much confidence do you have in HSMC that it honestly does what is suitable for the citizens? (Please circle one)**
- a. Not at all
 - b. Only a little confidence
 - c. Moderate confidence
 - d. A great deal of confidence
 - e. Don't know/Can't say

Section C: Perception about the Performance of HSMC

Satisfaction with the public service provisions

- 7. To what degree do you agree with the following statements? Please circle the answer that best describes your opinion.**

Statements	Completely disagree	Partly disagree	Partly agree	Completely agree	Don't know
I usually get the services on my own without using a personal connection (<i>afno manchhe</i>) and by just approaching the municipality's employees.	1	2	3	4	9
The works are usually get done with established rules, procedures, and norms of the municipality	1	2	3	4	9
The works are done in a timely manner, as mentioned in the citizens' charter of the municipality.	1	2	3	4	9
The employees of the municipality are helpful and responsive while providing the services.	1	2	3	4	9
I have never bribed the employees to get the services of the municipality	1	2	3	4	9

8. How do you perceive your satisfaction level with the following services delivered by the municipality? (Please tick one)

Services	1 Very dissatisfied	2	3	4	5	6	7	8	9	10 Very satisfied
Public Education System (secondary)										
Health Care Services										
Administrative services (such as vital registration, recommendation letters, issuing various certificates, etc.)										
Local Infrastructure Development										
Garbage Management										

Transparency in the local government

9. To what degree do you agree with the following statements? Please circle the answer that best describes your opinion.

Statements	Completely disagree	Partly disagree	Partly agree	Completely agree	Don't know
Your municipal government provides enough information about how it spends public tax.	1	2	3	4	9
The citizens can ask for and quickly get information about the procedure and activities of the municipality.	1	2	3	4	9
The municipality implements its plan and programs transparently.	1	2	3	4	9
The citizens can clearly see the progress and situation of the municipal administration.	1	2	3	4	9

Citizens' participation in decision-making

10. To what degree do you agree with the following statements? Please circle the answer that best describes your opinion.

Statements	Completely disagree	Partly disagree	Partly agree	Completely agree	Don't know
Your municipal council provides opportunities for the citizens to participate in ward/village meetings, local government planning/ budget meetings, etc.	1	2	3	4	9
Your municipal government addresses the citizens' voices, demands, and suggestions in the local planning and budget.	1	2	3	4	9
The citizens can notify the municipality about the community's problems and propose solutions to those problems.	1	2	3	4	9
The municipality is actively trying to involve citizens in the decision-making process.	1	2	3	4	9

Thank you for your cooperation.

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Title of Thesis: **Reforms of Intergovernmental Fiscal Transfer
System and Revenue Disparity Among Local
Governments in the Philippines**

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ABSTRACT

The Philippine intergovernmental fiscal transfer system recently undertook reforms following the execution of the Supreme Court ruling on the Mandanas Garcia petition in 2019. As a result, the computation basis of the local government shares in the national taxes expanded, thereby increasing the total amount for distribution to the local governments. A fiscal equalizing grant, called the Growth Equity Fund, was also introduced in 2022 to address disparities in the net fiscal capacities of the LGUs, unequal development, and marginalization in the local governments. This study investigates how these two reforms affected the level of revenue disparity among local governments in the country, thereby serving as an initial assessment of the effectiveness of the country's intergovernmental fiscal transfer system in addressing issues of horizontal fiscal inequality. Estimation of the following commonly used inequality measures was used in the analysis: maximum to the minimum ratio, coefficient of variation, Theil index, and Gini index. Significant findings from this study are as follows: 1) NTA reforms implemented in 2022 slightly widened the level of disparity within each tier of LGU, and 3) the GEF did not have an equalizing effect on the revenue per capita of the LGUs. These suggest that the reforms, separate or combined, widened the level of revenue disparity among the LGUs in the country. Based on these findings, the author argues that the intergovernmental fiscal transfer system needs to be reformed to reduce revenue disparity among LGUs in the country.

Keywords: intergovernmental fiscal transfers, local government, revenue disparity, horizontal fiscal inequality

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List of Acronyms and Abbreviations

ASSC	Areas of Special State Concern
BARMM	Bangsamoro Autonomous Region of Muslim Mindanao
BLGF	Bureau of Local Government Finance
BOC	Bureau of Customs
CV	Coefficient of Variation
DBM	Department of Budget and Management
DOF	Department of Finance
DTP	Devolution Transition Plan
GDP	Gross Domestic Product
GEF	Growth Equity Fund
GRDP	Gross Regional Domestic Product
HMA	Hill and mountain areas
HUC	Highly Urbanized City
ICC	Independent Component City
IMF	International Monetary Fund
IRA	Internal Revenue Allotment
IRR	Implementing rules and regulations
LAT	Local Allocation Tax
LBC	Local Budget Circular
LGC	Local Government Code
LGU	Local government unit
LSR	Locally sourced revenue
MMR	Maximum to Minimum Ratio
NEP	National Expenditure Program
NIRT	National Internal Revenue Tax
NTA	National Tax Allotment
NTRC	National Tax Research Center
OECD	Organization for Economic Cooperation and Development
PSA	Philippine Statistics Authority
REAT	Regional Economic Analysis Toolbox
UNICEF	United Nation's Childrens Fund
VAT	Value added Tax

CHAPTER 1. INTRODUCTION

1.1 Background of the Study

The Philippines is an archipelagic unitary state with the President acting as the head of state and government. Local government structure in the Philippines has three tiers: 81 provinces, 146 cities and 1,488 municipalities¹, and 42,046 barangays. Each tier of local government unit (LGU) is classified by income class based on their average annual income in the last four calendar years before the classification process was conducted².

Decentralization, which OECD (2019) defined as the transfer of more powers and responsibilities from the central to the subnational governments, was initiated in the Philippines way before the decentralization trends in the '80s and '90s. The current basis of the local government's revenue and expenditure powers and responsibilities is Republic Act 7160: An Act Providing for a Local Government Code (LGC). Said law was passed in 1991 to expand the local governments' revenue and expenditure functions and strengthen direct citizens' participation in local governance. Section 17 of the LGC spelled out the specific services devolved to each level of LGU from the national government, which includes economic, social, industrial, and research and development services. The local governments were then given the power and authority, through Section 18 of the Local Government Code, to create their revenue sources and levy taxes and fees, which they could use exclusively within their jurisdiction.

On top of the local revenues collected by the LGUs, they also receive intergovernmental fiscal transfers from the national government. The primary source of fiscal transfers in the Philippines is called the Internal Revenue Allotment

¹ Cities and municipalities belong to the same tier of local government, both composed of barangays (see Section 2.4).

² Based on Section 2 of Executive Order No. 249, Series of 1987.

(IRA), which is 40 percent of the taxes collected at the national level. The computation includes national internal revenue taxes (NIRTs) such as income taxes, estate and donor's taxes, and value-added taxes, to name a few. The major criticism of the IRA was its lack of an adequate equalization scheme which may result in fiscal imbalances and differing levels of public good and service provision across similar levels of local government.

In 2022, the Supreme Court approved the proposed changes in the computation basis of the IRA, drastically increasing the total share of the local governments to said funds, which hereafter is called the National Tax Allotment (NTA). Despite the increase in the total amount of the NTA, the distribution formula to the LGUs was not changed - which was mainly based on population and land area. The formula also includes an equal sharing component, which does not consider the fiscal capacities of the LGUs but only equally divides a certain amount from the NTA among all LGUs.

On top of the NTA, a fiscal equalization grant called the Growth Equity Fund (GEF) was also established to reduce disparities in the net fiscal capacities, unequal development, and marginalization among the LGUs. The GEF was granted to LGUs belonging to the lowest income classes. Recipient LGUs from said income classes were then identified based on poverty incidence and per capita NTA shares. Income classification in the country is based on the total annual income of the LGU rather than per capita fiscal capacity. As such, the basis for providing the current GEF may not be effective.

To sum it up, the reforms on the intergovernmental fiscal transfer system involve: 1) expanding the tax bases for the computation of the intergovernmental transfer system of the country, thereby increasing the total shares of the local governments, and 2) implementing a GEF which aims to address issues on marginalization, unequal development, high poverty incidence and disparities in the net fiscal capacities of the LGUs.

1.2 Problem Statement

Intergovernmental transfers in the Philippines have long been criticized for “having a counter-equalizing effect on regional development” (Yeeles, 2015, p. 391). Previous studies like Manasan (2007) argued that the distribution formula of the NTA widened geographic disparities in the country because of the inadequacy of its equalizing scheme. The NTA is population-based, and the equal sharing component of the formula does not consider the fiscal capacities of the LGUs. With the recent changes in the computation basis of the NTA and the implementation of the Growth Equity Fund, there is a need to reassess how these would affect the level of disparity among local governments in the country. High levels of revenue disparity across local governments may lead to inefficiencies and gaps in service delivery among LGUs, which contradicts the rationale behind intergovernmental fiscal transfers. Results from this study could be a helpful input in formulating policies and mechanisms toward a more equitable intergovernmental transfer system for the country.

1.3 Objective and Research Questions

This study aims to analyze how the implementation of the reforms discussed in Section 1.1 affected the level of revenue disparity among local governments in the Philippines. Given this objective, this study seeks to answer the following questions:

To what extent did the level of revenue disparity among the LGUs in the country change before and after the intergovernmental fiscal transfer system reforms?

Sub-question 1: To what extent did the level of revenue disparity among the local government units in the Philippines change before and after the NTA reforms?

Sub-question 2: How did the introduction of the GEF affect the level of revenue disparity among local governments in the country?

1.4 Methodology

The study used quantitative research methods to assess the extent to which the recent reforms in the country's intergovernmental transfer system affected revenue disparity among local governments. Existing literature sources pointed out that no single measure can capture the complexity of spatial or geographical inequality analysis (Shankar and Shah, 2003). As such, the estimation of four measures of inequality based on literature was utilized: 1) Maximum to minimum ratio (MMR); 2) Coefficient of Variation (CV); 3) Theil Index; and 4) Gini Index. Secondary data were gathered from the Philippines' Department of Budget and Management (DBM) and Bureau of Local Government Finance (BLGF) as follows: 1) locally sourced revenues of all LGUs in the country from FY 2020-2022; 2) National Tax Allotment for all LGUs from FY 2020-2022; and 3) Growth Equity Fund for FY 2022.

1.5 Results and Conclusions

Significant findings from this study are as follows: 1) NTA reforms implemented in 2022 slightly widened the level of disparity within each tier of LGU, and 3) the GEF did not have an equalizing effect on the revenue per capita of the LGUs. These findings suggest that the reforms, separate or combined, widened the level of revenue disparity among the LGUs in the country. Based on the findings, the author argues that the intergovernmental fiscal transfer system needs to be reformed to reduce revenue disparity among LGUs in the country.

1.6 Chapter Structure of the Study

This study is composed of six chapters. Chapter 1 provides a general overview of the study. Chapter 2 contains a more detailed context of local governments in the Philippines and recent reforms in the intergovernmental fiscal transfer system.

Chapter 3 is a review of related studies and existing literature. Chapter 4 details the research framework, methodology, data collection, and analysis methods used in the study. Chapter 5 presents the results of the analysis and discussion of significant findings. Lastly, Chapter 6 contains the study's conclusions and policy recommendations.

CHAPTER 2. BACKGROUND OF THE STUDY

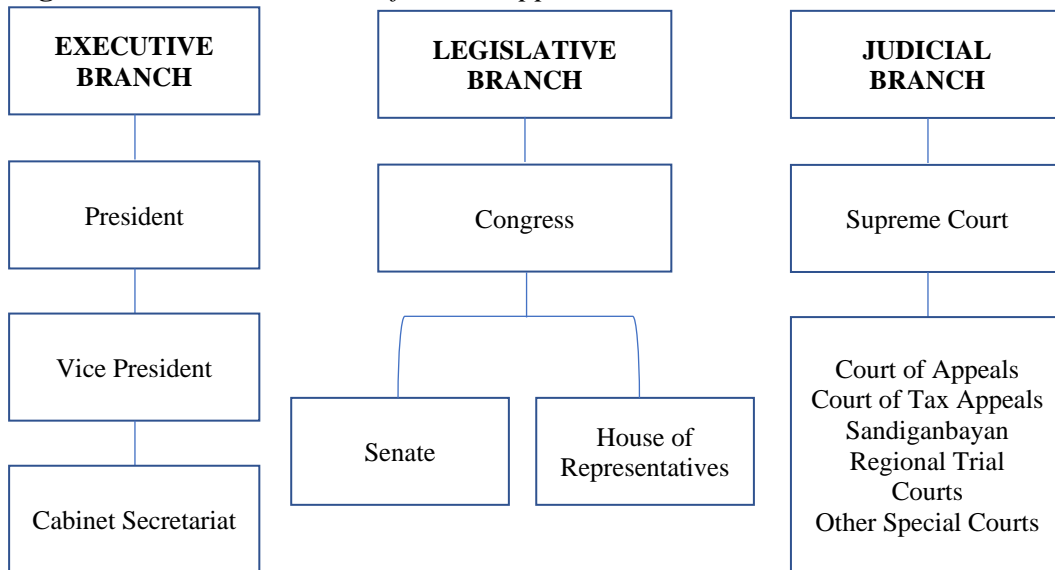
2.1 Introduction

This chapter contains a more detailed background and context of the structure, roles, and responsibilities of local governments in the Philippines. This chapter also presents the country's primary intergovernmental fiscal transfer system and its recent reforms. The last part presents issues and challenges in the country's fiscal transfer system, which justifies the need to conduct this study.

2.2 Local Government Structure in the Philippines

The Philippines is an archipelagic country in Southeast Asia. It adopts a unitary form of government where the President acts as head of state and head of government. The Philippine national government is divided into three branches – the executive, the legislature, and the judiciary. Figure 2-1 illustrates in detail the structure and government entities involved in each branch of the government. The executive branch is headed by a President elected through popular voting. The legislative branch of the Philippine government is bicameral and composed of the Senate and House of Representatives. Senators are voted through national elections, while legislative districts elect representatives. The judiciary is composed of the Supreme Court and several lower courts.

Figure 2-1. Three Branches of the Philippine Government



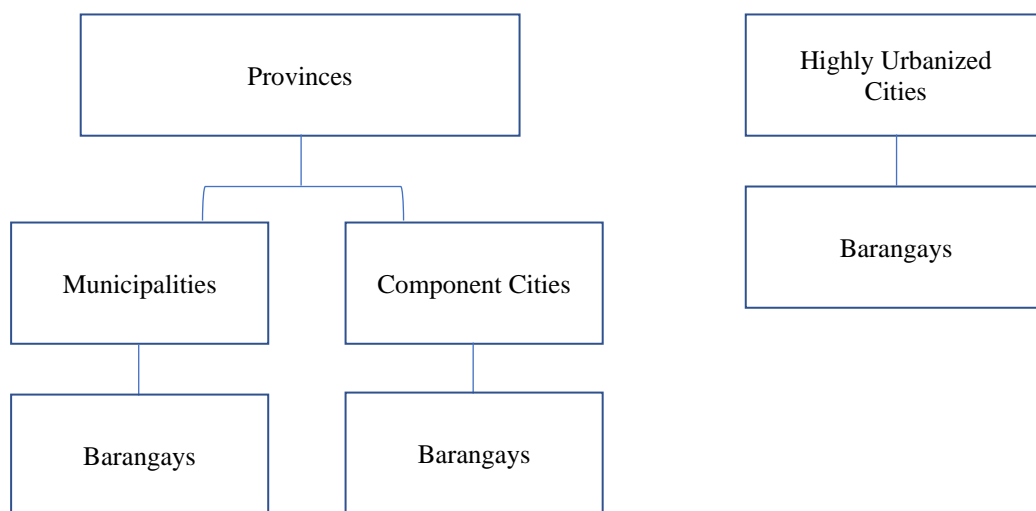
Source: Constructed by the Author based on the Philippine Gazette

The country's decentralized local government structure or political subdivisions has three tiers: provinces, cities and municipalities, and barangays (see Figure 2-2). The provinces are at the highest tier, followed by cities and municipalities at the mid-level, and the barangays at the lowest tier of local government. In the Philippines, these subnational levels of government are referred to as local government units (LGUs). In other countries, these are called subnational governments. For consistency, the term LGUs were used for the rest of this paper. At the bottom of the local government structure are the barangays, which comprise a municipality. The more urbanized and developed group of barangays form a city. The country classifies its cities into three: a highly urbanized city (HUC) and an independent component city (ICC), which are politically and administratively independent of the province; and a component city, which does not meet the requirements for an HUC and ICC and is still considered part of the province's administrative and political jurisdictions. As shown in Figure 2-2, component cities and municipalities are under the province's umbrella. Meanwhile, provincial governments do not exercise administrative and political jurisdiction over ICCs and HUCs.

Generally, the lower-level LGU is under the administrative supervision of the next higher-LGU.

Each LGU is headed by directly elected officials, specifically, a local chief executive (governors for provinces, mayors for cities and municipalities, and barangay captains for the barangays) and a legislative body called “*sanggunians*”.

Figure 2-2. *Local Government Structure in the Philippines*



Source: Manasan, 2005

As shown in Table 2-1, the LGUs in the country are also grouped into 17 regions. The regions are not part of the local government structure but are “merely territorial subdivisions created to coordinate the various programs of the national agencies” in adjacent LGUs (Capuno, 2002, p. 227). Only one of the 17 regions, the Bangsamoro Autonomous Region of Muslim Mindanao (BARMM), has an elected government and a separate parliament according to the Organic Law for the BARMM. Said law took effect in 2018 and aims to establish a political entity for the Bangsamoro people and Muslim Filipinos in the southern part of the country.

The Philippines has 81 provinces, 146 cities, 1488 municipalities, and 42,046 barangays. These figures sum up to 43,761 local government units in the country. The breakdown between component or highly urbanized/independent cities and component or independent municipalities can be found in Table 2-1.

Table 2-1. Number of Provinces, Cities, Municipalities, and Barangays in the Philippines

Regions	Provinces	Cities		Municipalities		Barangays
		Component	Highly urbanized or independent	Component	Independent	
Region I	4	8	1	116	-	3,267
Region II	5	3	1	89	-	2,311
Region III	7	12	2	116	-	3,102
Region IV-A	5	19	1	122	-	4,019
MIMAROPA	5	1	1	71	-	1,460
Region						
Region V	6	6	1	107	-	3,471
Region VI	6	14	2	117	-	4,051
Region VII	4	13	3	116	-	3,003
Region VIII	6	5	2	136	-	4,390
Region IX	3	4	1	67	-	1,904
Region X	5	7	2	84	-	2,022
Region XI	5	5	1	43	-	1,162
Region XII	4	3	1	45	-	1,195
Caraga	5	5	1	67	-	1,311
CAR	6	1	1	75	-	1,178
BARMM	5	2	1	116	-	2,490
NCR	0	0	16	0	1	1,710
Total	81	108	38	1487	1	42,046

Source: Author's summary based on the Bureau of Local Government Finance Statement of Receipts and Expenditures (as of 2022); Philippine Statistics Authority, Number of Provinces, Cities, Municipalities, and Barangays, By Region (as of September 2020)

Each tier of local government is also classified by income class, with provinces, cities, and municipalities having the highest average annual incomes under the 1st bracket and those with the smallest incomes under the last bracket. The income classification of an LGU is based on its average annual income within the last four years before the conduct of the classification process. The yearly income includes recurring revenues and receipts, specifically locally sourced revenues (LSR), internal revenue allotment (IRA), and other intergovernmental fiscal transfers. It excludes irregular sources of funds like national aid, grants, financial assistance,

loan proceeds, and sales of assets. The detailed income classification is presented in Table 2-2.

Table 2-2. Income Classification of Local Governments in the Philippines

	LGU Income Classification	Average Annual Income (in PhP)
Province	1 st	> 450 million
	2 nd	360 – 450 million
	3 rd	270 – 360 million
	4 th	180 – 270 million
	5 th	90 – 180 million
	6 th	< 90 million
Cities	1 st	> 400 million
	2 nd	320 – 400 million
	3 rd	240 – 320 million
	4 th	160 – 240 million
	5 th	80 – 160 million
	6 th	< 80 million
Municipalities	1 st	> 55 million
	2 nd	45 – 55 million
	3 rd	35 – 45 million
	4 th	25 – 35 million
	5 th	15 – 25 million
	6 th	< 15 million

Source: Department of Finance Order No. 23-08, July 29, 2008

2.3 History of Decentralization in the Philippines

The Philippines was at the forefront of the decentralization efforts in East Asia, initiating local governance reforms even before the broader wave of decentralization in the 1990s and 2000s (Matsuda, 2011; World Bank and Asian Development Bank, 2005a; World Bank, 2005b). It is also among the more decentralized countries in East Asia in terms of devolution (Smoke, 2015).

Historically, political decentralization³ in the Philippines can be traced back to the First Philippine Republic from 1898 to 1902, with the reorganization and Filipinization of the country's provinces and municipalities after the Spanish colonization period (Bello Brillantes, 1987). Local autonomy was observed with the organization of legislative assemblies at the municipal level, with members chosen indirectly by the people. The municipal captains were then responsible for the elections of officials for the provincial assembly.

The country took a step back in its political decentralization efforts during the American colonialization period. "All local governments were placed under military control primarily for control and security purposes" (Bello Brillantes, 1987, p. 134). Article VII Section 11 of the 1935 Philippine Constitution under the Commonwealth Government stated that "the President shall...exercise general supervision over all local governments". In 1959, a few years after the country gained its political independence from the Americans, the first fiscal autonomy act was passed. Republic Act 2264, entitled "*An Act Amending the Laws Governing Local Governments by Increasing their Autonomy and Reorganizing Provincial Governments,*" gave the city and municipal governments greater fiscal, planning, and regulatory powers. For example, the taxing powers of the cities and municipalities were broadened within the framework of national tax laws; the local governments were also given the powers to adopt zoning and planning ordinances and implement any public works projects they financed.

In 1967, the government passed Republic Act 5185, or the Decentralization Act of 1967, which "increased the financial resources of the local governments broadening their decision-making latitude over fiscal, personnel, and other substantive matters ."At the time, the country's political decentralization and autonomy policy

³ Political decentralization aims to devolve more political decision-making powers to the local government and increase citizen's participation (OECD, 2019). It usually serves as a precursor to the decentralization of taxing and spending powers to local governments; See 3.2. Political decentralization then aims to devolve political decision-making power away from the central government, define the roles and responsibilities of each level of government, and increase citizen's participation.

was focused on transforming local governments into “effective instruments which people can, in a most genuine fashion, govern themselves and work out their destinies .”In other words, political decentralization in the Philippines emphasized the need to strengthen citizens’ participation in the government’s policy-making processes. Such a goal is a logical and essential consideration in implementing these reforms.

The country again experienced a setback in its decentralization efforts when Martial Law was imposed in 1972. Although the administration led by then-President Ferdinand Marcos pushed forward some pro-decentralization laws and policies, the general political conditions under his authoritarian rule either neutralized or negated the effects of said policies. For instance, Article II Section 10 of the 1973 Marcos Constitution provided that “Each local government unit [provinces, cities, municipalities, and barrios] shall have the power to create its own sources of revenue and to levy taxes subject to limitation as may be provided by law” (p. 136). In other words, the taxing powers were explicitly stated in the Constitution, even during Martial Law. However, the Local Government Code promulgated to operationalize the local government provisions in the Constitution also explicitly provided that the “President would continue to exercise general supervision over the local governments to ensure that local affairs are administered according to law” (Bello Brillantes, 1987, p. 137). The Marcos Administration also kept the power to appoint and replace local government officials within its bounds.

The end of Martial Law in 1986 and the rise of a new political administration also signaled changes in the country’s decentralization systems. The new Constitution promulgated in 1987 explicitly highlighted that the “State shall ensure the autonomy of local governments” (Article 2 Section 25 of the 1987 Philippine Constitution).

As can be observed from the historical background described above, efforts toward a more decentralized system were a long process of pushes and pulls to and away from decentralization as administrations changed over time.

2.4 Roles and Responsibilities of the Philippine Local Governments Under the Local Government Code of 1991

In 1991, amid decentralization trends, the Philippines also took a giant leap to further institutionalize the local government autonomy provisions in the 1987 Philippine Constitution. Republic Act 7160: An Act Providing for a Local Government Code (LGC) of 1991 was passed, and it envisions local governments who "enjoy genuine and meaningful local autonomy to enable them to attain their fullest development as self-reliant communities and make them more effective partners in the attainment of national goals" (Sec. 2 of the LGC, 1991).

The LGC currently serves as the basis and guiding legislation on the implementation of decentralization in the Philippines. The LGC aimed to delegate more expanded revenue and expenditure roles to the local governments as well as a larger scope for citizens' participation in local governance than the previous decentralization efforts discussed in Section 2.6 (Tapales, 1993; Manasan, 1992; Brillantes, 1987; Capuno, 2002).

Section 17 of the LGC spelled out the specific goods and services devolved to each level of LGU from the national government, which includes economic, infrastructure, social, industrial, and research and development services. For the barangays, the smallest unit of local government in the country, most of the devolved functions are related to the maintenance of health and infrastructure facilities, establishment of multi-purpose halls and other similar facilities, and operation of agriculture facilities established by the city/municipality. The cities and municipalities are expected to implement the bulk of devolved programs and projects, including but not limited to agricultural extension and research services and facilities, primary health care services, social welfare services, solid waste disposal and environmental management systems, infrastructure facilities funded out of municipal and city funds, and tourism facilities, among others. The provinces, the biggest unit of local government, are responsible for the implementation of some agriculture extension and research services and facilities such as animal

breeding stations and assistance in the organization of farmers' and fishers' cooperatives, secondary and tertiary health services, relief operations, infrastructure facilities funded out of provincial funds, housing, investment support services, and tourism development and promotion programs. The details of the functions and responsibilities devolved to each level of LGU in the country can be found in Appendix A.

The local governments were given the power and authority, through Section 18 of the Local Government Code, to create their own revenue sources and levy taxes and fees, which they could use exclusively within their jurisdiction.

However, the national government reduced the amount of intergovernmental transfers several times in the past as an austerity measure after a public sector deficit. As such, the delegation of expenditure responsibilities to the local governments had not been fully implemented until 2022.

Table 2-3 illustrates the taxing powers of the different tiers of LGUs in the Philippines. Real property taxes can only be levied by the provinces and cities. The provinces share their proceeds with the municipalities and barangays based on percent sharing defined by the LGC of 1991. Meanwhile, cities share a percentage of their collections with their barangays. Other taxes which can only be levied by the provinces and cities are on the transfer of real property ownership, the business of printing and publication, franchise, persons engaged in the practice of their profession requiring government examination, delivery vans and trucks for specific products, and idle lands. Tax on sand, gravel, and other quarry resources can only be levied by cities and provinces, but proceeds must also be shared with the municipalities and barangays. The provinces and cities can also impose taxes on the operation of amusement places. However, provinces share the proceeds equally with the municipalities where the amusement places are located. On the other hand, tax on the gross sales of businesses and community taxes can only be levied by cities and municipalities, not the provinces.

Table 2-3. Taxing Powers of Local Governments in the Philippines

Tax Base	Cities	Provinces	Municipalities	Barangay
Transfer of Real Property Ownership	X	X		
Business of Printing and Publication	X	X		
Franchise	X	X		
Sand, Gravel, and Other Quarry Resources	X	X	*	*
Professionals	X	X		
Amusement Places	X	X	*	
Delivery Vans and Trucks	X	X		
Real Property	X	X	*	*
Idle lands	X	X		
Business	X		X	X
Community Tax	X		X	**

Note: X - tax is collected by the LGU tier

* - tax collected by the province and shared to municipalities and barangays

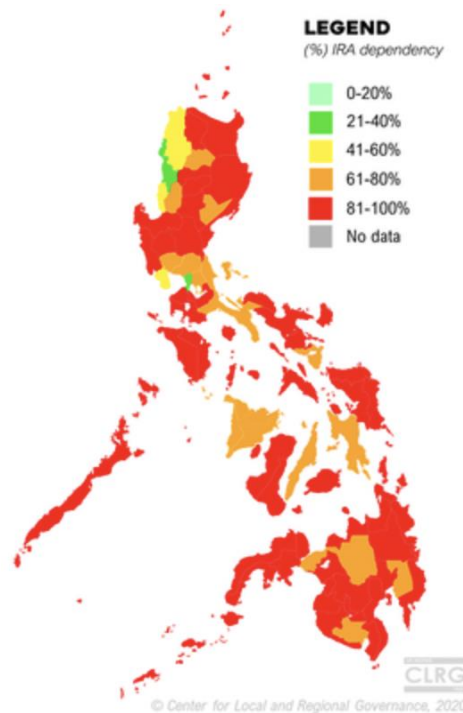
** - tax collected by the city or municipality and shared to barangays

Source: Section 17, Local Government Code of 1991; Llanto, 2012

2.5 Internal Revenue Allotment: The Philippine Intergovernmental Fiscal Transfer System before the Supreme Court Ruling

In theory, decentralization could lead to inequities in service delivery among local governments because of differences in the local governments' fiscal abilities. These differences become the justification for intergovernmental transfers from the national government. In the Philippines, the primary vehicle for ensuring income or revenue equality between the national and local governments (vertical equality) and among the local governments themselves (horizontal equality) is the IRA (Yeeles, 2015). The IRA comprises around 81 to 100 percent of the total revenue of the local government in the Philippines as illustrated in Figure 2-3.

Figure 2-3. *Percentage of IRA in the Total Revenues of the Philippine Provinces, 2020*



Source: Center for Local and Regional Governance, 2020, <https://localgov.up.edu.ph/ira-dependency-of-philippine-provinces.html>

The Philippine Local Government Code of 1991 specified the guidelines on how the IRA is computed and distributed. The Code stipulated that the local governments would have a just share in national taxes which is automatically and directly released to them. Section 284 of the Code assigned 40 percent of the national taxes to LGUs based on the collection of taxes of the third fiscal year preceding the current. For example, the computation of the IRA for the LGUs for fiscal year (FY) 2022 is based on the tax collection in FY 2019. The calculation includes national internal revenue taxes, specifically income taxes, estate and donor's taxes, value-added taxes, other percentage taxes, excise taxes, and documentary stamp taxes.

Table 2-4 shows that the Philippines uses a two-stage population and land area-based formula to distribute the IRA. In the first stage, 40 percent of proceeds from national taxes are distributed to the LGUs in this order – 23 percent goes to the

provinces, 23 percent to cities, 34 percent to municipalities, and 20 percent to the barangays. In the second stage, the shares of the provinces, cities, and municipalities are distributed to each LGU through a weighted criterion: 50 percent population, 20 percent land area, and 25 percent equal sharing. Equal sharing entails that a certain amount from IRA is equally divided among LGUs.

Table 2-4. *Distribution Formula of the Internal Revenue Allotment (IRA) in the Philippines*

First Stage: Among LGUs		
	Share	No. of LGUs
Provinces	23%	81
Cities	23%	146
Municipalities	34%	1,488
Barangays	20%	42,046
Second Stage: Through a Weighted Criteria		
Population	50%	
Land Area	25%	
Equal Sharing	25%	

Source: Section 285, Local Government Code of 1991

Meanwhile, the share of the barangays is computed differently: PhP80,000 for each barangay with a population of not less than 100 inhabitants. The balance is then allocated as follows: 60 percent based on population and 40 percent equal sharing. The distribution of the IRA has been implemented since the inception of the Local Government Code of 1991.

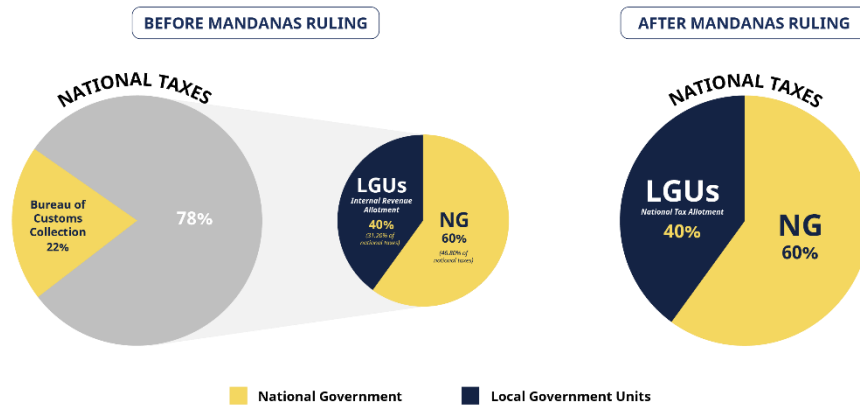
2.6 Recent Reforms on the Philippine Intergovernmental Fiscal Transfer

System: From IRA to National Tax Allotment (NTA)

In 2013, two local chief executives filed petitions challenging the justness of how the IRA was computed. Article X Section 6 of the 1987 Philippine Constitution stipulated that the “Local government units shall have a just share, as determined by law, in the national taxes which shall be automatically released to them.” Banking on this provision, they petitioned the Supreme Court to compel the national government to compute the IRA based on the “just shares” of the LGUs. In other words, they asked to expand the types of taxes included in the computation from national internal revenue taxes to other national taxes.

Following this petition, the Supreme Court ruled that “the determination of the just share of the LGUs should not be based solely on national internal revenue taxes but on all national taxes.” In other words, all collections of national taxes shall now be included in the computation of the base of the just share of the LGUs based on the same formula. Meanwhile, the distribution formula of the intergovernmental transfers among local governments remained the same – mainly population and land-area based. Figure 2-4 provides a more detailed illustration of the comparison between the tax basis for the computation of the IRA before and after the Supreme Court ruling. As illustrated, local governments only received shares from national internal revenue taxes, comprising around 40 of the national taxes collected by the national government. As seen in the same Figure, the computation did not include fees and taxes collected by the Bureau of Customs (BOC). With the execution of the Supreme Court Ruling, the calculation now includes taxes collected by the BOC, increasing the shares of the LGUs to 40 percent of the taxes collected by the national government.

Figure 2-4. National and Local Government Revenue Sharing Before and After the Mandanas Ruling



Source: Mandanas Ruling.PH, n.d.

Specifically, Table 2-5 enumerates the specific types of taxes included in the computation of the IRA before and after the Mandanas ruling. Before the fiscal year 2022, it was computed using the government's national internal revenue tax (NIRT) collections three years preceding the current year. The NIRTs primarily include income tax, estate and donor's tax, value-added tax (VAT), excise tax, and documentary stamp tax. After implementing the Mandanas ruling in 2022, the IRA is now computed using the NIRTs plus other national taxes like tariffs and customs duties, national taxes collected from the exploitation and development of national wealth, and franchise taxes. It also includes 50 percent of VAT and 30 percent of all other national taxes collected in the country's Bangsamoro Autonomous Region of Muslim Mindanao and 85 percent of excise taxes on tobacco products.

Table 2-5. Tax Bases of the NTA Before and After the Mandanas Ruling

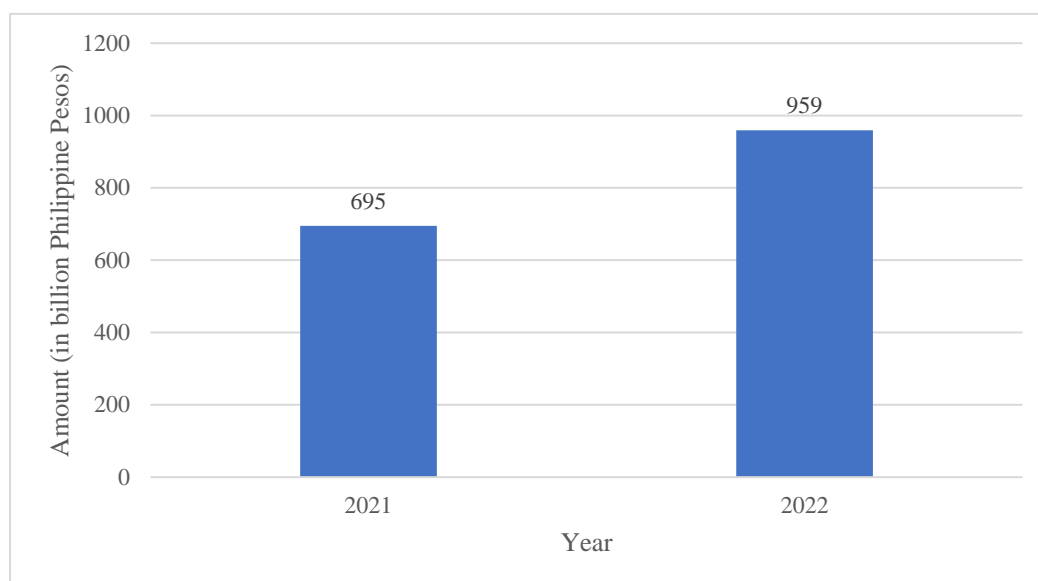
NTA sources before FY 2022	NTA sources starting FY 2022
<p>NIRTs</p> <ul style="list-style-type: none"> • Income tax • Estate and donor’s taxes • Value-added tax • Other percentage taxes • Excise taxes • Documentary stamp taxes 	<p>NIRTs</p> <p>Tariffs and customs duties</p> <p>50% of VAT collected and 30% of all other national taxes in the ARMM</p> <p>60% of national taxes collected from exploitation and development of national wealth</p> <p>85% excise taxes on tobacco products</p> <p>5% of franchise taxes</p>

Source: Manasan, 2020

Considering these changes in the computation basis, the IRA was also renamed National Tax Allocation (NTA) to highlight that it consists of national taxes and not just NIRTs. The term NTA will be used in the succeeding parts of the paper to refer to the intergovernmental transfer in the country for consistency.

Due to this reform, the total amount of NTA distributed to the LGUs increased from PhP695 billion in 2021 to PhP959 billion in 2022, as illustrated in Figure 2-5.

Figure 2-5. Total Amount of National Tax Allocation for the LGUs, 2021-2022



Source: Department of Budget and Management, 2022

After this, the national government decided to transfer to the local governments the responsibility to deliver basic services and facilities through Executive Order (EO) No. 138, Series of 2021, entitled “*Full Devolution of Certain Functions of the Executive Branch to Local Governments, Creation of a Committee on Devolution, and for Certain Purposes.*” The EO defined devolution as “the act by which the national government, as may be allowed by existing laws, confers power and authority to the various LGUs to perform specific functions and responsibilities” (p. 3). The functions and services planned to be devolved are those stipulated under Section 17 of the 1991 Local Government Code, the complete list of which can be found in Appendix A of this paper. Meanwhile, the taxing powers of the local governments remain the same, as shown in Table 2-6.

To facilitate the smooth transition of functions for devolution, the national government agencies and LGUs are all required to prepare devolution transition plans (DTPs). The individual DTPs provide details on the specific programs and projects that will be devolved. Since the devolution process is a major undertaking, all DTPs are expected to be implemented gradually within three years – from 2022-2024.

Table 2-6. Taxing Powers of Local Governments in the Philippines after the Reform

Tax Base	Cities	Provinces	Municipalities	Barangay
Transfer of Real Property Ownership	X	X		
Business of Printing and Publication	X	X		
Franchise	X	X		
Sand, Gravel, and Other Quarry Resources	X	X	*	*
Professionals	X	X		
Amusement Places	X	X	*	
Delivery Vans and Trucks	X	X		
Real Property	X	X	*	*
Idle lands	X	X		
Business	X		X	X
Community Tax	X		X	**

Source: Note: X - tax is collected by the LGU tier

* - tax collected by the province and shared to municipalities and barangays

** - tax collected by the city or municipality and shared to barangays

Source: Section 17, Local Government Code of 1991; Llanto, 2012

The government recognizes that these reforms, the increase in NTA and the devolution of function, might disadvantage some local government units.

As such, a fiscal equalization system called the Growth Equity Fund (GEF) was also established in 2022. EO 138 pointed out that the GEF aims to address the issues of “marginalization, unequal development, high poverty incidence, and disparities in the net fiscal capacities of LGUs.” In other words, the GEF will be provided to the LGUs that: 1) do not have the adequate financial capacity to allocate funds and; 2) are technically weaker in implementing devolved services and topping up their National Tax Allotment (NTA).

The Implementing Rules and Regulations (IRR) of EO 138 stipulated that the amount for the GEF will be included by the country’s Department of Budget and Management (DBM) in the National Expenditure Program (NEP) starting FY 2022

(p. 20). For the first year of implementing the reforms, the government allocated around 1.25 billion pesos as part of the GEF for local governments.

Local Budget Circular (LBC) No. 146, Series of 2022, released by the DBM, spelled out the criteria for the distribution of the GEF to the levels of LGU in the country, as follows: 1) ten percent to provinces; 2) ten percent to cities; 3) seventy percent to municipalities; and 4) ten percent to the barangays (p. 2).

The same circular provided additional guidelines on the distribution of the equalization fund within each level of LGU. The following criteria are primarily used: i) income bracket, 2) poverty incidence, and 3) per capita FY 2022 NTA (p. 2).

The income bracket of the LGUs, which was discussed in the earlier part of this chapter, is utilized in the initial determination of the qualified recipients of the GEF. Only LGUs belonging to the following income brackets are part of the allocation: 1) provinces belonging to income bracket 4; 2) cities belonging to income bracket 4; 3) municipalities belonging to income brackets 4 and 5; and 4) geographically isolated and disadvantaged barangays located in municipalities belonging to income brackets 4 and 5 (DBM, 2022, p. 3).

The LGUs in the country's autonomous region, the Bangsamoro Autonomous Region in Muslim Mindanao, are not included in the allocation of the FY 2022 LGSF-GEF (p. 2).

As a rule, the GEF will be used by the recipient LGUs to cover their funding requirements for priority programs, projects, and activities under the devolution transition plans (DTPs) and gradually enable the full and efficient implementation of the devolved functions and services.

To sum it up, the reforms on the intergovernmental fiscal transfer system involve: 1) expanding the tax bases for the computation of the intergovernmental transfer system of the country, thereby increasing the total shares of the local governments,

and 2) implementing a GEF which aims to address issues on marginalization, unequal development, high poverty incidence and disparities in the net fiscal capacities of the LGUs.

2.7 Problem Statement: Disparity Issues on the Philippine Intergovernmental Fiscal Transfer System

Several issues and challenges have long hounded the country's intergovernmental fiscal transfer system. First, the intergovernmental transfer system in the country has long been criticized for having an unequalizing effect on regional development (Yeeles, 2015, p. 391). In other words, the NTA increases disparity among the country's local government units. Manasan (2007) argued that the country's intergovernmental system "1) creates vertical imbalances leading to the inadequacy of the IRA [NTA] to fund the expenditure functions assigned to them, and 2) lacks an equalizing feature in the IRA [NTA] distribution formula so that disparities in the fiscal capacities of LGUs are not adequately addressed, thereby widening the geographic disparities in human development outcomes and level of economic development" (p. 2). The country's intergovernmental transfer system is population-based and does not have an adequate fiscal equalization system to bridge the gap in fiscal capacities among the local governments. Before the reforms, the country's intergovernmental transfer system was computed based on population and land area. There is an equal sharing component, but it is distributed as literally an equal amount across all LGUs and does not consider the fiscal capacities of the LGUs. Thus, previous studies on horizontal equality reported wide geographic disparities among local governments.

With the recent increase in the total shares of the local governments from the country's tax collections coupled with the implementation of a fiscal equalization system called the GEF, there is a need to reassess how these would affect the level of revenue disparity among local governments in the country.

High levels of revenue inequality across local governments may lead to inefficiencies and gaps in service delivery among LGUs, which contradicts the

rationale behind intergovernmental fiscal transfers. Results from this study could be a helpful input in formulating policies and mechanisms toward a more equitable intergovernmental transfer system for the country.

CHAPTER 3. REVIEW OF RELATED LITERATURE

3.1 Introduction

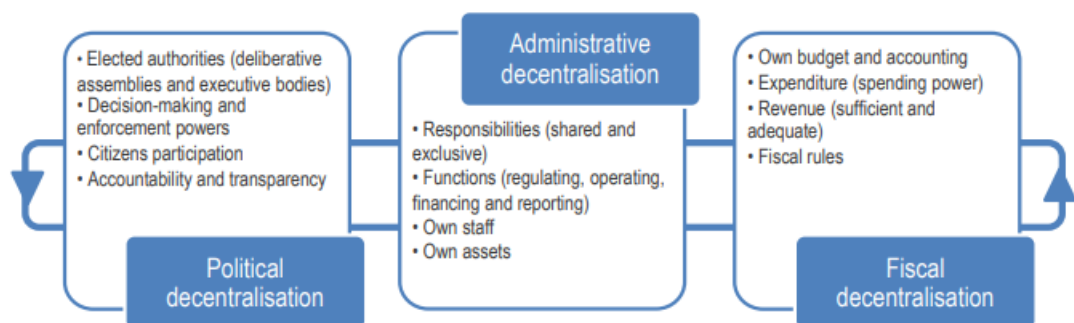
This chapter contains a detailed discussion of findings from related studies and relevant theories on decentralization, intergovernmental fiscal transfers, and statistical measures of revenue disparity. In the later part of the chapter, existing studies on intergovernmental fiscal transfers in the Philippines was discussed. This chapter also presents the research gaps, and how it relates to this study.

3.2 Defining the Concept of Decentralization

Several organizations and institutions have a more or less common understanding of decentralization as a concept. OECD (2019) defines decentralization as the “transfer of powers and responsibilities from the central government level to elected authorities at the subnational level (regional governments, municipalities, etc.), having some degree of autonomy” (p. 3).

Various literature sources came up with several components and variations of decentralization. OECD (2019) categorized decentralization into three distinct components: political, administrative, and fiscal, as illustrated in Figure 3-1.

Figure 3-1. *Political, Administrative, and Fiscal Decentralization*



Source: OECD, 2019, p. 4

Political decentralization often results from the view that “over-concentration of political power has been a problem and that fragmentation of political powers better enables the checks and balances needed to ensure democratization” (OECD, 2020, p. 18). Political decentralization then aims to devolve political decision-making power away from the central government, define the roles and responsibilities of each level of government, and increase citizens’ participation. Administrative decentralization is more concerned with transferring operational responsibility from a higher level to a lower level of organization (OECD, 2020, p. 18). The third form of decentralization is fiscal decentralization. It involves the transfer of expenditure and revenue generation responsibilities from the central to subnational levels of government. Several policy decision points must be taken into consideration when implementing fiscal decentralization: 1) division of spending assignments among the levels of governments; 2) revenue sources of central and subnational governments; 3) degree of autonomy of each level of government; and 4) financing and distribution of intergovernmental transfers (OECD, 2020, p. 19).

In practice, separating these three forms of decentralization is difficult as they often overlap. Decentralization is usually a mix of political, administrative, and fiscal decentralization. Thus, the degree to which one form is greater than the other depends on the implementation and the way different measures are applied in the system. For instance, in cases where subnational governments were given a relatively high degree of spending and revenue autonomy, there are still redistributive expenditure functions, like education, health, and other social services. Other local public services like local infrastructure, local schools, or waste and sewerage services usually need less central government intervention (OECD, 2020, p. 19).

Smoke and White (2005) mentioned three variations of decentralization – deconcentration, delegation, and devolution - based on the degree or extent to which responsibilities are shared between the central and subnational governments. Deconcentration entails that subnational governments act as agents of the center. In other words, the subnational governments are more of regional branches or agents

with some degree of autonomy but still subject to guidelines from the central governments. Smoke and White (2005) pointed out that one of the downsides of this arrangement is that the local governments usually lack authority over the scope and quality of the services and how they are provided. Delegation, the second variation, gives more independence to subnational governments than deconcentration. In delivering certain services, the central governments determine what must be spent and set minimum service standards. Still, the subnational governments define the details to reflect local circumstances better. Under delegation, maintaining the balance between central and local government is crucial and is influenced by the design of intergovernmental transfers and the degree and nature of central monitoring. The most complete form of decentralization is devolution. “Independent or semi-independent and, typically, elected subnational governments are responsible for delivering a set of public services and for imposing fees and taxes to finance those services” (p. 6). With devolution, other levels of government may still grant intergovernmental transfers, but the subnational governments now have more freedom to select which types and levels of services they will provide.

Decentralized systems also usually implement a mix of deconcentration, delegation, and devolution. In theory and principle, Smoke and White (2005) suggest that efficiency under devolution should be improved by giving the citizens greater influence over the services and by providing local governments with greater incentives to mobilize resources.

Governments implement decentralization for various political, historical, and economic reasons. The classic theory of decentralization anchored on Oates’ decentralization theorem (1972) argued that “it will always be efficient for local governments to provide the Pareto-levels of output for their respective jurisdictions than for the central government to provide any specified and uniform level of output across all jurisdictions.” In other words, providing local public goods is more desirable at the local government level due to the varying need and preferences across different jurisdictions. Aside from the motivation to make public service

delivery more efficient, several countries also move towards decentralization to increase local democratic control and accountability for regional and local development policies (OECD, 2019).

In the past, development economists discouraged decentralization, especially in developing countries, by pointing out that centralizing control over the economy is the best way to maximize growth (Smoke, 2006). The lack of managerial and technical expertise has also been used in the past as an excuse to stick with centralized governance.

However, centralized planning has not always been successful in practice. Changes in the political landscape and international economic conditions have also encouraged the development of local governments, especially in developing countries (Smoke, 2006). As such, almost all countries worldwide have already moved towards decentralization to some extent. The extent of decentralization varies significantly from country to country (OECD, 2019). The degree of accountability and control of the central and subnational governments also vary depending on the country. The World Bank reported that over 80 percent of developing and transition countries of Eastern and Central Europe and the former Soviet Union were already experimenting with decentralization in 1999. Relatedly, a study by Martinez-Vasquez in 2011, which used the share of subnational governments in total government expenditures as a measure of decentralization, revealed that several Asian countries have the highest degree of decentralization. Some were even higher than Australia and New Zealand in the same period. East Asia, in particular, was way ahead of its neighbors, South and Southeast Asia, in terms of decentralization. Around 70 percent of total expenditures in China, 66 percent in India, 60 percent in Japan, and 45 percent in the Republic of Korea and Vietnam, are allocated at the subnational level.

3.3 Defining Intergovernmental Fiscal Transfers

As discussed above, decentralization implies giving the local governments more expenditure and revenue generation functions. Particularly in the context of decentralization, there exists a mismatch between the costs of public services that the local governments are expected to undertake vis-à-vis the available resources (Kim and Smoke, 2002). The mismatch between the income generating – mainly from taxation – and expenditure powers justifies the need for intergovernmental fiscal transfers.

Intergovernmental fiscal transfers are financial resources transferred between or among local government levels. These funds are allocated to roughly match the ability of the local governments to raise revenues with the spending needs at all levels of the government (Shah, 2006).

Smoke (2006) pointed out the need for an appropriate intergovernmental transfer system in the implementation of fiscal decentralization programs. Intergovernmental transfer systems are implemented along fiscal decentralization programs for several reasons. First, as mentioned, there usually exists a mismatch between the costs of expenditures that local governments are expected to handle vis-à-vis the available resources. Second, local governments have sizeable differences in terms of revenue-raising capacities. It does not just have an implication on equality but also on the efficiency of service delivery, especially for local governments with lower resource levels. Lastly, Kim and Smoke (2002) also pointed out that intergovernmental fiscal transfers are necessary to ensure that the basic national priorities of the national government can be implemented in all local governments (e.g., health and education) (p. 1). In general, the primary goal of the transfer is to ensure that different local governments can provide the same level of services to the public despite the differences in local revenue-generating capacities.

Ahmad and Craig (1997) classified two ways funds are transferred across different levels of government. First, through a revenue sharing system which can take any

of the following forms: sharing tax bases or pooling taxes and sharing it afterward using a predetermined formula. Second, transfers can take the form of grants, which can either be unconditional or conditional. Slack (2006) distinguished between conditional and unconditional transfers. Unconditional transfers, which are released without conditions, may be provided on a per capita basis or depending on a formula that considers various factors such as the local government's spending needs, population, and the size of its tax base, among other possible considerations.

Meanwhile, conditional transfers are funds that must be spent on specific expenditure items like roads and bridges. There are various typologies for conditional transfers – either lump-sum or matching transfers. Lump-sum is a block grant which the recipient local government can spend on a specific program or set of programs. On the other hand, matching transfers are grants which require counterpart funding from the recipient local government.

Intergovernmental transfers that generally aim to “offset the differences in the revenue-raising capacity or public service cost” of local governments are also called fiscal equalization schemes (OECD, 2007). Over the years, different fiscal equalization arrangements have emerged. The OECD (2007) distinguished these schemes in terms of the direction of the transfers – horizontal vs. vertical – and the type of disparity being addressed – revenue vs. cost equalization. With horizontal equalization, funds are transferred between sub-central governments. Meanwhile, vertical equalization transfers funds from the central to local governments. The main distinction between these two is how funds are generated. In vertical equalization, funds are collected through national taxation (e.g., value-added tax). In horizontal arrangements, funds are gathered from and transferred between local governments (Yeeles, 2015). In terms of the type of disparity that the system attempts to address, revenue equalization aims to reduce disparities in the local government's per capita revenue-raising capacity. On the other hand, cost equalization is focused on reducing the differences in the per capita cost of delivering a standard set of public services.

Several literature sources pointed out that the implementation of intergovernmental transfers and fiscal equalization systems is not a “one size fits all.” In other words, there is not one ideal type of transfer that fits the context of all countries. The design and choice of intergovernmental transfer mechanism depend on the objectives of the policymakers (Ahmad and Craig, 1997). Policymakers usually implement a mix of different types of transfers depending on their intentions and goals.

Since these systems vary across countries, it is also difficult to make general recommendations on the appropriate structure of an intergovernmental transfer system. Careful research before the transfer design and monitoring during implementation must be undertaken to help the policymakers understand the system and make some adjustments as may be necessary (Smoke, 2006).

3.4 Rationale of Intergovernmental Fiscal Transfers

Intergovernmental fiscal transfers play an essential role not only in bridging the gap between the expenditure needs and revenue means of the local governments but also in “shaping expenditure priorities and have implications for the fiscal health, autonomy, and tax effort of recipient governments and for the efficiency and equity of public services provision” (Shah, 2006, p. 215). It is especially true for developing countries that rely on intergovernmental fiscal transfers to finance the expenditure needs of their national and local governments.

Existing literature points to five main economic justifications for providing intergovernmental fiscal transfers (Boadway et al., 1994; Shah, 2006).

First, as mentioned, fiscal imbalances or gaps exist between the ability of the various levels of local governments to raise revenues and their expenditure functions, which could result in fiscal deficits. These gaps happen due to several possible reasons: 1) disproportionate assignment of taxing powers and expenditure functions; 2) limited or unproductive tax bases assigned to local governments; 3) regional tax competition among local governments; and 4) level of taxation at the central government may be limiting the revenue-raising potential of the local

governments. Shah (2006) pointed out that the first three reasons for imbalances may be rectified by expanding the taxing powers of the local governments or through the implementation of unconditional or revenue-sharing transfers from the central governments.

Second, intergovernmental fiscal transfers are implemented to increase the efficiency of public service provision at the local government level. Specifically, the transfers are used to correct inefficiencies that arise from inter-jurisdictional spillovers. These happen because the benefits of a locally provided public good or service spill over to other jurisdictions, not contributing to the cost of said good or service. For instance, the benefits of an air pollution control project, state universities, or parks implemented by a particular local government spill beyond or can also be enjoyed even by non-residents. Since local governments make decisions based on the costs and benefits of a project within their jurisdictions, they tend to underprovide public goods and services. Broadway et al. (1994) and Shah (2006) argue that intergovernmental fiscal transfers, specifically conditional matching grants, are the practical way to address this concern.

Third, intergovernmental fiscal transfers support a country's economic stabilization objectives (Shah, 2006; OECD, 2007). In other words, transfers could serve as a cushion for local governments in times of lagging economic activities or income and employment shocks. Shah (2006) pointed out that capital grants may be the appropriate type of transfer for this purpose.

Fourth, intergovernmental fiscal transfers try to address horizontal fiscal inequality among the same level of local governments (Boadway et al., 1994; Shah, 200, OECD, 2007). Simply put, the goal is to ensure that all individuals in a country receive comparable public services at similar tax rates. Fiscal inequality happens because some local governments inherently have more abundant and valuable natural resources, thus better access to an expanded revenue base. Some local governments have relatively larger incomes and are more able to generate revenues from existing tax bases. Moreover, some local governments may have greater cost-

disability factors, such as isolated geographical locations or difficult terrain. Horizontal fiscal inequalities may be addressed or reduced by implementing a type of transfer called fiscal equalization grants.

Lastly, differences in the net financial benefits of the local governments result in not only fiscal inequality but also fiscal inefficiency. Differences in net fiscal benefits encourage migration based on fiscal considerations rather than productivity. Shah (2006) emphasized that migration based on the fiscal situation of an area alone is inefficient. For instance, fiscal-induced migration towards a resource-rich area can create social and economic problems. Like fiscal inequality, this issue can also be addressed by providing equalization grants based on the capacity of each local government to raise taxes (Boadway et al., 1994).

The concept and study of intergovernmental fiscal transfers are huge and complex. As discussed, there are also several rationales for allocating such funds. As such, it is important to note that this study primarily focuses on fiscal inequality reducing the function of said transfers.

3.5 Methods to Measure Inequality Based on Existing Literature

As mentioned above, fiscal equalization is one of the main purposes of providing intergovernmental transfers to local governments. In other words, intergovernmental transfers aim to ensure that each local government can provide the same level of services despite their differences in terms of fiscal capacities. As such, several studies have attempted to assess the effect of intergovernmental transfers focused on fiscal equalization since the start of the decentralization trend in the '80s. Existing empirical research on this area of concern utilized various methods for the analysis, usually patterned from several literature sources on regional disparities or inequality.

3.5.1 *Minimum (maximum) as percent of national average*

Bird and Tarasov (2002) used this measure, which is the ratio between the per capita value of the lowest (highest) region to the national per capita average, in examining fiscal imbalances for eight industrially developed federations – Australia, Austria, Belgium, Canada, Germany, Spain, Switzerland, and the United States. This measure takes the formula:

$$\frac{y_{min}}{\bar{y}} \times 100\% \quad \text{and} \quad \frac{y_{max}}{\bar{y}} \times 100\%$$

This measure is useful in providing a clear and dynamic illustration of changes in regional inequality among regions across the years as shown by Bird and Tarasov (2002). However, it may be difficult to make specific conclusions just based on this analysis.

3.5.2 *Maximum to minimum ratio (MMR)*

The maximum to minimum ratio (MMR) is a simple comparison of the region with the highest income, in terms of per capita gross regional domestic product (GRDP), to the region with the lowest (Bird and Tarasov, 2002; Shankar and Shah, 2003):

$$MMR = \frac{y_{max}}{y_{min}}$$

When MMR equals 1, it means that perfect equality exists. Meanwhile, the larger the values mean that regional inequalities exist. However, Bird and Tarasov (2002), warned of special cases which may affect the results of the analysis such as “city-states, sparsely populated territories, or sparsely populated rich territories” (p. 12).

3.5.3 Coefficient of Variation (CV)

The coefficient of variation (CV) is also commonly used in several studies to analyze and present regional inequalities (Akita and Lukman, 1995; Nagaraj et al., 1998, Bird and Tarasov, 2002; Shankar and Shah, 2003). It focuses on how scattered the values or data are around the mean. The CV may be unweighted or weighted as depicted in the following formula from Shankar and Shah (2003):

$$CV_u = \frac{\sqrt{\frac{\sum_i (y_i - \bar{y}_u)^2}{N}}}{\bar{y}_u}, \quad CV_w = \frac{\sqrt{\frac{\sum_i (y_i - \bar{y})^2 \frac{P_i}{P}}{P}}}{\bar{y}}$$

Akita and Lukman (1995) used the weighted CV to analyze interregional income inequalities in Indonesia from 1975 to 1992, with the gross domestic product (GDP) per capita as the main variable of interest. Nagaraj et al. (1998) utilized the same method to study income inequality across Indian states from 1960 to 1993. Like Akita and Lukman (1995), the authors used per capita gross domestic product of the 17 Indian states. Previous studies on inequality that used the coefficient of variation were mainly focused on how income is distributed across populations in different regions. However, the CV was not usually used alone to assess fiscal imbalances and the effect of intergovernmental fiscal transfers on fiscal inequalities.

Both the MMR and dispersion indices like the CV are simple and easy to interpret. But, researchers may need to exercise caution in terms of analysis because of these measures' sensitivity to outliers (Shankar and Shah, 2003). As such, it would not be easy to tell if high inequality is due to the way per capita incomes are distributed or just due to the outliers.

3.5.4 Theil Index

The Theil index, proposed by Theil (1967), is a measure of inequality that can be broken down into within-group and between-group inequality (Liao, 2016). In other words, the Theil index is most useful when comparing inequality between regions

or subgroups. OECD (2016) used Theil index estimation to analyze disparities in regional well-being based on eleven variables of interest: income, jobs, housing, health, education, safety, environmental quality, civic engagement, access to services, community, and life satisfaction. Many studies on revenue or fiscal inequalities utilized the Theil index for analysis.

For instance, this index was used in Bird and Tarasov’s (2004) assessment of regional fiscal imbalances for eight industrially developed federations – Australia, Austria, Belgium, Canada, Germany, Spain, Switzerland, and the United States. Said study utilized the Theil index with the following formula:

$$T = \sum_i \frac{y_i}{\bar{y}} \times \frac{p_i}{P} \times \log \left(\frac{y_i}{\bar{y}} \right)$$

Yeeles (2015) also used the same method to study geographical disparities in terms of local government income distribution in the Philippines.

$$T = \underbrace{\sum_{k=1}^m \left(\frac{n_k}{n} \times \frac{\bar{y}_k}{\bar{y}} \right) T_K}_{\text{Within}} + \underbrace{\sum_{k=1}^m \frac{n_k}{n} \left(\frac{\bar{y}_k}{\bar{y}} \right) \ln \left(\frac{\bar{y}_k}{\bar{y}} \right)}_{\text{Between}}$$

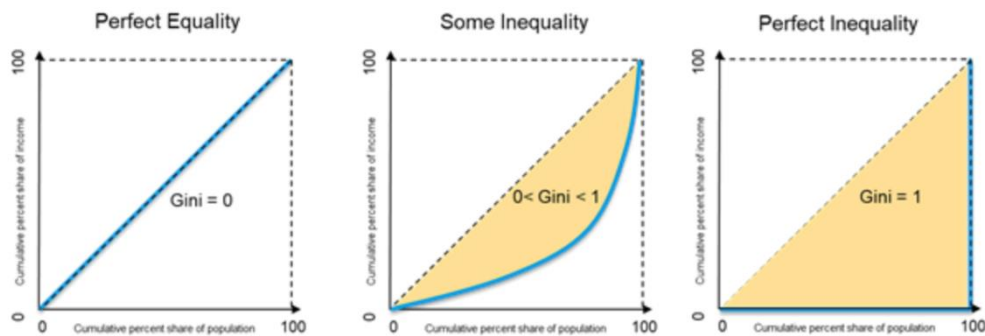
In Theil index, 0 represents perfect equality and ∞ for inequality. However, the index “does not have a straightforward representation and lacks the appealing interpretation of the Gini coefficient” (World Bank, n.d.).

3.5.5 Gini Index

One commonly used measure of income inequality or distribution is the Gini index, also called the Gini coefficient or Gini ratio (World Population Review, 2022). The Gini index estimates “the extent to which income distribution among individuals or households within an economy deviates from a perfectly equal distribution” (World

Bank, n.d.). The index is an inequality measure ranging between 0 and 1, where 0 represents perfect equality and one perfect inequality. In other words, a higher Gini index reflects a broader gap between the rich and the poor, while a lower index means otherwise. There are no established international standards to define the cut-off values of the Gini index. The International Monetary Fund (IMF) labeled the Gini index as 0 for perfect equality, $0 < \text{Gini} < 1$ for some level of inequality, and 1 for perfect inequality (see Figure 3-2). Others classify the Gini index more comprehensively as < 0.2 for perfect income inequality, 0.2-0.3 for relative equality, 0.3-0.4 for relatively reasonable income gap, 0.4-0.5 for the high-income disparity, and above 0.5 for severe income disparity (UNICEF China, n.d.).

Figure 3-2. Graphical Illustration of the Gini Index



Source: IMF, n.d.

In literature, the Gini index was applied depending on the objectives of the research. For instance, Shankar and Shah (2003), who studied regional income disparities with the GDP per capita as the main variable of interest, used the unweighted (G_u) and weighted (G_w) Gini index, as follows:

$$G_u = \left(\frac{1}{2\bar{y}_u} \right) \cdot \frac{1}{n(n-1)} \sum_i^n \sum_j^n |y_i - y_j|$$

$$G_w = \left(\frac{1}{2\bar{y}} \right) \sum_i^n \sum_j^n |y_i - y_j| \frac{p_i p_j}{p^2}$$

The study on regional inequality is a complex subject matter. As such, some studies used several measures altogether to conduct the analysis (see Shankar and Shah, 2003; Bird and Tarasov, 2004).

3.6 Review of Existing Studies on Intergovernmental Fiscal Transfers and Revenue Inequality

The same measures of inequality discussed above, which were usually used in the general study of regional disparities, were applied to the study of fiscal imbalances among subnational or local governments. Bird and Tarasov (2004) used six different measures – minimum and maximum as a percent of the national average, maximum to minimum ratio, weighted coefficient of variation, and their index – to assess fiscal imbalances using several variables of interest, namely: GRDP per capita, regional personal income per capita, total regional expenditure per capita, and own regional revenue per capita. In terms of regional expenditure and own revenue per capita, which are more relevant variables in examining fiscal imbalances among jurisdictions such as regions or local government units, the authors compared Canada with data from 1961-2000 and Australia from 1973-1991. Findings from this study revealed that the two countries exhibit substantial equalization for both variables. However, the weighted coefficient of variation was much lower in Australia than in Canada for some years.

Moreover, the equalizing effect of the intergovernmental fiscal transfers changed depending on the period for each country. For instance, the transfers had a more equalizing effect in Canada from 1961-85 than after 1985. Bird and Tarasov (2004) owed this to changes in transfer programs in the said country in the mid-1980s.

Hofman and Guerra (2005) also studied fiscal disparities and analyzed the extent to which fiscal grant systems try to minimize such disparities and equalize fiscal capacities among local governments in selected countries in East Asia, specifically China, Indonesia, the Philippines, and Vietnam. Based on the study, which used more descriptive measures like the maximum-minimum ratio (MMR) and

coefficient of variation (CV), the distribution of revenues per capita for the four countries becomes relatively more equal after the transfers. However, it is worth noting that the equalizing effect differed depending on the country – strongest in Vietnam but weakest in the Philippines. Moreover, significant disparities between the richest and poorest provinces persist even after the transfers (Hofman and Guerra, 2005). For instance, the revenue per capita of Vietnam's wealthiest province is 22 times larger than its poorest province. On the other hand, China and Indonesia's richest provinces were eight and ten times higher at the time of the study.

In another study conducted by the OECD (2007), the coefficient of variation and Gini index were used to assess whether fiscal equalization systems reduce fiscal disparities. The study involved the OECD member countries- federal - Australia, Austria, Canada, Germany, Italy, Spain, and Switzerland - and unitary - Denmark, Finland, Japan, Norway, Portugal, Sweden, and Turkey. Said study found that fiscal equalization systems in most OECD member countries positively reduce fiscal disparities, with a 19.2 percentage point reduction before and after equalization using the coefficient of variation and a 9.1 percentage point difference with the Gini coefficient as a measure.

The above-discussed multi-country studies showed that intergovernmental fiscal transfers with equalization mechanisms reduce fiscal disparities among local or subnational governments. However, Bird and Tarasov (2004) also warned that no simple or straightforward conclusion could be made from comparing various countries. First, the importance of these transfers as sources of revenue for local governments varies from country to country. For instance, unconditional fiscal equalization grants comprise the largest external source of revenues for Indonesia and the Philippines, but for China and Thailand, conditional grants play a more prominent role (Hofman and Guerra, 2005). Depending on the country's policy, conditional grants may be implemented with or without equalization mechanisms. Thus, they can also either increase or decrease fiscal inequalities.

Second, different countries implement different equalization systems. Thus, the implications of the disparity between such systems may not be directly comparable. For instance, although Australia and Canada are both federal countries, they have different equalization systems. Australia considers both the State's costs of providing public services, its capacity to raise revenues, and the specific purpose funds they receive from the national government in the distribution of equalization grants (Spasovejic and Nicholas, 2013). Meanwhile, Canada's system is more focused on the fiscal capacities of its subnational governments, which pertain to the "revenues a province could raise if it were to tax at the national average rate" (DOF Canada, 2000, How Equalization Works section, para. 1). In other words, the difference in the expenditure needs of the provinces are not considered. The differences have implications for the level of fiscal disparities between these countries.

Lastly, country-specific policy developments in a certain period may also affect fiscal disparity among subnational governments. For instance, in Bird and Tarasov's (2004) comparative study on the fiscal equalization schemes of Canada and Australia in the '90s, they found that the transfers were more equalizing in Canada during a specific period, possibly due to changes in said country's transfer, programs within the study period.

As mentioned by Bird (1986), each country is essentially doing things their way - designing fiscal equalization policies and transfers as they think is appropriate and, depending on their intentions, equalizing to the extent they choose to do so, and providing different degrees of responsibilities and fiscal autonomy to the local governments. Intergovernmental fiscal transfer systems are country specific. Thus, multi-country studies cannot produce simple conclusions or guidelines on which specific system must be adopted or what the countries can and should do to reduce the disparities.

Considering the points mentioned above, some researchers also attempted to investigate the effect of intergovernmental fiscal transfers and fiscal equalization systems on fiscal disparities and imbalances using country-specific studies.

A study conducted by Primorac (2015) attempted to assess the effectiveness of fiscal equalization instruments in Croatia. The country's fiscal equalization system is mainly revenue-based, wherein personal income tax (PIT) collection by the government is distributed to the local governments based on geographical criteria but with preferential treatment to areas of special state concern (ASSC) and hill and mountain areas (HMA) (Primorac, 2014, 2015). These areas are allowed to retain 90 percent of the PIT collected in their jurisdiction, while the remaining 10 percent is distributed to the county that the ASSC and HMA belong to. Moreover, LGUs in the ASSC and HMA do not have to contribute to the equalization fund for decentralized functions. Primorac (2015) argued that the Croatian equalization system might not be effective since preferential treatment to weaker LGUs is "based on their geographic location rather than financial criteria" (p. 299). The same study used the Gini index to measure the degree of inequality in fiscal capacity per capita of the local governments. Fiscal capacity in Croatia refers to the locally generated income of the LGUs plus those received through equalization grants for decentralized functions (Primorac, 2015). It was found that although some government grants were a little effective in reducing fiscal imbalances, grants from the equalization fund for decentralized functions and the PIT revenue-sharing arrangements were not effective. Bajo and Bronic (2007) suggest that the Croatian national government should consider the economic and fiscal capacities of the local governments in the criteria for allocating grants and sharing the personal income tax.

In Germany, Kowalik (2015) assessed the horizontal fiscal imbalance before and after the reunification. Horizontal fiscal imbalance happens because of "revenue or expenditure differences between states" (Khan and Agrawal, 2016, p. 125). In other words, a gap becomes evident in the resources between the same level of local or subnational governments. The measures of inequality discussed in Section 2.4 of

this chapter – minimum (maximum) as a percent of national average, maximum to minimum ratio, coefficient of variation, and Theil and Gini index – were used for the analysis with regional GDP per capita as the variable of interest. Aside from the common measures discussed, the study also used other simple descriptive measures like range and relative mean deviation and statistical measurements like the Hoover and Coulter coefficient. Results showed that horizontal fiscal imbalances increased after reunification. It was owed to large disparities between "old" and "new" länder (German states) (Kowalik, 2015).

Japan's equalization system for the local governments is a demand-based system called the local allocation tax (LAT). The LAT aims to "rectify the disparities among the financial capabilities of local governments" (Kimura, 2015, p. 3). The share of a local government to the LAT depends on the difference between its standard financial requirements and revenue. Miyazaki (2018) conducted a study investigating regional inequality in Japan's general revenues and local taxes, including the LAT, using general revenues per capita with breakdowns for local allocation tax, local corporate tax, and other local taxes. Analysis and presentation of data for the 47 prefectures were done through graphs and the Gini index. Results showed that the LAT "expands the inequality in general revenues per person" (p. 347). To reduce the inequalities, Miyazaki (2018) recommended that universal reduction of the LAT might be more effective in correcting revenue inequality instead of reforms on local corporate or local consumption taxation.

Like the Philippines, equalization grants in Indonesia comprise the largest share of fiscal transfers from the national to the local governments (Hofman and Guerra, 2005). The grant, called *dana alokasi umum* (DAU), is based on the local government's revenue capacity and spending needs. To be more specific, expenditure needs are determined by the local government's population, poverty rate, land area, and construction cost index. On the other hand, revenue capacity is based on standardized own revenues (based on average efforts), plus shared tax revenues, plus 75 percent of natural resource revenues. Hofman and Guerra (2005) contended that Indonesia's equalization system is weak due to imperfections in the

formula. As such, Akita et al. (2020) studied trends in fiscal disparity across districts in the country from 2001-2012 and attempted to explore determinants of fiscal disparity. Decomposition of the coefficient of variation, Theil index, and Gini index were used in the analysis. The results showed that per capita revenue disparity in the country has been increasing since the implementation of decentralization laws in 2001. The country's fiscal equalization scheme was found to be equalizing in general, but its contribution to fiscal disparity has been increasing over the years. Akita et al. (2020) pointed out that said rise in disparity might be due to within-region disparities in Eastern Indonesia.

From the vast literature on the effect of equalizing intergovernmental fiscal transfers to fiscal inequality, it can be implied that there is no uniform conclusion across different countries. The impact of transfers on regional incomes, local government revenue equality, or the level of public services varies from country to country and from time to time.

3.7 Review of Existing Studies on Intergovernmental Fiscal Transfers in the Philippines

Interest in the Philippine fiscal decentralization system has increased since the approval and operationalization of the Local Government Code of 1991. Researchers have particularly paid attention to the country's major intergovernmental fiscal transfer system, the internal revenue allotment (IRA), now known as the national tax allotment (NTA). Following the OECD's (2007) taxonomy on the different intergovernmental fiscal transfer schemes, the NTA is a vertical transfer system in that funds are transferred from the national to local governments. However, Yeeles (2015) pointed out that the NTA is the primary scheme for addressing both vertical and horizontal inequalities in the Philippines. In terms of the issue that the system attempts to address, the NTA is more of a revenue equalization scheme. The same study by Yeeles (2015) mentioned that these schemes are usually composed of tax-sharing agreements and predetermined distribution formula.

As mentioned in the earlier parts of this paper, the IRA comprises a large share of the total revenue of the country's local government units. Several studies have tried to explore the effects of the IRA on indicators like local fiscal performance, economic growth, regional development, and fiscal balance.

Capuno (2002) assessed the distribution of the country's intergovernmental transfers and their impact on local fiscal performance, overall fiscal balance, and regional development. The internal revenue allotment (IRA), now called national tax allotment (NTA), has positive effects on local fiscal performance as presented in Capuno (2002) using the elasticity of local revenues and expenditures of the provinces and cities with respect to changes in the IRA. Second, increases in IRA did not appear to discourage the mobilization of local revenues in provinces and cities. This result is different from a similar study by Manasan (1995, 1997), which reported that IRA increases might disincentivize efforts of the local governments to raise their revenues. Capuno (2002) argued that the IRA might have a negative effect on local revenue mobilization efforts may be accurate at the municipality level since their dependency on the IRA is higher, and their tax bases are poorer compared with provinces and cities. It is worth noting that the two studies used different periods in their analysis.

Several studies also attempted to analyze the impact of the IRA on growth and development. In assessing the impact of IRA on regional development, Capuno (2002) used the human development index (HDI) for the years 1990, 1994, and 1997 to estimate the relationship between IRA and development. The same study emphasized the difficulty of directly measuring the impact of IRA on HDI, considering that: 1) longer time series data may be needed, and 2) both national and local government expenditures influence the HDI, thus is a challenge to isolate the effect of IRA. Nonetheless, considerable increases in IRA indirectly contributed to the improvement of human development indicators (i.e., health, literacy, and family income) in the 1990s. IRA also seems to have positively affected local governments' economic service provision and capital outlays. A similar study by Maquito (2017), using correlation analysis, showed that the IRA could positively contribute to

shared growth. Unlike Capuno (2002), who focused on human development, shared growth in this study is concerned with per capita income distribution among households. In a study by the Philippine National Tax Research Center (2008), ordinary least squares regression analysis was used to measure the IRA's ability to contribute to provincial development. Using the taxable assessed value of properties as a measure for development, the study found that the IRA increased provincial economic development from 2002 to 2005.

Researchers are also concerned with the level of fiscal inequality among local governments in the Philippines. Capuno (2002) assessed said issue by describing the average real per capita revenue of the provinces, cities, and municipalities from 1990 to 1999. The study revealed that the "IRA appeared to have worsened fiscal imbalances" (p. 275).

The cities' average real per capita IRA is more than double the added amounts for provinces and municipalities, making the distribution biased towards the cities. Although the IRA provides equal shares for the provinces and cities, it does not consider the fiscal capacities of the local governments. Contrary to Capuno (2002), who studied the fiscal imbalances between the different levels of local government units (LGUs), Manasan (2005) included in her study on local public finance in the Philippines the level of inequality within each level of LGU from 1995 to 2003. Said study showed that "while the increase in the IRA share of some LGUs is not enough to finance the functions devolved to them, others have received resources beyond their requirements" (p. 80). In other words, fiscal disparity also exists within the same local government level. It was evidenced by negative per capita net resource transfer⁴ in some years. Moreover, the current distribution formula of the IRA had an equalizing effect on the fiscal capacities of cities, although the same is not true for provinces and municipalities. In a study on the impact of the IRA on Philippine provinces, the Philippine National Tax Research Center (2008) supported the results of previous studies by saying that IRA has also been counter-

⁴ Per capita net resource transfer in 2001 defined as per capita 2001 IRA less per capita 1992 IRA less per capita cost of devolved functions adjusted for inflation (Manasan, 2005)

equalizing from 2001 to 2006 based on the correlation coefficients of the average family income and IRA per capita received by the provinces in said periods. In contrast, Yeeles (2015) showed that the IRA decreased the level of inequality in LGU per capita revenues across national space from 2001-2010. The Gini and Theil indices were used in the study, with per capita local revenue and IRA as variables of interest. The study also found that the largest contributing spatial inequality happens across provincial and congressional districts, which can relate to political-administrative determinants in the distribution of revenues across local governments. Although the IRA allocates 11 percent more revenues to municipalities than cities, there are 20 times more municipalities than cities, which makes fund distribution inequitable. In general, income inequalities, with or without the IRA, have been relatively stable from 2001-2010.

3.8 Research Gaps

In summary, existing literature on the Philippine intergovernmental fiscal transfer system encompassed studies on the NTA's effect on economic growth, regional development, revenue mobilization, and fiscal imbalances. Focusing on the impact of the NTA on fiscal imbalances among local government units in the Philippines, existing studies used different methods to conduct the analysis – from descriptive and correlation analysis to estimating Gini and Theil indices. The studies were also conducted within different periods in the early 2000s and used different variables of interest to explore the issue. As such, observations may have been different. However, it is worth noting that most studies point out the relative bias of the allocation system towards the cities.

In addition, most previous studies pointed to the lack of an effective fiscal equalization scheme in the country's intergovernmental transfer system. The NTA or any other transfer program in the country cannot be adequately identified as a fiscal equalization scheme (Capuno, 2002). In her studies, Manasan (2005, 2007) also noted the need to include equalization grants in the country's intergovernmental

fiscal transfer system to reduce disparities in the LGUs' revenue or net fiscal capacities (revenues less spending needs).

In 2022, reforms to the NTA have been implemented. The reform mainly involved expanding the basis for the computation of the NTA, which resulted in considerable increments in the share of the LGUs. The GEF was also implemented to assist the LGUs, which are relatively weaker in terms of net fiscal capacity and development.

While there have been several studies that explored how the country's IRA (now NTA) affects income or revenue inequality in the Philippines (Capuno, 2002; Manasan, 2005, 2007; NTRC, 2008; Yeeles, 2015), no study has been conducted yet which focuses on assessing how the introduction of an equalization grant affects fiscal imbalances. Moreover, most previous studies on the equalizing effect of the NTA used more descriptive statistics and correlation analysis using proxy data. Only one other study used the Gini and Theil indices (Yeeles, 2015).

To address these gaps, this study intends to serve as a preliminary assessment of how the current reforms in the country's intergovernmental transfer system affect the level of disparity among local governments. Aside from the Gini and Theil indices, two other statistical inequality measures discussed in Section 3.5 are also utilized.

Specific focus is paid attention to the inclusion of a fiscal equalization grant to complement the changes in the NTA. Consequently, this study shall contribute relevant data and inputs to studying intergovernmental fiscal transfers in the Philippines.

3.9 Significance of the Study

Interest in fiscal decentralization and intergovernmental fiscal transfer systems has been growing. The fiscal disparity among local governments is one of the critical policy concerns for decentralized nations. Inequalities in the capacity of local governments to fund basic goods and services that are devolved to them could lead

to disparities in the level and quality of services for the people. Large fiscal disparities could also induce migration to regions with higher revenues and better services, even though the migrants could have been employed more productively elsewhere" (Hofman and Guerra, 2005, p. 67). Lastly, considerable disparities in revenues and the delivery of public services may cause political and social unrest, especially from regions left behind, as in the case of the Muslim areas in Mindanao (Hill, 2000).

The Philippines is just starting to implement reforms in the NTA – the country's primary intergovernmental fiscal transfer system. In general, fiscal inequalities have negative policy implications in terms of inclusive economic growth and development, efficient allocation of resources, and equity and fairness among regions or local governments. For an archipelagic country like the Philippines, which is currently navigating through the current reforms in its intergovernmental transfer system, this study could be a helpful input for policymakers in assessing the effectiveness of its reforms in addressing horizontal fiscal disparities among local governments. It is especially significant at present because the country's local governments are still heavily reliant on intergovernmental fiscal transfers to finance their expenditure needs. In the long run, this study could be useful as an input for policymakers in rethinking the current design of the country's transfer systems and subsequently coming up with a more equitable and effective one. This study could also contribute to the existing body of knowledge and literature on the Philippine intergovernmental fiscal transfer system.

CHAPTER 4. RESEARCH DESIGN AND METHODOLOGY

4.1 Introduction

This chapter explains the research approach, data collection, and analysis methods utilized to explore the research questions identified in the earlier part of this paper. In general, this study employed the quantitative research methodology both in data collection and analysis.

4.2 Research Framework

Based on the discussion of the background and gaps in existing literature, Figure 4-1 below outlines the process that the research followed to meet its objectives.

Figure 4-1. *Research Framework of the Study*

Problem Statement	Relatively high level of revenue disparity among local government units (LGUs) in the country as evidenced by previous studies and reports from concerned Philippine government agencies.		
Objectives	This study aims to analyze the extent to which the reforms on the Philippine intergovernmental fiscal transfer system affects the level of revenue disparity among its local government units.		
Research Questions	<table border="1"><tr><td>To what extent did the level of revenue disparity among the local government units in the Philippines change before and after the NTA reforms?</td><td>How did the introduction of the GEF, a fiscal equalizing grant, affect the level of revenue disparity among local governments in the country?</td></tr></table>	To what extent did the level of revenue disparity among the local government units in the Philippines change before and after the NTA reforms?	How did the introduction of the GEF, a fiscal equalizing grant, affect the level of revenue disparity among local governments in the country?
To what extent did the level of revenue disparity among the local government units in the Philippines change before and after the NTA reforms?	How did the introduction of the GEF, a fiscal equalizing grant, affect the level of revenue disparity among local governments in the country?		
Data Analysis	Statistical Estimation Methods to Measure Inequality: <ul style="list-style-type: none">• Maximum to Minimum Ratio• Coefficient of Variation• Theil Index• Gini Index		
Data Collection Methods	Secondary Data on the 2020-2022 Locally sourced Revenues and National Tax Allotment (NTA) Data on the GEF recipients for FY 2022		

4.2.1 Objective and Research Questions

As shown in Figure 4-1, the issue tackled in this study is the disparity among the country's local government units (LGUs). As such, the researcher aims to analyze the extent to which the implementation of the two reforms discussed in the background affected the level of revenue disparity among local governments in the Philippines. Given this objective, this study aims to answer the following questions:

To what extent did the level of revenue disparity among the LGUs in the country change before and after the intergovernmental fiscal transfer reforms?

Sub-question 1: To what extent did the level of revenue disparity among the local government units in the Philippines change before and after the NTA reforms?

Sub-question 2: How did the introduction of the GEF, a fiscal equalizing grant, affect the level of revenue disparity among local governments in the country?

4.2.2 Hypothesis Development

As discussed in the literature, one of the main objectives of intergovernmental transfer systems is horizontal fiscal balance. It means ensuring local governments in the same tier have the fiscal capacity to provide their constituents with the same level of basic services.

Previous studies on the Philippine intergovernmental fiscal transfer system pointed to the lack of a fiscal equalization scheme in the country's intergovernmental transfer system. Manasan (2005 and 2007) emphasized that such a scheme's intention must be to reduce disparities in the LGUs' revenue or net fiscal capacities.

The recent reforms in the country's intergovernmental fiscal transfer systems, which were discussed in the previous chapters, may not be effective in reducing revenue inequalities among the local governments based on the following arguments:

First, despite the increase in NTA amount following the Supreme Court ruling, the formula for its distribution to the LGUs was not changed. The NTA is distributed within each tier of LGU mainly based on population and land area. The equal sharing component does not consider the fiscal capacities of each LGU but instead allows a certain amount to be equally divided among all LGUs. With the increase of the total NTA for distribution, the gap between the LGU with the highest and the lowest income may widen. As such, the author hypothesizes that:

H1: The level of revenue disparity among the local governments is wider after the Supreme Court decision on the NTA.

The second reform, the GEF, may not be effective in reducing fiscal disparities based on the two arguments. Firstly, the income bracketing in the Philippines is based on total annual income instead of per capita income, thus does not consider the fiscal capacities of the LGUs vis-a-vis the needs of the population. Second, poverty incidence and per capita NTA are considered in the criteria for the distribution of the grant. However, it did not consider the locally sourced per capita revenue-generating capacity of the LGUs. As such, it may not be the fairest and most effective initial criteria for the grant distribution.

H2: The Growth Equity Fund is not effective in reducing revenue disparity among local governments.

Considering the preceding hypotheses, the combined impact of the two reforms may not be effective as horizontal fiscal equalizing schemes.

H3: The NTA reform and GEF combined do not have a significant equalizing effect on revenue disparity among Philippine local governments.

4.3 Methodology

This research attempts to analyze the extent to which the country's fiscal equalization system, which was implemented as part of the fiscal decentralization

reform, affects the level of revenue disparity among the local governments, thus uses an applied quantitative methodology. This type of methodology uses quantitative analytical methods to examine secondary data sets or data which were already collected by and available in relevant institutions and organizations (Kilonzo & Ojebode, 2023). In studying the level of revenue disparity among the local government units in the Philippines, it is more appropriate to utilize large datasets as much as possible to come up with more reliable results. These datasets can be collected from the country's government agencies handling the monitoring of local government finance.

4.3.1 Quantitative Analytical Methods to Measure Disparity Among Local Governments in the Philippines

As mentioned in the literature, there has been a growing interest in assessing disparity among local governments worldwide. Methods of regional economic analysis, which aim to analyze issues in regional and urban economics like economic growth and disparities, are usually used for the aforesaid topic of interest (Capello & Nijkamp, 2009; Dinc, 2015; Farhauer & Kroll, 2014; Schatzl, 2000). Shankar and Shah (2003) pointed out that measuring regional disparities is difficult and that no single measure of inequality can capture its complexity. The use of several methods in one analysis is also a good way of cross-validating and increasing the reliability of the results of this study. The researcher discussed five measurements of inequality in the literature. However, one of the measurements - minimum (maximum) as a percent of the national average - was only used in the literature to illustrate trends in data; thus, it cannot be used to generate conclusions on the research questions. Considering this, the researcher only used the following four: maximum to minimum ratio (MMR), coefficient of variation (CV), Theil index, and Gini index.

4.3.1.1 Maximum to minimum ratio (MMR)

This study utilized the maximum to minimum ratio formula from Bird and Tarasov (2002):

$$\text{MMR} = \frac{y_{\max}}{y_{\min}}$$

where y_{\max} is the per capita revenue of the local government unit (LGU) with the highest income and y_{\min} is the per capita revenue of the LGU with the lowest income. In interpreting the MMR, a value of 1 means that perfect equality exists while values larger than 1 means that inequalities exist.

4.3.1.2 Coefficient of Variation (CV)

This study used the unweighted coefficient of variation (CV) as another analytical method. As mentioned in the literature, the CV simply focuses on how scattered the values or data are around the average. The revenue per capita of the LGUs was also used as the variable of interest. The CV is based on the formula from Shankar and Shah (2003):

$$\text{CV}_u = \frac{\sqrt{\frac{\sum_i (y_i - \bar{y}_u)^2}{N}}}{\bar{y}_u}$$

Where,

CV_u is the unweighted coefficient of variation;

y_i is the revenue per capita of LGU I;

\bar{y}_u is the unweighted mean revenue per capita;

N is the number of LGUs;

\

In analyzing the CV, a value of 0 means that the distribution of revenue among the local governments is perfectly equal. Both weighted and unweighted CV was calculated to determine the level of revenue inequality with and without considering the weight of each local government unit.

4.3.1.3 Theil Index

The Theil index, proposed by Theil (1967), is a measure of inequality that can be broken down into within-group and between-group inequality (Liao, 2016). In other words, it is useful when one wants to compare inequality between regions or between subgroups. In the Theil index, 0 represents perfect equality and ∞ inequality. It goes by the formula (Bird and Tarasov, 2004):

$$T = \sum_i \frac{y_i}{\bar{y}} \times \frac{p_i}{P} \times \log\left(\frac{y_i}{\bar{y}}\right)$$

Where,

T is the Theil index ranging from 0 to ∞

y_i is the revenue per capita for LGU i

\bar{y} is the mean revenue per capita

P is the national population; and

p_i is the population of LGU i

4.3.1.4 Gini Index

The Gini index, one of the most used measures of income inequality or distribution, was also utilized in this study. It estimates “the extent to which the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution” (World Bank, n.d.). The index is an inequality measurement ranging between 0 and 1, where 0 represents perfect equality and 1 perfect inequality.

For this study, the author mainly utilized the estimation of the Gini Index to examine how the country’s fiscal decentralization reform especially on the implementation of a fiscal equalization system affect each level of local government. In particular, the following formula (Shankar & Shah, 2003; Yeeles, 2015) is considered:

$$G = \left(\frac{1}{2\bar{y}_u} \right) \cdot \frac{1}{n(n-1)} \sum_i^n \sum_j^n |y_i - y_j|$$

Where,

G is the Gini index ranging from 0 to 1

y_i and y_j are revenue per capita for each LGU

n is the number of LGUs

4.3.2 Data Analysis

All four measures discussed in the previous section were employed to assess the level of revenue disparity among the local government units in the Philippines. The level of disparity based on the per capita revenue of each province, city, and municipality was then measured or estimated.

Microsoft Excel was used to estimate MMR and CV. Meanwhile, the Theil and Gini index estimation was done using the Regional Economic Analysis Toolbox (REAT) in an open-source programming and statistical platform – R software. REAT is a tool used in urban and regional economics to analyze inequality and regional disparities.

4.3.2.1 Assessing the Effect of the NTA on the Level of Revenue Disparity

To compare the extent to which the level of revenue inequality changed before and after the NTA reforms, point differences of the MMR, CV, Theil, and Gini index estimates between the revenues with and without the NTA was computed.

Table 4-1. *Values to be Estimated Before and After the NTA Reform*

	Before reform (2020-2021)	With reform (2022)
Provinces	Locally sourced revenue per capita (L)	L
	L + NTA per capita (I)	L + I
Cities	L	L
	L + I	L + I
Municipalities	L	L
	L + I	L + I

Source: Constructed by the author

The point differences of the measurements of inequality discussed in 4.4 with and without the NTA reform was compared for the analysis as shown in Table 4-2.

Table 4-2. *Point Difference to be Calculated Before and After the NTA Reform*

	Before reform (2020-2021)	With reform (2022)
Provinces	$MMR_{L+I} - MMR_L$	$MMR_{L+I} - MMR_L$
	$CV_{L+I} - CV_L$	$CV_{L+I} - CV_L$
	$Theil_{L+I} - Theil_L$	$Theil_{L+I} - Theil_L$
	$Gini_{L+I} - Gini_L$	$Gini_{L+I} - Gini_L$
Cities	$MMR_{L+I} - MMR_L$	$MMR_{L+I} - MMR_L$
	$CV_{L+I} - CV_L$	$CV_{L+I} - CV_L$
	$Theil_{L+I} - Theil_L$	$Theil_{L+I} - Theil_L$
	$Gini_{L+I} - Gini_L$	$Gini_{L+I} - Gini_L$
Municipalities	$MMR_{L+I} - MMR_L$	$MMR_{L+I} - MMR_L$
	$CV_{L+I} - CV_L$	$CV_{L+I} - CV_L$
	$Theil_{L+I} - Theil_L$	$Theil_{L+I} - Theil_L$
	$Gini_{L+I} - Gini_L$	$Gini_{L+I} - Gini_L$

Source: Constructed by the author

4.3.2.2 Assessing the Effect of the GEF on the Level of Revenue Disparity

To examine the effect of the GEF's introduction on the level of revenue disparity among local governments in the country, the four measurements of inequality discussed in 4.4 was also utilized. Estimation for each tier of local government before and after the introduction of the GEF was conducted.

Table 4-3. *Values to be Estimated with and without the GEF*

	Without GEF (2022)	With GEF (2022)
Provinces	Locally sourced revenue per capita (L) + NTA per capita (I)	L + I + GEF
Cities	L + I	L + I + GEF
Municipalities	L + I	L + I + GEF

Source: Constructed by the author

The point differences of the measurements of inequality with and without the GEF was also calculated as shown in Table 4-4.

Table 4-4. *Point Difference to be Calculated on the Effect of GEF to Revenue Disparity*

	Provinces	Cities	Municipalities
With reform (2022)	$MMR_{w/GEF} - MMR_{noGEF}$ $CV_{w/GEF} - CV_{noGEF}$ $Theil_{w/GEF} - Theil_{noGEF}$ $Gini_{w/GEF} - Gini_{noGEF}$	$MMR_{w/GEF} - MMR_{noGEF}$ $CV_{w/GEF} - CV_{noGEF}$ $Theil_{w/GEF} - Theil_{noGEF}$ $Gini_{w/GEF} - Gini_{noGEF}$	$MMR_{w/GEF} - MMR_{noGEF}$ $CV_{w/GEF} - CV_{noGEF}$ $Theil_{w/GEF} - Theil_{noGEF}$ $Gini_{w/GEF} - Gini_{noGEF}$

Source: Constructed by the author

4.3.2.3 Assessing the Combined Impact of the NTA Reform and GEF on Revenue Disparity

To examine the combined impact of the NTA reform and introduction of GEF on revenue disparity, the same four measurements of inequality was used. Estimation for each tier of local government before the reforms (2020 and 2021) and after the reforms (2022) was conducted (see Table 4-5).

Table 4-5. Point Difference to be Calculated Before and After the NTA Reform

	Before the Reform (2020-2021)	With reform (2022)
Provinces	Locally sourced revenue per capita (L)	L
	L + NTA per capita (I)	L + I + GEF
Cities	L	L
	L + I	L + I + GEF
Municipalities	L	L
	L + I	L + I + GEF

The point differences of the measurements of inequality was also calculated as shown in Table 4-6.

Table 4-6. Point Difference to be Calculated Before and After the NTA Reform and GEF

	Before reform (2020-2021)	With reform (2022)
Provinces	$MMR_{L+I} - MMR_L$	$MMR_{L+I} - MMR_L$
	$CV_{L+I} - CV_L$	$CV_{L+I} - CV_L$
	$Theil_{L+I} - Theil_L$	$Theil_{L+I} - Theil_L$
	$Gini_{L+I} - Gini_L$	$Gini_{L+I} - Gini_L$
Cities	$MMR_{L+I} - MMR_L$	$MMR_{L+I} - MMR_L$
	$CV_{L+I} - CV_L$	$CV_{L+I} - CV_L$
	$Theil_{L+I} - Theil_L$	$Theil_{L+I} - Theil_L$
	$Gini_{L+I} - Gini_L$	$Gini_{L+I} - Gini_L$
Municipalities	$MMR_{L+I} - MMR_L$	$MMR_{L+I} - MMR_L$
	$CV_{L+I} - CV_L$	$CV_{L+I} - CV_L$
	$Theil_{L+I} - Theil_L$	$Theil_{L+I} - Theil_L$
	$Gini_{L+I} - Gini_L$	$Gini_{L+I} - Gini_L$

Source: Constructed by the author

4.3.2.4 Main Variable of Interest

As mentioned in Section 3.6, the country’s fiscal transfer system is mainly revenue sharing. Bird and Tarasov (2004) and Yeeles (2015) pointed out that revenue per capita is a more relevant variable in examining fiscal imbalances among jurisdictions than growth and personal income measures like the gross domestic product (GDP). Since this study is also concerned with the same issue, revenue per capita was used in this study to measure disparity.

To consider the disparity in the revenue distributed among the population for each LGU, per capita values were used instead of total revenue.

4.3.3 Data Collection

Several data collection methods are being employed in research depending on the research question and the analysis method involved. In this study, secondary or preexisting data from the Philippine Department of Budget and Management (DBM) and the Bureau of Local Government Finance (BLGF) was used.

Table 4-7. Secondary Data Collection Method to Assess Revenue Disparity among LGUs in the Philippines

Data	Timeframe	Number of Observations to be Gathered	Data Source
Locally sourced Revenues (LSR)	2020-2022	All 81 Provinces, 146 Cities, and 1488 Municipalities	BLGF
National Tax Allotment (NTA) per Local Government	2020-2022		DBM
Growth Equity Fund (GEF) Allocation	2022		
Population Count	2020		Philippine Statistics Authority (PSA)

As illustrated in Table 4-7, data on locally sourced revenues (LSR) from 2020-2022 was gathered from the BLGF, an agency mandated to assist the Department of Finance in the formulation and execution of policies concerning local taxation and other financial activities of the local governments. Meanwhile, data on the national tax allotment (NTA) and growth equity fund (GEF) were gathered from the Department of Budget and Management.

Since the research focuses on the assessment of revenue disparity before and after the recent intergovernmental fiscal transfer system reforms, only data for three fiscal years were gathered: pre-reform (2020 and 2021) and the first year of the reform implementation (2022). Since the GEF was only implemented in 2022, data for said year was gathered.

To make the assessment as representative as possible and to reduce biases in the analysis, relevant data on all local governments in the Philippines was collected. The researcher attempted to gather data for the 81 provinces, 146 cities, and 1,488 municipalities included in the dataset. In the Philippines, a population census is conducted every five years. As such, data from the latest population census in 2020 was considered.

4.3.4 Description of Dataset

Table 4-8 shows that the researcher collected relevant data for all 81 provinces and 146 cities. However, due to a lack of complete data for municipalities, the total number of observations in the dataset is only 1,469 of 1,488 (around 98.7 percent of the total number of municipalities).

The same table also shows the income classification of the LGUs in the country as of 2016. As discussed in 2.2, income classifications mean that 1st class LGUs have the highest average annual income and 6th class LGUs have the lowest. The majority of the provinces (54.32 percent) belong to the 1st income class, followed by 2nd (19.75 percent), 3rd (14.81 percent), 4th (7.41 percent), and 5th (3.70

percent) income classes. There are no 6th class provinces based on the latest income classification.

Similarly, the majority of the country’s cities (31.51 percent) belong to the 1st income class, followed by 3rd (21.92 percent), 4th (18.49 percent), 2nd (10.96 percent), 5th (6.16 percent), and 6th (4.11 percent) income classes. Two cities in the country, Quezon City and Manila City, located in the National Capital Region, have been classified as Special cities based on Department of Finance (DOF) Department Order No. 23-08.

Unlike provinces and cities, a considerable percentage of the municipalities in the country are identified as 4th income class (26.41 percent). They are followed by 1st (22.19 percent), 5th (18.31 percent), 3rd (17.83 percent), 2nd (12.46 percent), and 6th (1.36 percent) income class municipality. There are 15 newly created municipalities that have not been classified yet and six municipalities without income classifications (NC) due to a lack of data.

Table 4-8. Data Size and Income Classification of the LGUs

	N	1 st	2 nd	3 rd	4 th	5 th	6 th	Special	New	NC
Provinces	81	44	16	12	6	3	-	-	-	-
Cities	146	46	16	32	27	9	6	2	-	-
Municipalities	1469	326	183	262	388	269	20	-	15	6
Total	1,696									

Source: Bureau of Local Government Finance (BLGF)

CHAPTER 5. FINDINGS AND DISCUSSION

5.1 Introduction

This chapter presents the results of the analysis conducted to answer the research questions mentioned at the beginning of the paper. For better appreciation, descriptive summary statistics tables were generated from the data collected. The descriptive statistics tables for each tier of LGU included in this study can be found in Appendix B.

5.2 To what extent does the NTA reform affect the level of revenue disparity among LGUs in the Philippines?

As discussed in the methodology, the researcher utilized four measures to increase the validity and reliability of the estimation process. A value of 1 for MMR equates to perfect equality, and the larger the number, the more unequal the distribution is. For the coefficient of variation (CV), a value of zero means that the distribution of revenue per capita is perfectly equal, and a higher number denotes a higher level of inequality. The Theil index also has a value of zero for perfect equality and ∞ inequality. Lastly, the Gini index is the only measure with limits – 0 is for perfect equality, and 1 is for perfect inequality.

Table 5-1 presents the estimation of the level of revenue inequality with and without the NTA from 2020 to 2022. L refers to locally sourced revenue per capita, while L + I includes NTA per capita (I). The level of disparity was calculated for each of the three tiers of LGUs in the country. In general, the table shows that all four measures exhibited large values in terms of the LGUs' locally sourced revenue per capita (L). It depicts significant differences in the local revenue-generating capacities of the country's local governments.

Table 5-1. *Estimation of the Level of Revenue Inequality with and without the NTA, 2020-2022*

			MMR	CV _u	Theil	Gini
Provinces	2020	L	424.101	0.810	0.388	0.401
		L + I	24.270	0.959	0.169	0.314
	2021	L	291.604	0.767	0.359	0.389
		L + I	23.458	0.955	0.167	0.312
	2022	L	253.361	0.744	0.336	0.380
		L + I	21.747	0.972	0.167	0.314
Cities	2020	L	266.650	1.141	0.387	0.470
		L + I	8.387	0.402	0.064	0.200
	2021	L	143.004	1.119	0.369	0.462
		L + I	7.419	0.385	0.061	0.196
	2022	L	145.057	1.096	0.354	0.452
		L + I	6.080	0.366	0.059	0.195
Municipalities	2020	L	65,052.047	1.345	0.541	0.493
		L + I	242.237	2.285	0.164	0.292
	2021	L	26,463.424	1.453	0.513	0.482
		L + I	242.069	2.280	0.164	0.292
	2022	L	8,847.549	1.349	0.511	0.483
		L + I	227.737	2.345	0.171	0.295

Source: Author's estimation using Excel and REAT

To determine if the NTA has a more equalizing effect before and after reform, the point difference of the MMR, CV, Theil and Gini Index between L + I and L for each year was computed (see Table 5-2). A negative sign means that the NTA reduces the level of revenue inequality among local governments of the same tier. The actual value depicts the equalizing effect – a higher number indicates a more equalizing effect for the Gini and Theil indices.

Table 5-2. *Point Difference of the Inequality Measures with and without the NTA, 2020-2022*

Provinces			
	2020	2021	2022
MMR	-399.831	-268.146	-231.614
CV _u	0.149	0.188	0.228
Theil	-0.219	-0.192	-0.169
Gini	-0.087	-0.077	-0.066
Cities			
MMR	-258.263	-135.585	-138.976
CV _u	-0.740	-0.734	-0.730
Theil	-0.323	-0.308	-0.295
Gini	-0.270	-0.266	-0.257
Municipalities			
MMR	-64,809.810	-26,221.354	-8,619.13
CV _u	0.940	0.827	0.996
Theil	-0.377	-0.349	-0.340
Gini	-0.201	-0.190	-0.188

Source: Author's calculation

5.2.1 MMR

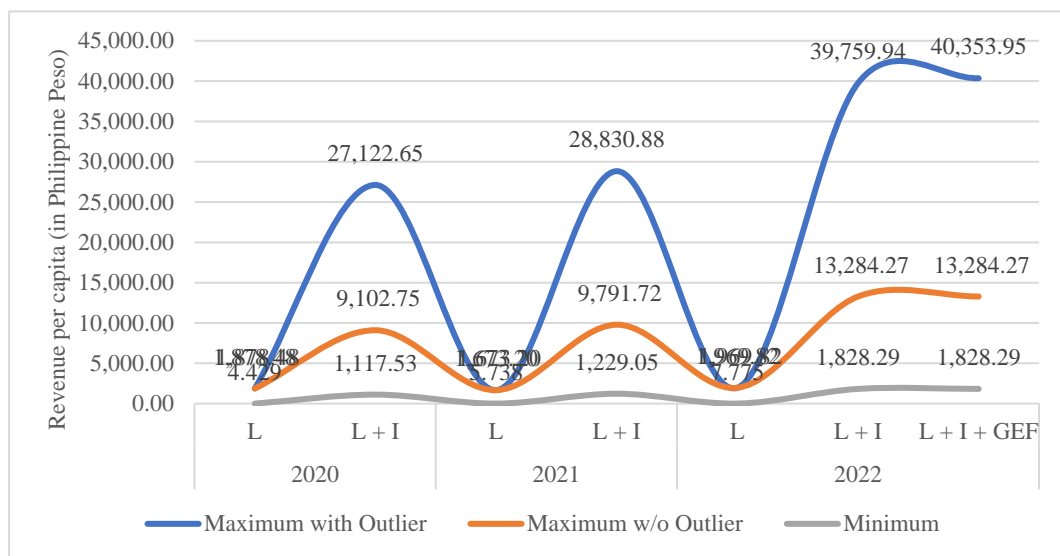
Using the MMR as a measurement, the analysis shows a reduction in revenue disparity among provinces, cities, and municipalities in the country in the three-year study period. Analyzing the extent to which the NTA affected the level of revenue disparity from before (2020-2021) and after (2022), the MMR shows that the extent to which the NTA has narrowed the gap between the maximum and minimum revenue per capita of the LGUs has decreased. In other words, the changes in the NTA in 2022 have slightly worsened the revenue disparity level in the three LGUs tiers. However, it is worth noting that the MMR is sensitive to outliers, as emphasized by literature sources. These results were verified using other measures in the succeeding sections.

The MMR illustrates how wide the disparity is between LGU with the highest revenue per capita and LGU with the lowest. In 2022, for instance, the province's highest L was 253 times larger than the lowest. With the addition of the NTA, the gap was reduced to 21. In cities, the highest L was 145 times bigger than the lowest, but with the NTA, the highest revenue per capita was just six times the lowest. The gap is more evident for municipalities, with the highest L more than 8 thousand times larger than the lowest. This can be explained by the extremely low minimum

L at PhP2 versus the maximum at PhP18,000. With the NTA, the gap was reduced to 227 times.

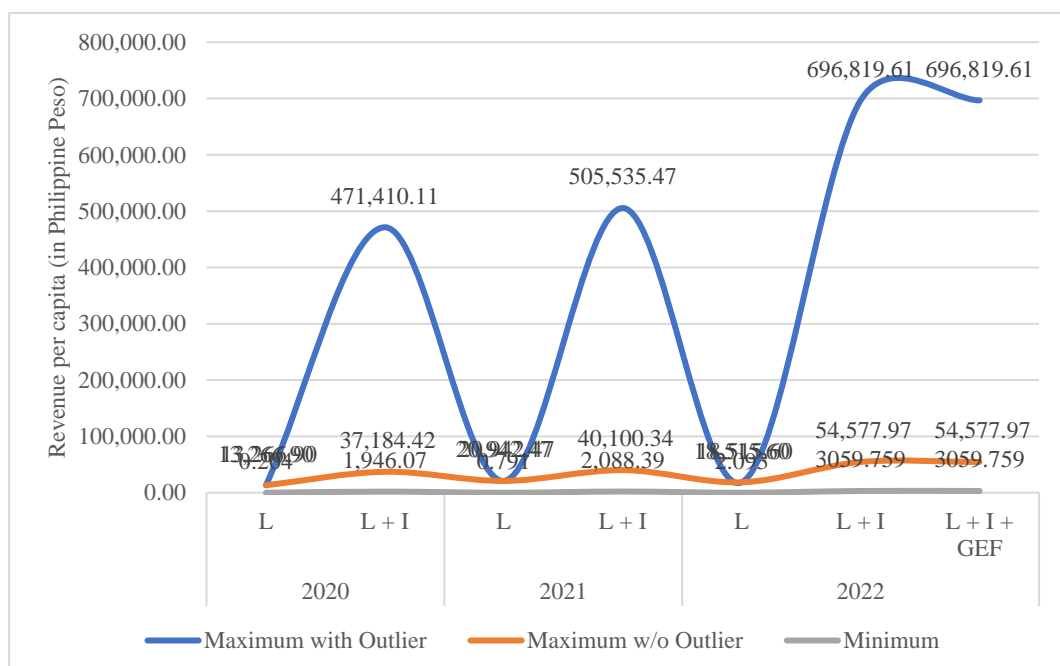
Compared with cities, the province's and municipalities' MMR were relatively higher, especially in terms of L + I. This can be explained by the drastic increase in the LGU's maximum L + I, as shown in Figures 5-1 and 5-2.

Figure 5-1. Maximum vs. Minimum Value of the Provinces' Revenue Per Capita, 2020-2022



Source: Constructed by the author based on the dataset

Figure 5-2. Maximum vs. Minimum Value of the Municipalities' Revenue Per Capita, 2020-2022



Lastly, despite the reduction in the gap between the maximum and minimum revenue per capita after the NTA, Figure 5-1 and 5-2 shows that the gap remains significantly huge.

5.2.2 CV

The CV shows how scattered the values in the dataset are around the mean, thus, a larger CV implies a more unequal distribution of revenues. The calculation of the CV resulted to varying levels of revenue disparity among the different tiers of LGU in the country. The distribution of the NTA increases the level of revenue disparity within provinces and municipalities. On the other hand, the NTA reduces the level of revenue disparity among cities.

Despite the differences in the equalizing effect of the NTA to the three tiers of LGUs, as shows in Tables 5-1 and 5-2. The actual value of the point difference using the CV showed that the NTA slightly increased the level of revenue disparity with the changes in 2022 in provinces and municipalities. In contrast, the reforms in the NTA reduced the disparities among the cities.

The CV is a useful measure to estimate the level of disparity, however, this measure can also be sensitive to outliers like the MMR. As such, the CV is not usually used alone for analysis. The next sections will discuss more statistical measures – the Theil and Gini index – to come up with more reliable analysis and conclusions.

5.2.3 Theil Index

Based on the estimated Theil indices, the NTA reduces the level of disparity in each tier of local government as evidenced by the decreased in Theil from L to L + I. Analyzing the extent to which the level of disparity changed before and after the reform, the point difference in Theil shows that the NTA had a slightly less equalizing effect in 2022. Specifically, point difference for Theil in provinces decreased to 0.169 in 2022 versus the average 0.205 for 2020 and 2021. For cities, disparity reducing effect decreased to 0.295 in 2022 from 0.315 in 2020-2021.

Lastly, the disparity reducing effect of the NTA within municipalities decreased from 0.363 in 2020-2021 to 0.340 in 2022.

5.2.4 Gini Index

Based on the estimated Gini indices, the NTA reduces the level of disparity in each tier of local government as evidenced by the decreased Gini from L to L + I and the negative point difference values. Analyzing the extent to which the level of disparity changed before and after the reform, the point difference in Gini shows that the NTA had a slightly less equalizing effect in 2022. For provinces, the equalizing effect reduced from 0.082 in 2020-2021 to 0.066 in 2022. The equalizing effect with the NTA reform in cities reduced from 0.268 in 2020-2021 to 0.257 in 2022. Lastly, the disparity reducing effect of the NTA reform among municipalities decreased to 0.188 in 2022 from 0.195 in 2020-2021.

5.3 How did the introduction of the GEF affect the level of revenue disparity among LGUs in the Philippines?

To determine if the introduction of the GEF has an equalizing effect on the revenue per capita of LGUs, estimation using the four inequality measures was conducted for the data on L + I for 2022 (without GEF) and L+I+GEF for 2022 (with GEF). Table 5-3 contains the estimation of the level of revenue inequality with the GEF, denoted by L + I + GEF, and without the GEF, denoted by L + I. As explained in previous sections, L + I refers to total revenue per capita with the NTA alone.

Table 5-3. *Estimation of the Level of Revenue Inequality with and without the GEF in 2022*

		MMR	CV _u	Theil	Gini
Provinces	L + I	21.747	0.972	0.167	0.314
	L + I + GEF	22.072	0.984	0.172	0.318
Cities	L + I	6.080	0.366	0.059	0.195
	L + I + GEF	6.080	0.366	0.059	0.195
Municipalities	L + I	227.737	2.345	0.171	0.295
	L + I + GEF	227.737	2.332	0.172	0.298

Source: Author's calculations

The point difference of the MMR, CV, Theil and Gini Index between the L + I for 2022 and L+I+GEF for each level of LGU was also computed to determine the extent of the inequality (see Table 5-4).

A negative value means that the GEF reduced the level of revenue inequality among local governments of the same tier. Meanwhile, a positive value means that the GEF worsened the level of revenue inequality among the LGUs. In general, the GEF had different effects on the different tiers of local government. There were no changes in the revenue disparity of cities, but slightly worse in provinces and municipalities.

Table 5-4. *Point Difference of the Inequality Measures with and without the GEF*

	Provinces	Cities	Municipalities
MMR	0.325	0.000	0.000
CV _u	0.012	0.000	-0.013
Theil	0.005	0.000	0.001
Gini	0.004	0.000	0.003

Source: Author's calculations

5.3.1 MMR

The MMR calculation showed that the GEF had varying effects on the three tiers of LGUs. For the provinces, the gap between the LGU with the highest revenue per capita and the LGU with the lowest, increased from 21.747 without the GEF to 22.072 with the GEF. Meanwhile, there were no changes in the level of revenue disparity for the cities and municipalities.

5.3.2 CV

In terms of the CV, the results showed that the GEF slightly worsened the revenue disparity within provinces. In other words, the revenue per capita of the provinces and municipalities are scattered more away from the mean revenue per capita. The CV of the provinces is 0.972 without the GEF and 0.984 after the GEF. For cities, the GEF had no effect in terms of revenue disparity with the CV at 0.366 with and without the GEF. Lastly, the CV of the municipalities is 2.345 without the GEF and

2.332 with the GEF which implies that the GEF slightly moved the revenue per capita values towards the mean per capita revenue.

5.3.3 Theil Index

The Theil index showed an increase in disparity in provinces and municipalities with the introduction of the GEF. The province's Theil index increased from 0.167 without and 0.172 with the GEF. For the municipalities, the Theil index increased from 0.171 without and 0.172 with the GEF. For the cities, the GEF had no effect since the Theil index remained at 0.059 regardless of its introduction.

In terms of the extent to which the level of revenue disparity increased, the revenue disparity increased by 0.005 for provinces and 0.001 for municipalities with the GEF. For the cities, the point difference of 0.00 shows that the introduction of the GEF had no effect on revenue disparity.

5.3.4 Gini Index

Similarly, the Gini index also showed an increase in disparity in the provinces and municipalities with the introduction of the GEF. For the provinces, the Gini index increased from 0.314 without the GEF and 0.318 with the GEF. The municipalities' Gini index increased from 0.295 without the GEF and 0.298 with the GEF. Meanwhile, the Gini index of the cities remained the same with and without the introduction of the GEF at 0.195.

In terms of the extent to which the level of revenue disparity increased, the GEF's introduction increased the revenue disparity in provinces and municipalities by 0.004 and 0.003, respectively.

5.4 Combined Impact of the NTA Reform and GEF

To estimate the combined impact of the two intergovernmental fiscal transfer reforms to the level of revenue disparity among local governments, the calculated

values of the four inequality measures on L and L + I for 2020 to 2021, and L and L+I+GEF for 2022. Results of such calculations are presented in Table 5-5.

Table 5-5. Estimation of the Level of Revenue Inequality Before and After the NTA Reform and GEF, 2020-2021 vs. 2022

			MMR	CV _u	Theil	Gini
Provinces	2020	L	424.101	0.810	0.388	0.401
		L + I	24.270	0.959	0.169	0.314
	2021	L	291.604	0.767	0.359	0.389
		L + I	23.458	0.955	0.167	0.312
	2022	L	253.361	0.744	0.336	0.380
		L + I+ GEF	22.072	0.984	0.172	0.318
Cities	2020	L	266.650	1.141	0.387	0.470
		L + I	8.387	0.402	0.064	0.200
	2021	L	143.004	1.119	0.369	0.462
		L + I	7.419	0.385	0.061	0.196
	2022	L	145.057	1.096	0.354	0.452
		L + I+ GEF	6.080	0.366	0.059	0.195
Municipalities	2020	L	65,052.047	1.345	0.541	0.493
		L + I	242.237	2.285	0.164	0.292
	2021	L	26,463.424	1.453	0.513	0.482
		L + I	242.069	2.280	0.164	0.292
	2022	L	8,847.549	1.349	0.511	0.483
		L + I+ GEF	227.737	2.332	0.172	0.298

Source: Author's calculations

To determine if the reforms combined has reduced or worsened the level of revenue disparity, the point difference of the MMR, CV, Theil and Gini Index between L + I and L for 2020 to 2021. To compare, the calculation was also conducted for the four measurements between L and L + I + GEF for 2022 (see Table 5-6). A negative sign means that the NTA reduces the level of revenue inequality among local governments of the same tier. The actual value depicts the equalizing effect – a higher number indicates a more equalizing effect for the Gini and Theil indices.

Table 5-6. Point Difference of the Inequality Measures Before and After the NTA Reform and GEF, 2020-2021 vs. 2022

Provinces				
	2020	2021	Ave. 2020-2021	2022
MMR	-399.831	-268.146	-333.989	-231.289
CV _u	0.149	0.188	0.169	0.240
Theil	-0.219	-0.192	-0.206	-0.164
Gini	-0.087	-0.077	-0.082	-0.062
Cities				
MMR	-258.263	-135.585	-196.924	-138.977
CV _u	-0.740	-0.734	-0.737	-0.730
Theil	-0.323	-0.308	-0.316	-0.295
Gini	-0.270	-0.266	-0.268	-0.257
Municipalities				
MMR	-64,809.810	-26,221.354	-45,515.582	-8,619.812
CV _u	0.940	0.827	0.884	0.983
Theil	-0.377	-0.349	-0.363	-0.339
Gini	-0.201	-0.190	-0.196	-0.185

Source: Author's calculations

5.4.1 MMR

The MMR calculation showed that combining the NTA reform and the GEF reduced the gap between the LGU with the highest revenue per capita and the lowest, across the three tiers of LGUs. In terms of the extent to which the gap was reduced, it shows that the reform had a less equalizing effect for provinces at 231.289 with the reforms against the 333.989 average point difference in 2020-2021. The same is true for cities and municipalities whose point differences also decreased with the reforms in 2022.

5.4.2 CV

The calculation of the CV resulted to varying levels of revenue disparity among the different tiers of LGU in the country. The two reforms combined increased the level of revenue disparity within provinces and municipalities. On the other hand, the NTA reduces the level of revenue disparity among cities.

Despite the differences in the equalizing effect of the NTA to the three tiers of LGUs, as shown in Tables 5-5 and 5-6. The actual value of the point difference using the CV showed that the reforms slightly increased the level of revenue disparity with

the changes in 2022 in provinces and municipalities. In contrast, the reforms in the NTA reduced the disparities among the cities.

5.4.3 Theil Index

Based on the estimated Theil indices, the reforms combined slightly worsened the level of revenue disparity in 2022. Specifically, point difference for Theil in provinces decreased to 0.164 in 2022 versus the average 0.206 for 2020 and 2021. For cities, disparity reducing effect decreased to 0.295 in 2022 from 0.316 in 2020-2021. Lastly, the disparity reducing effect of the NTA within municipalities decreased from 0.363 in 2020-2021 to 0.339 in 2022.

5.4.4 Gini Index

Based on the estimated Gini indices, the reforms combined also slightly worsened the level of disparity in the three tiers of the LGUs. For provinces, the equalizing effect reduced from 0.082 in 2020-2021 to 0.062 in 2022. The equalizing effect with the NTA reform in cities reduced from 0.268 in 2020-2021 to 0.257 in 2022. Lastly, the disparity reducing effect of the NTA reform among municipalities decreased to 0.185 in 2022 from 0.196 in 2020-2021.

In general, the researcher also found that the NTA reform and GEF combined worsened the level of revenue disparity in the LGUs by a minimal point as against the NTA reform alone.

5.5 Discussion Based on the Findings

Major findings from the study can be summarized into several key points. The author organized this section based on the research questions. Some additional findings are also discussed.

5.5.1 Revenue Disparity Before and After the Supreme Court Ruling on the NTA

As such, findings suggest that the NTA reform in 2022 widen the revenue disparity within each tier of LGUs in the country. The disparity worsened with the increase in the total amount of funds to be distributed to the LGU without making changes to the distribution formula. The distribution formula looks skewed towards LGUs with small population relative to its land area. For instance, the municipality with the highest revenue per capita with the NTA is a 5th income class municipality with only 193 people but is the largest in terms of land area. As such, its total revenue per capita drastically increased from PhP500,000 in 2021 to almost PhP700,000 in 2022. Even disregarding this outlier, the difference in revenue per capita between municipalities belonging to the top 20 and the bottom 20 is relatively huge.

Before the reforms in 2022, revenue distribution among LGUs in the country is already characterized by significantly large gaps between the LGUs with the highest revenue per capita and LGUs with the lowest. Such gaps widened further after the reform, consequently resulting in increased revenue disparity.

5.5.2 Revenue Disparity with the Introduction of the GEF

Based on the analysis, the GEF may not be effective as a horizontal fiscal equalizing scheme as it widened the disparity among provinces and municipalities and had no effect on the cities. These findings may be owed to the two -stage criteria utilized in the distribution of the GEF. The first stage limits the recipients of the GEF to 4th and 5th class LGUs. Although the second stage of the criteria considers poverty incidence and NTA per capita, LGUs with high poverty incidence and low NTA per capita but belong to higher income classes get excluded from the grant. By looking into the poverty incidence⁵ of LGUs included in the GEF distribution, the

⁵ Based on the 2021 Family Income and Expenditure Survey conducted by the Philippine Statistics Authority (PSA); Data is available for provinces only.

recipient provinces Batanes⁶ and Siquijor both have 3.4 percent poverty rate in 2021. This rate is one of the lowest poverty rates among provinces in the country. Some of the country's poorest provinces belong to the 1st and 2nd income classification. As such, the recipients of the GEF are usually the least densely populated LGUs with the highest revenue per capita after the inclusion of the NTA. Such considerations may have widened the disparity among the LGUs after the introduction of the GEF. The trend in revenue per capita among cities is generally more stable. Makati City, a 1st income class highly urbanized city in Metro Manila, is the city with the highest revenue per capita with or without the NTA and GEF and from 2020 to 2022. There are no notable changes in the revenue per capita of the cities even after the introduction of the GEF.

5.5.3 Revenue Disparity with the Combined Implementation of the NTA and GEF in 2022

Following the findings in Section 5.5.1 and 5.5.2, the findings from this study also suggest that the combined implementation of the NTA reform and GEF widened revenue disparity among the LGUs, particularly the provinces and municipalities. The combined implementation of the two reforms or policies also worsened the level of revenue disparity in the LGUs by a minimal point as against the NTA reform alone. This may be explained by the circumstances explained earlier on the allocation of the NTA and GEF to the LGUs. Appendix C illustrates the changes in the revenue per capita of each province before and after the reforms for context.

5.5.4 Additional Findings

Findings from the study suggest that the NTA may have revenue disparity reducing effect within the three tiers of LGUs, however, its distribution formula may be more biased towards the cities. Relatedly, the extent of the NTA's equalizing effect varies among the different levels of LGU: strongest in cities and weakest in provinces and

⁶ Batanes is a 5th income class province. It is the least populous province in the country with a population of 18,831 as of 2020 and a land area of 219.01 sq. km.

municipalities. The first stage of the NTA distribution formula allocates funds on a 23-23-34 percent sharing basis to provinces, cities, and municipalities, respectively. The share of the municipalities may be 11 percent bigger than the cities, but there are ten times more municipalities than cities. The cities and municipalities take on almost similar expenditure responsibilities, except for the province's responsibilities which are also expected of HUCs and ICCs (see Appendix A). The locally sourced revenue generating capacity of the cities are also relatively stronger than the municipalities, as may be explained by their taxing powers as discussed in Chapter 2.

CHAPTER 6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter discusses the major findings and conclusions on how the reforms on the intergovernmental fiscal transfer system affected the level of revenue inequality among the LGUs in the country. Finally, the researcher presents policy recommendations to respond to the findings and some suggestions for further research, considering the limitations of this study.

6.2 Conclusions

As mentioned, this study attempted to answer the following questions:

To what extent did the level of revenue disparity among the LGUs in the country change before and after the intergovernmental fiscal transfer reforms?

Sub-question 1: To what extent did the level of revenue disparity among the local government units in the Philippines change before and after the NTA reforms?

Sub-question 2: How did the introduction of the GEF, a fiscal equalizing grant, affect the level of revenue disparity among local governments in the country?

Estimation of four commonly used measures of inequality were used for the analysis. These are: 1) the maximum to minimum ratio (MMR), 2) coefficient of variation, 3) Theil index, and 4) Gini index.

To answer the first question, the point difference of the values with and without the NTA was computed for the years before and after the reform. The values were then compared to determine the extent to which the Supreme Court ruling on the NTA affected the level of revenue inequality. From this analysis, it was found that: 1) the

NTA reduces the disparities in the locally sourced revenue-raising capacities of the LGUs; 2) the extent of the NTA's equalizing effect varies among the difference levels of LGU: strongest in cities and weakest in provinces; and 3) the Supreme Court ruling on the NTA in 2022 slightly widened the level of disparity in each tier of LGU. These findings support our first hypothesis that: *The level of revenue inequality among the local governments is wider after the Supreme Court decision on the NTA.*

The second question explores the effect of the GEF's introduction to the level of revenue disparity among the LGUs. Estimation of the four inequality measures mentioned above was conducted for the data on L + I for 2022 (without GEF) and L+I+GEF for 2022 (with GEF). The point difference of each inequality measure with and without the GEF was also computed to estimate the extent of the inequality. Based on the analysis, it was found that: 1) the GEF slightly widened the revenue inequality within the provinces and municipalities; and 2) the GEF had no effect on the level of revenue inequality within the cities. In other words, it supports the second hypothesis that: *The Growth Equity Fund does not have a significant equalizing effect on revenue inequality among Philippine local governments.*

Lastly, the author assessed the combined effect of the NTA reform and GEF to the level disparity among the LGUs using the same method for the first two questions. The author found that the combined NTA reform and GEF increased the level of revenue disparity in the three tiers of LGUs. Moreover, the NTA reform and GEF combined worsened the level of revenue disparity in the LGUs by a minimal point as against the NTA reform alone. It supports the third and final hypothesis that: *The NTA reform and GEF combined do not have a significant equalizing effect on revenue disparity among Philippine local governments.*

6.3 Policy Recommendations

Following the research findings and conclusions, the researcher recommends the following:

On the horizontal fiscal equalizing effect of the NTA and GEF, the researcher recommends that the national government conducts a review or adjustment in the design of the NTA and the GEF

Findings from this study showed that the GEF was not as effective in trying to address revenue disparity among LGUs. As such, the government could consider focusing on reforming the distribution formula of the NTA instead of implementing a separate scheme like the GEF. Despite the equalizing effect of the NTA, there still are points for improvement especially in trying to reduce the gap between the richest and the poorest LGUs in the country. Such a recommendation is more significant considering that the level of revenue inequality among the LGUs slightly worsened after the Supreme Court ruling on the NTA.

Consider in the review or adjustment of the distribution formula the differences in the revenue raising capacity of the three tiers of LGUs

One of the findings from the study is that the NTA is more equalizing for cities than it is for municipalities. The first stage of the NTA distribution formula distributes the funds to the provinces, cities, and municipalities in a 23-23-34 percent sharing basis. The share of the municipalities is 11 percent bigger than the cities. However, there are ten times more municipalities than cities. As such, it may be worth looking into this imbalance in the review or reconsideration of the current NTA distribution formula.

Implement appropriate interventions to assist lagging and geographically isolated LGUs especially in the midst of the implementation of reforms

Despite aiming to reduce the fiscal disparities among the local governments, the GEF limits the distribution of the grant to just the 4th to 6th income class LGUs. The government may need to consider implementing more appropriate interventions focused on lagging and geographically isolated LGUs. Such consideration is more significant in the meantime, considering that the government is in the process of devolving the implementation of services to the LGUs, and capacity-building efforts for them are still ongoing.

6.4 Originality of the Study

The intergovernmental fiscal transfer reforms mentioned in this study were just implemented in 2022. As such, no other study has been conducted yet that tried to assess the effect of these reforms on inequality among LGUs. As repeatedly mentioned throughout this paper, this study serves as an initial assessment on the effectiveness of the NTA and the GEF to the level of revenue inequality among the local governments in the Philippines.

6.5 Limitations of the Study

This study assessed the effectiveness of the NTA and the GEF on the level of revenue inequality among the local governments in the Philippines. Due to data limitations, the researcher only focused on revenue per capita as the variable of interest. Although primarily descriptive, other variables or indicators are discussed in the RRL chapter that can be considered in future studies.

The reforms focused on in this study are relatively new. As such, the researcher could only assess the inequality in the distribution of the fiscal transfers to the LGUs. In the future, it is essential to study how these reforms impact local fiscal performance, revenue generation efforts, and even local development.

Although no ideal timeframe exists for studying revenue disparity⁷, this research was limited to three years due to limitations on data availability.

6.6 Recommendations for Further Research

Considering the limitations discussed in Section 6.5, the researcher would like to recommend the following for future research:

1. Explore the use of other indicators or variables to measure fiscal inequality in order to validate the results of studies similar to this one;
2. Consider studying the impact of the intergovernmental fiscal transfer system reforms using a longer timeframe, subject to data availability.
3. Explore other issues on the country's intergovernmental fiscal transfer system.

⁷ Miyazaki (2018) conducted a study on the equalizing effect of Japan's local allocation taxes using a three-year timeframe.

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APPENDICES

A. List of Expenditure Functions of the LGUs in the Philippines Based on the Local Government Code of 1991

Table A-1. *Expenditure Assignments of the LGUs in the Philippines Based on the LGC of 1991*

	Province	Municipality	City^a	Barangay
Agricultural Support Services	Extension and on-site research services and facilities: <ul style="list-style-type: none"> • prevention and control of plant and animal pests and diseases; • dairy farms, livestock markets, animal breeding stations, and artificial insemination centers; • assistance in the organization of farmers' and fishermen's cooperatives and other collective organizations, as well as the transfer of appropriate technology. 	Extension and on-site research services and facilities related to agriculture and fishery activities: <ul style="list-style-type: none"> • dispersal of livestock and poultry, fingerlings, and other seeding materials for aquaculture; • palay, corn, and vegetable seed farms; • medicinal plant gardens; fruit tree, coconut, and other kinds of seedling nurseries; • demonstration farms; • quality control of copra and improvement and development of local distribution channels, preferably through cooperatives; • inter-barangay irrigation system; • water and soil resource utilization and conservation projects; • enforcement of fishery laws in municipal waters including the conservation of mangroves 	All services provided by provinces and municipalities	Planting materials distribution system and operation of farm produce collection and buying stations

	Province	Municipality	City^a	Barangay
Health and social welfare services	Health services which include hospitals and other tertiary health services;	Health services: <ul style="list-style-type: none"> • implementation of programs and projects on primary health care, maternal and child care, and communicable and non-communicable disease control services; • access to secondary and tertiary health services; • purchase of medicines, medical supplies, and equipment needed to carry out the services herein enumerated 		Maintenance of barangay health center
Social Welfare Services	Social welfare services which include programs and projects on rebel returnees and evacuees; relief operations; and, population development services;	Social welfare services: <ul style="list-style-type: none"> • programs and projects on child and youth welfare, family and community welfare, women's welfare, welfare of the elderly and disabled persons; • community-based rehabilitation programs for vagrants, beggars, street children, scavengers, juvenile delinquents, and victims of drug abuse; • livelihood and other pro-poor projects; • nutrition services; • family planning services 		Social welfare services which include maintenance of day-care center
Natural Resource	Enforcement of forestry laws limited to community-based forestry projects,	Pursuant to national policies and subject to supervision, control and review of the		

	Province	Municipality	City^a	Barangay
Management Services	small scale mining law and mini-hydroelectric projects	DENR, implementation of community-based forestry projects: <ul style="list-style-type: none"> integrated social forestry programs and similar projects; management and control of communal forests with an area not exceeding fifty (50) square kilometers; establishment of tree parks, greenbelts, and similar forest development projects 		
Environmental Services	Enforcement of pollution control law	Solid waste disposal system or environmental management system and services or facilities related to general hygiene and sanitation		Services and facilities related to general hygiene and sanitation, beautification, and solid waste collection
Local Infrastructure Services	Infrastructure facilities intended to service the needs of the residence of the province and which are funded out of provincial funds including, but not limited to, provincial roads and bridges; inter-municipal waterworks, drainage and sewerage, flood control, and irrigation systems; reclamation projects; Provincial buildings, provincial jails, freedom parks and other public assembly areas and similar facilities	Infrastructure facilities intended primarily to service the needs of the residents of the municipality and which are funded out of municipal funds including but not limited to: municipal roads and bridges; school buildings and other facilities for public elementary and secondary schools; clinics, health centers and other health facilities necessary to carry out health services; communal irrigation, small water impounding projects and other similar projects; fish ports; artesian wells, spring development, rainwater collectors and water supply systems; seawalls,		Maintenance of barangay roads and bridges and water supply systems; Infrastructure facilities such as multi-purpose hall, multipurpose pavement, plaza, sports center, and other similar facilities

	Province	Municipality	City ^a	Barangay
		dikes, drainage and sewerage, and flood control; traffic signals and road signs; Municipal buildings, cultural centers, public parks including freedom parks, playgrounds, and other sports facilities and equipment, and other similar facilities		
Housing Services	Programs and projects for low-cost housing and other mass dwelling			
Other Services	Tourism development and promotion programs	Tourism facilities and other tourist attractions, including the acquisition of equipment, regulation and supervision of business concessions, and security services for such facilities		Satellite or public market, where viable
	Intermunicipal telecommunication services			
		Information services which include investments and job placement information systems, tax and marketing information systems, and maintenance of a public library		Information and reading center
		Public markets, slaughterhouses, and other municipal enterprises;		Satellite or public market, where viable
		Public cemetery		
		Sites for police and fire stations and substations and the municipal jail;		Maintenance of katarungang pambarangay

a/ In addition to functions assigned to provinces and municipalities, cities are also assigned functions related to transportation and communication facilities.
Source: Author's summary of Section 17(b) of the 1991 LGC

B. Descriptive Summary Statistics of Data Collected on LSR, NTA, and GEF per Capita of the Provinces, Cities, and Municipalities in the Philippines

Table B-1. *Descriptive Statistics for the Locally sourced Revenue per Capita (L) of Provinces with and without the NTA per Capita (I), and the Growth Equity Fund (GEF), 2020-2022*

	2020		2021		2022		
	<i>L</i>	<i>L + I</i>	<i>L</i>	<i>L + I</i>	<i>L</i>	<i>L + I</i>	<i>L + I + GEF</i>
Mean	398.775	3,184.300	413.861	3,399.297	497.592	4,598.424	4,620.108
Standard Error	35.882	339.273	35.281	360.701	41.136	496.797	505.123
Median	338.474	2,431.046	349.906	2,605.801	422.689	3,521.577	3,521.577
Mode	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Standard Deviation	322.942	3,053.453	317.529	3,246.312	370.227	4,471.172	4,546.107
Range	1,874.054	26,005.121	1,667.457	27,601.833	1,962.040	37,931.641	38,525.657
Minimum	4.429	1,117.525	5.738	1,229.046	7.775	1,828.294	1,828.294
Maximum	1,878.483	27,122.646	1,673.195	28,830.880	1,969.815	39,759.935	40,353.951
Sum	32,300.751	257,928.311	33,522.728	275,343.031	40,304.942	372,472.383	374,228.748
Count	81	81	81	81	81	81	81

Table B-2. Descriptive Statistics for the Locally sourced Revenue per Capita (L) of Cities with and without the NTA per Capita (I), and the Growth Equity Fund (GEF), 2020-2022

	2020		2021		2022		
	<i>L</i>	<i>L + I</i>	<i>L</i>	<i>L + I</i>	<i>L</i>	<i>L + I</i>	<i>L + I + GEF</i>
Mean	2,707.406	7,541.887	2,669.902	7,851.342	2,954.258	10,087.366	10,099.996
Standard Error	255.723	250.648	247.276	250.157	267.970	305.161	305.944
Median	1,872.952	6,900.658	1,826.726	7,148.442	2,035.674	9,181.338	9,181.338
Mode	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Standard Deviation	3,089.911	3,028.587	2,987.846	3,022.658	3,237.894	3,687.269	3,696.740
Range	24,122.540	23,187.927	22,076.555	21,195.256	24,231.138	22,987.901	22,987.901
Minimum	90.806	3,138.936	155.464	3,301.962	168.206	4,524.876	4,524.876
Maximum	24,213.346	26,326.863	22,232.019	24,497.218	24,399.344	27,512.777	27,512.777
Sum	395,281.335	1,101,115.525	389,805.751	1,146,295.947	431,321.663	1,472,755.449	1,474,599.439
Count	146	146	146	146	146	146	146

Table B-3. *Descriptive Statistics for the Locally sourced Revenue per Capita (L) of Municipalities with and without the NTA per Capita (I), and the Growth Equity Fund (GEF), 2020-2022*

	2020		2021		2022		
	<i>L</i>	<i>L + I</i>	<i>L</i>	<i>L + I</i>	<i>L</i>	<i>L + I</i>	<i>L + I + GEF</i>
Mean	609.375	5,548.199	665.871	5,961.390	730.428	7,984.406	8,039.497
Standard Error	21.383	330.760	25.248	354.667	25.717	488.523	489.073
Median	418.036	4,339.418	470.315	4,649.523	505.360	6,187.592	6,191.238
Mode	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Standard Deviation	819.569	12,677.223	967.678	13,593.517	985.659	18,723.902	18,744.951
Range	13,266.699	469,464.036	20,941.673	503,447.076	18,513.504	696,804.668	696,804.668
Minimum	0.204	1,946.071	0.791	2,088.391	2.093	3,059.759	3,059.759
Maximum	13,266.903	471,410.107	20,942.465	505,535.466	18,515.597	696,819.608	696,819.608
Sum	895,171.343	8,150,303.967	978,163.855	8,757,282.092	1,072,998.412	11,729,092.679	11,810,021.604
Count	1,469	1,469	1,469	1,469	1,469	1,469	1,469

C. Revenue per Capita of the Provinces, Cities, and Municipalities vis-à-vis the National Average Revenue Per Capita from 2020 to 2022

Figure C-1. Locally sourced Revenue per capita (L) Among Provinces in the Philippines, FY 2021 (in PhP)

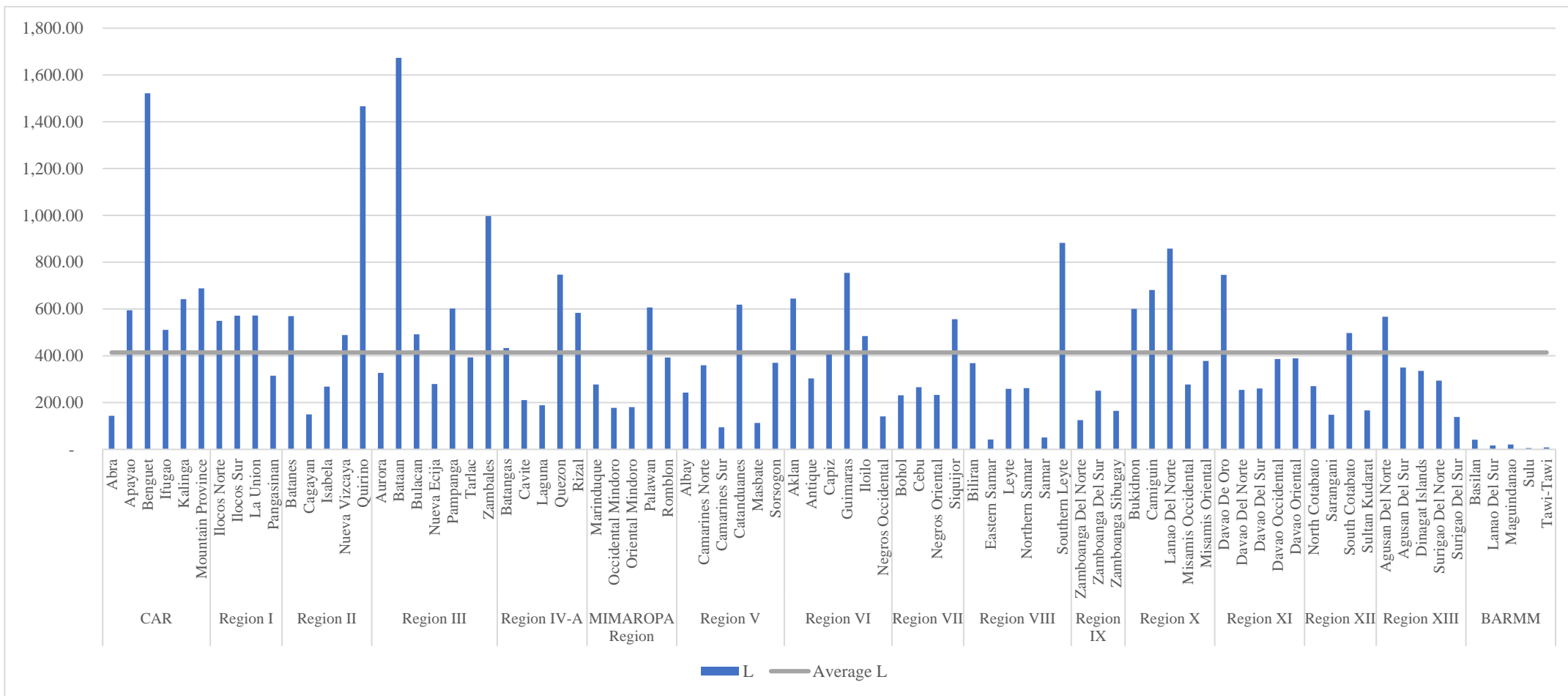


Figure C-2. Locally sourced Revenue per capita (L) and Distribution of National Tax Allotment (NTA) Among Provinces in the Philippines, FY 2021 (in PhP)

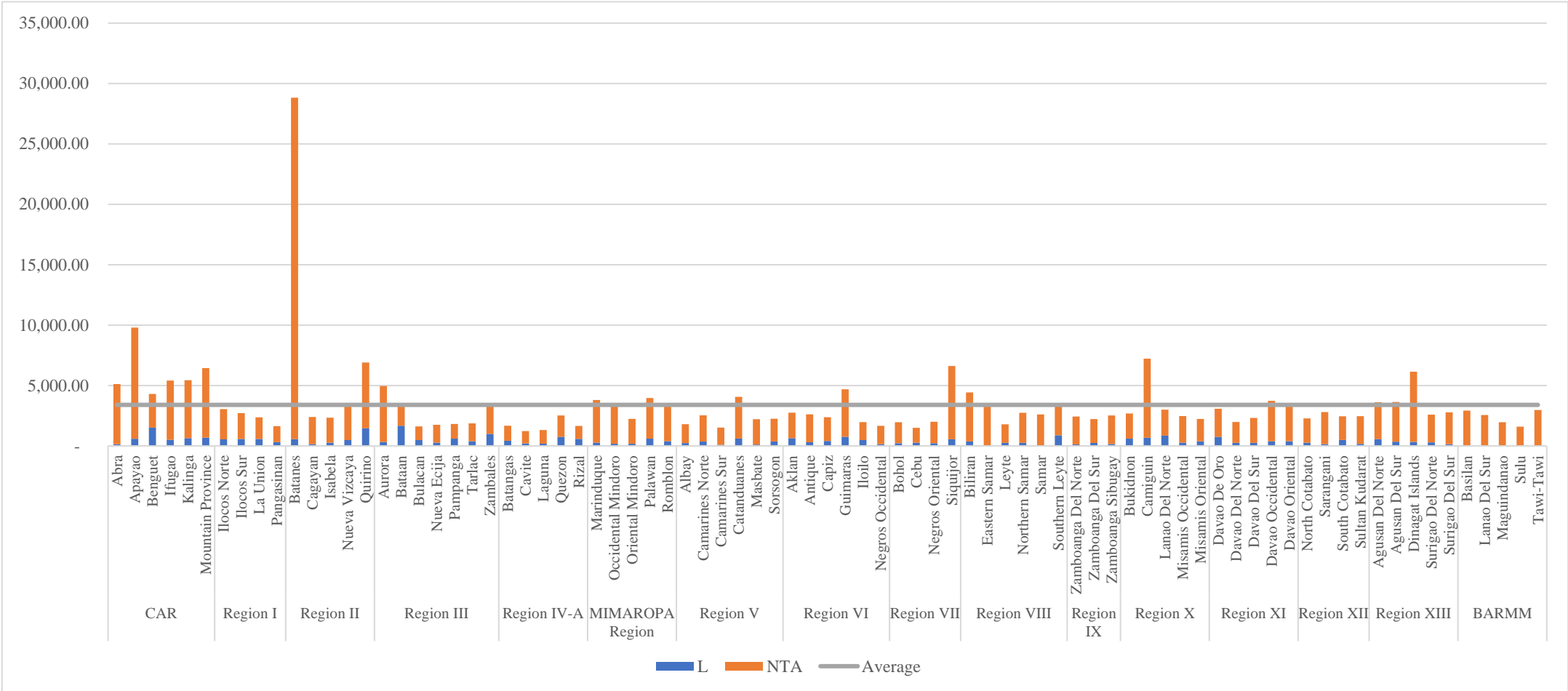


Figure C-3. Locally sourced Revenue per capita (L) Among Provinces in the Philippines, FY 2022 (in PhP)

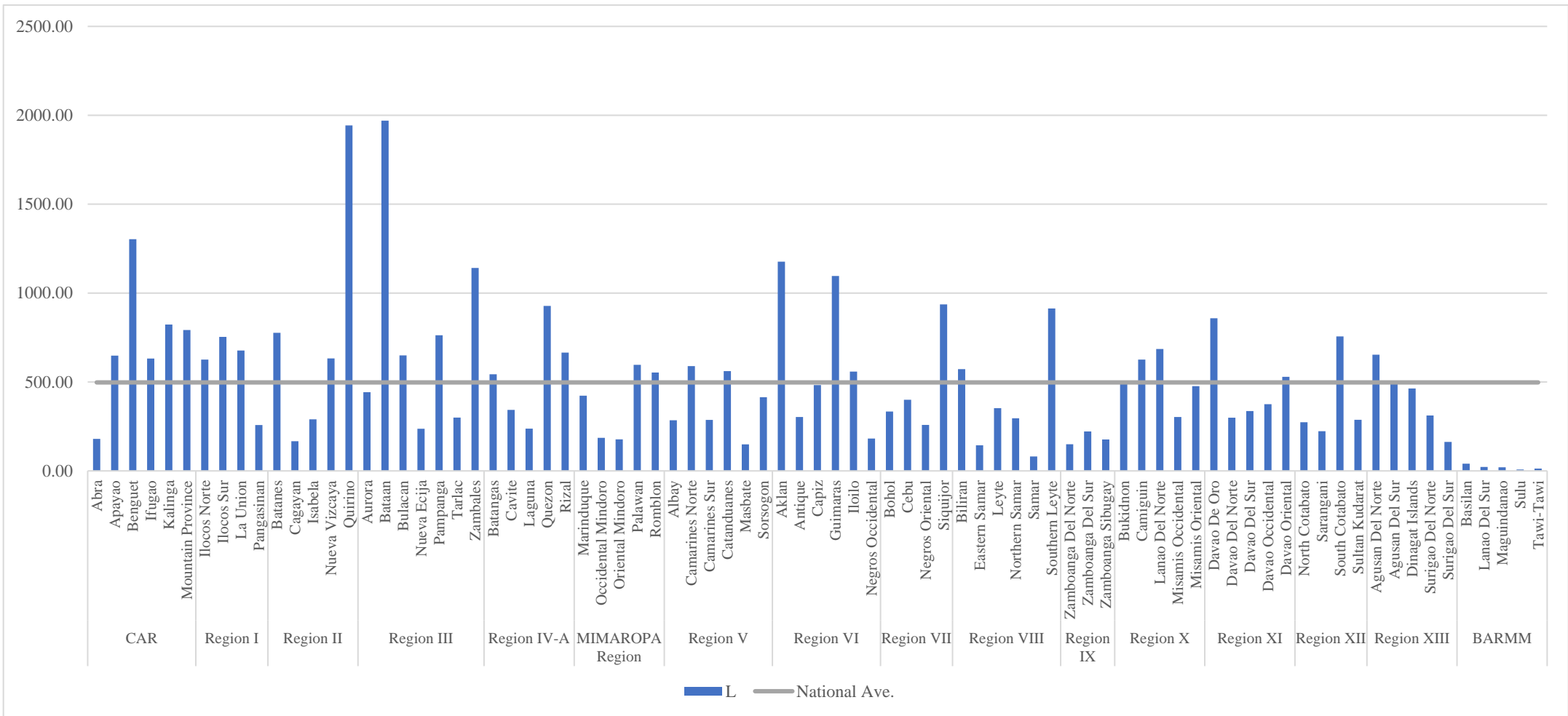


Figure C-4. Locally sourced Revenue per capita (L) and Distribution of National Tax Allotment (NTA) Among Provinces in the Philippines, FY 2022 (in PhP)

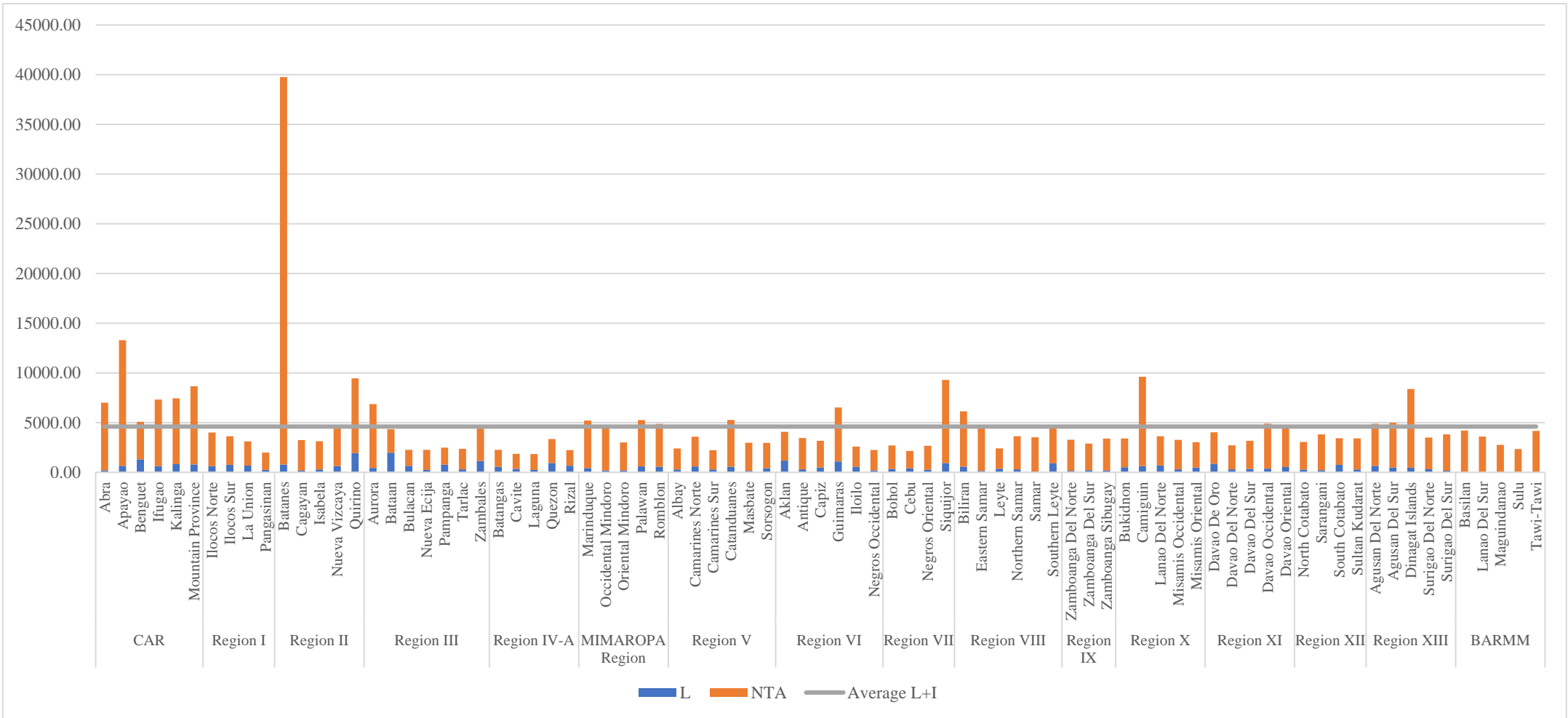
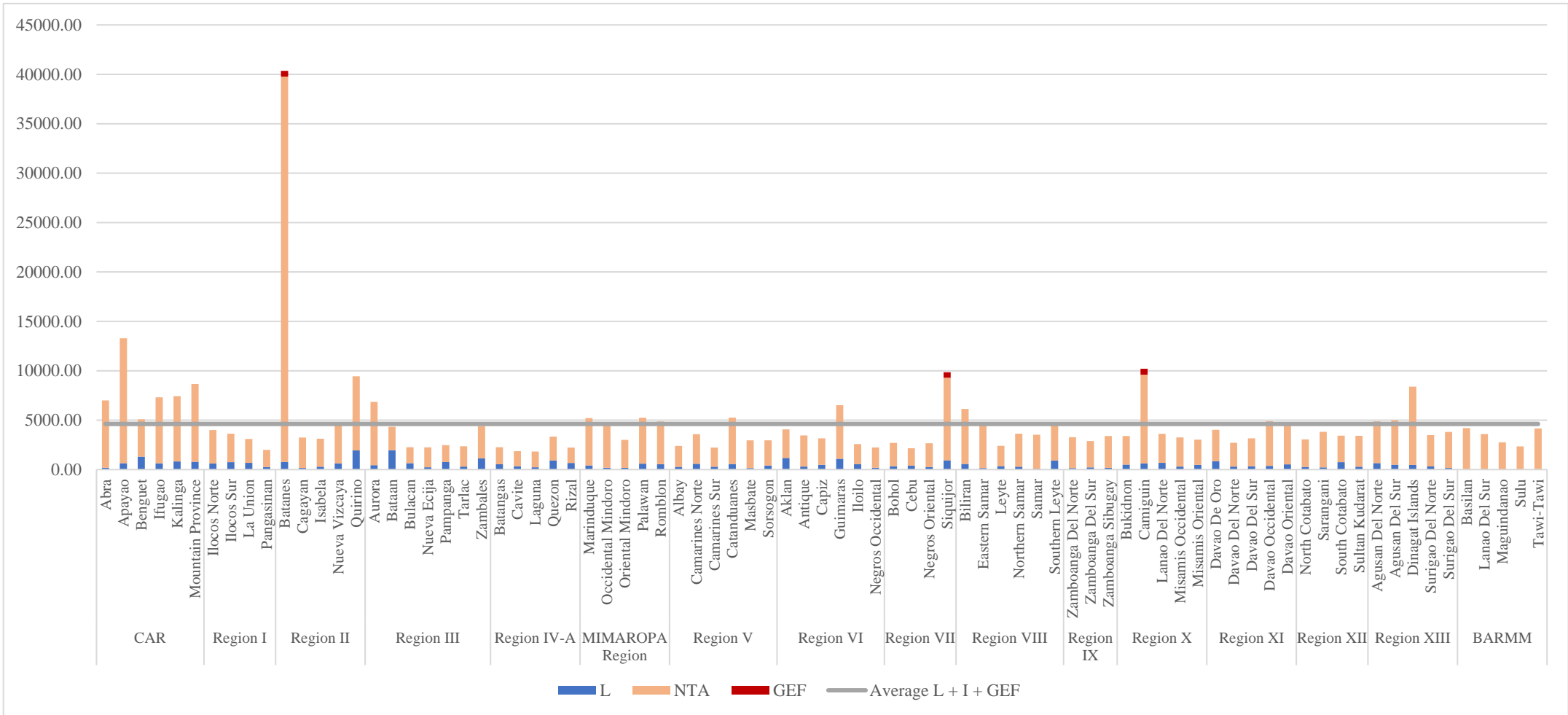


Figure C-5. Locally sourced Revenue per capita (L) and Distribution of National Tax Allotment (NTA) and Growth Equity Fund (GEF) Among Provinces in the Philippines, FY 2022 (in PhP)



D. Locally Sourced Revenues of LGUs in the Philippines

Table D-2. Total and Average Tax and Non-tax Revenues Collected by the Provinces, Cities, and Municipalities, FY 2021 and 2022

LSRs	2021						2022					
	Provinces		Cities		Municipalities		Provinces		Cities		Municipalities	
	Total	Ave.	Total	Ave.	Total	Ave.	Total	Ave.	Total	Ave.	Total	Ave.
Real Property Tax	11,842.88	146.21	53,819.34	368.63	12,491.85	8.50	13,040.62	161.00	56,433.53	386.53	13,285.02	9.04
Business Tax	2,076.44	25.64	83,763.81	573.72	15,311.13	10.42	2,080.38	25.68	87,894.80	602.02	17,808.72	12.12
Other Taxes	1,562.74	19.29	9,411.60	64.46	986.17	0.67	2,014.39	24.87	10,780.94	73.84	1,063.16	0.72
Regulatory Fees	777.18	9.59	9,780.91	66.99	5,252.85	3.58	806.29	9.95	10,351.58	70.90	5,956.88	4.06
Service/user charges	7,538.87	93.07	7,823.85	53.59	5,154.40	3.51	10,015.90	123.65	9,376.26	64.22	6,071.33	4.13
Receipts from Economic Enterprises	5,640.75	69.64	7,698.91	52.73	8,680.83	5.91	7,212.37	89.04	9,194.25	62.97	9,003.39	6.13
Other Receipts	1,505.67	18.59	3,002.48	20.56	1,926.26	1.31	2,010.69	24.82	2,557.26	17.52	1,380.19	0.94

Submitted to the Faculty of the Graduate School of Governance Studies
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Title of Thesis: **An Assessment of Customer Satisfaction with the
Perceived Service Quality of Women Help Desks
(WHDs): A Case Study on Bangladesh Police**

Governance Program,
The Graduate School of Governance Studies

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Completion in: **September 2023**

Abstract

Purpose: This study aims to measure customer satisfaction from the perceived service quality of the Women Help Desks (WHDs) of Bangladesh Police. Based on the objective, the research questions are: (1) To what extent are the customers satisfied with the service quality of WHDs? (2) What are the dominant service quality dimensions of WHDs that affect customer satisfaction?

Methodology: An explanatory sequential design of mixed method is employed in this study. The SERVQUAL theory, with quality dimensions of Reliability, Assurance, Tangibles, Empathy, Responsiveness, and Security, is the guiding framework in this study. The quantitative findings are based on customer survey data (N=104), while semi-structured interview data are utilized to supplement the quantitative findings and identify additional quality dimensions. Binomial logistic regression is used in quantitative analysis and thematic analysis in the qualitative part.

Findings: WHDs' existing service quality has been largely unsatisfactory, and amelioration is required. Reliability and security are the two leading dimensions of customer satisfaction. Moreover, service fairness could be another determinant of perceived service quality that impedes satisfaction.

Originality: This premiere study on WHDs has exposed two service-specific quality dimensions, Security, and service fairness, which carry theoretical significance and practical implications.

Implications: The findings of this study could be used to identify the key performance indicators for customer satisfaction and provide a basis for further research in this area.

Limitations: The unwillingness of the service recipients to share experiences regarding police service and the unavailability of contact details of the service recipients limited the sample size.

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List of abbreviations

- APA- Annual Performance Agreement
- CMP- Chittagong Metropolitan Police
- CPIA- Country Policy and Institutional Assessment
- GBV- Gender-Based Violence
- GRS- Grievance Redress System
- HRW- Human Rights Watch
- IDA- International Development Association
- JICA- Japan International Cooperation Agency
- KPI- Key Performance Indicator
- NIS- National Integrity Strategy
- NSW- New South Wales
- PS- Police Station
- SPSS- Statistical Package for the Social Sciences
- TQM- Total Quality Management
- VAW- Violence Against Women
- VIF- Variance Inflation Factors
- VOC- Voice Of the Customers
- WHDs- Woman Help Desks
- WISP- World Internal Security and Policy

Chapter I: Introduction

Summary

Quality improvement is critical for customer satisfaction. Bangladesh Police introduced special desks such as WHDs to improve service quality, but the level of satisfaction is not known yet, which is the baseline for improvement. This study is to investigate the satisfaction of the customers of WHDs and to identify the service quality dimensions. An explanatory sequential design of mixed-method research is employed in this study. Moreover, the SERVQUAL model is used as the guiding framework in this study.

1.1 Background

Quality has become a critical issue in both the public and private sectors. The increase in global competition has put pressure on public services to be as productive and efficient as private services (Hsieh, 2002). Consequently, Total Quality Management has been adopted as a management process in public services to improve service quality and achieve customer satisfaction. In short, TQM is the management philosophy to enhance the quality of service through a continuous effort to meet and exceed customers' requirements (Hansen, 2008). Thus, Customer satisfaction is the pivotal element of TQM, and evaluation of this element is the crucial factor in evaluating an organization's service quality.

The World Bank's "Country Policy and Institutional Assessment Report (CPIA) 2020" illustrated that the quality of public administration (Criterion 15, Cluster D) is not in good shape (The World Bank, 2022). The Service seekers in Bangladesh are dissatisfied with the service delivery system of the public sector of Bangladesh due to numerous issues, and reforms are suggested to improve the service quality (Hassan, 2015, p. 92). However, JICA supported project for 'Enhancing Capacity of Public Service Training in Bangladesh' identified the problem with public service in Bangladesh involved with 'service delivery not resources or policy (Japan International Cooperation Agency (JICA), 2017).' Bangladesh Police, as a public service organization, is far behind the people's expectations due to a lack of democratic attitude (Chowdhury M. M., 2010), and he suggested reforms for improving a sense of security. Some other studies also suggest the same for effective service delivery systems. Suddle (2012, as cited in Shafiqul et al., 2020) explored the aloofness of police in dealing with citizens due to the colonial legacy, and the attitude has not changed yet. Over time, Bangladesh Police has

become the most extensive public organization in the public sector of Bangladesh, with 220,000 police members and more than 75 divisions (Bangladesh Police, 2022). The training system, mission, and vision of Bangladesh Police are designed now to uphold human rights and to provide proactive service delivery.

The vision of the Bangladesh police is “To provide quality service by competent, efficient and dedicated professionals enjoying trust and respect of the citizens to make Bangladesh a better and safer place to live (Bangladesh Police, 2022).” It is evident from the vision that quality service focuses on achieving citizens’ trust and respect, which is termed customer satisfaction in quality management. Citizens are the customers in the public sector, and a service’s success or failure depends on customer satisfaction. Police stations are commonplace for customers, and it is the principal place to evaluate the service quality of police service (Shahjahan, 2020). So, the Evaluation of services in police stations is the best way to assess the service quality of Bangladesh police.

Police stations are the smallest unit of Bangladesh police and are designed to provide most of the services at the grass-root level. In Bangladesh, police stations offer various kinds of services as per the customers’ requirements, but guided by rules and regulations, like a general diary, complaints lodging on criminal matters, verification of a criminal history of persons, and investigation of criminal cases. Among those services, gender-based violence and domestic violence are dealt with by the WHDs, which is very sensitive from customers’ perspectives. A recent trend suggests that the complaints on this desk are on the rise (UNDP, 2022) and requires a special focus on customer satisfaction. Finally, this paper is aimed to evaluate the quality of the services provided by the Woman Help Desks (WHDs) at police stations.

1.2. Key Terms and Definitions

Quality

Quality has become a catchphrase in both the manufacturing and service sectors though the word was first introduced in a car production company in the USA in the 1910s. Quality is a universal term, but the meaning is different in at least two ways, such as relative or absolute, and in manufacturing or service sectors. One group thinks that quality differs with people, and another group considers quality as an absolute phenomenon that needs to be achieved through continuous development. Similarly, the definition of quality differs in the manufacturing and service sectors as well. The common point in each group is “customer satisfaction.”

The European Organization for Quality Control (EOQC) defines quality as a combination of three features such as excellence in products and services, performance, and Managerial practices (European Organization for Quality (EOQ), 2022). There are three features associated with the quality of service or products that affect the customer. They are the price, quality, and delivery of a product or service (Hoyle, 2007). The price and delivery are ephemeral in nature, whereas quality has a long-term impact which is determined by conformance to the requirements or degree of excellence after experiencing it (Hoyle, 2007). The definition of quality has changed over time. The evolution of the quality in the International Standard Organization (ISO) is shown in Table 1.

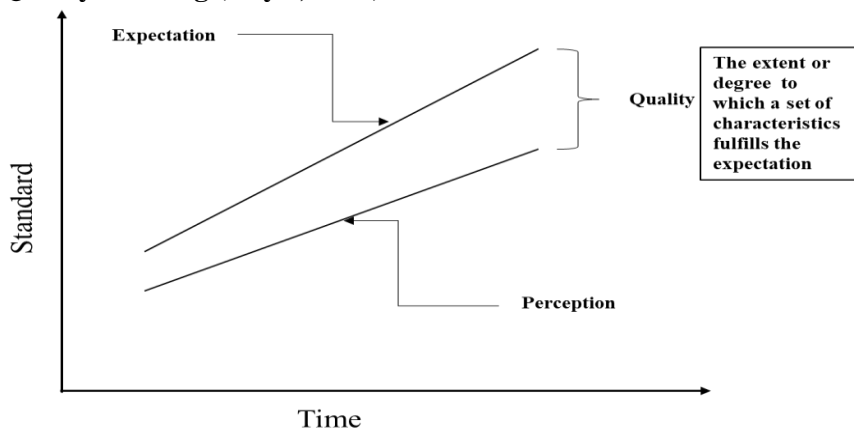
Table 1: Evolution of Quality Definition by ISO

Definition	ISO Source
The totality of characteristics of a product or service that bear on its ability to satisfy stated or implied needs	ISO 8402:1986 clause 3.1
The totality of characteristics of an entity that bear on its ability to satisfy stated or implied needs	ISO 8402:1994 clause 2.1
The degree to which a degree of inherent characteristics fulfills requirements	ISO 9000:2000 clause 3.1.1
The degree to which a degree of inherent characteristics of an object fulfills requirements	ISO 9000:2015 clause 3.6.2

Source: (Transition Support, 2019)

The word “degree” implies the difference between stated requirements and the standard achieved, which is shown in Figure 1.

Figure 1: Quality meaning (Hoyle, 2007)



Quality is a diverse concept depending on products and services. It may vary from industry to industry as well (Garvin, 1988). Garvin, Harvey, and Green (1993) defined quality in five co-existing ways:

1. Exceptional: This idea is based on three alternatives: Tradition, Excellence, and Standards
2. Perfection: This concept defines quality as conformance to specification (benchmark) for zero defect or no defect of product or services.
3. Fitness for Purpose: It is the relationship between the purpose of the use of a product or service to the quality. Without fitness to purpose, a product or service may be regarded as worthless.
4. Value for money: It defines the constructive collaboration of the cost of products or services to the level of specification. For public services, it could be regarded as “Accountability” (Dahlgaard, Kristensen, & Kanji, 2007).
5. Transformative: This concept includes “Value Addedness” for qualitative change (Müller & Funnel, 1992) and “Empowerment of employees” for their own transformation for a positive change (Harvey & Barrows, 1992).

Quality in Service Sector

The concept of quality in service sectors is different from that of manufacturing sectors. Pollitt and Bouckaert (1995) claimed that services are different from goods as they cannot be produced, stored, or checked and presented afresh to the customers. Consequently, services, especially in public sectors, are generated on the spot, and the quality of services dramatically depends on the interaction of providers and receivers. The taxpayers are the user of public services, and the dynamics of public service are much more complicated in terms of bureaucratic control and political notions. Noel (1995) explained quality in public services as ‘what the customer wants’ as an attempt to rediscover the customer. It is the customer who dictates the policy direction associated with quality and service delivery. In the public sector, the spotlight on quality may be considered in three different but interconnected levels, namely Micro-quality level, Meso-quality level, and Macro-quality level (Pollitt & Bouckaert, 1995).

Rendering service as a Police Officer is slightly different from others, especially in subcontinental countries, as the history of police formation, political use of police, and police culture are different from other regions of the globe (Chowdhury M. M., 2010). So, the

improvement of service quality in Bangladesh police is a complicated phenomenon that needs analysis to find the gap in service quality, the precursor of customer satisfaction.

Quality Management and Customer

Management is a process of utilizing organizational resources to achieve the desired goal of customer satisfaction. Kreitner defined management as “a problem-solving process for achieving organizational objectives effectively through the best use of scarce resources in a dynamic environment” (Kreitner, 2005). Quality management is the process of achieving the expected requirements of a product or service to satisfy customers, as quality improvement begins and ends with the customer (Senge, 1991). Thus, Customer Satisfaction is pivotal for an organization to effectively use quality management systems (QMS) to achieve excellence (ISO 18091, 2019) through service quality.

Service Quality and Customer Satisfaction

Service quality is defined by the Customer (Hoyle, 2007), and quality of service results in customer satisfaction. Therefore, these two notions are conceptually distinct but empirically overlapping (Schneider & White, 2004). Among the numerous definitions of service quality, the extensively used definition is the extent to which a service meets customers’ needs or expectations (Wisniewski, 2001). Schneider & White (2004) defined service quality as overall excellence or superiority using a judicious mind. Rhee & Rha (2009) argued about the existence of four different qualities in the service sector such as process quality, outcome quality, design quality, and relationship quality. They demonstrated that end customers (Beneficiaries) are concerned about process and outcome quality, but the intermediate customers are involved with the design and relationship with customers. In this paper, customer satisfaction is measured using the concept of service quality proposed by Zeithaml et al. (1990) that results from the gap between customer expectations of service and experienced service. Expected service is the customer’s need or wants from the service provider, and perceived service is the evaluation depending on the experience about the service.

Oliver (1997) outlined customer satisfaction as “a judgment that a product or a service feature, the product or service itself, provided (is providing) a pleasurable level of consumption-related fulfillment, including levels of under- or over-fulfillment.” For the service sector, the judgment comes from the difference between expectations and performance. Expectations evolve through knowledge about the service and image of the

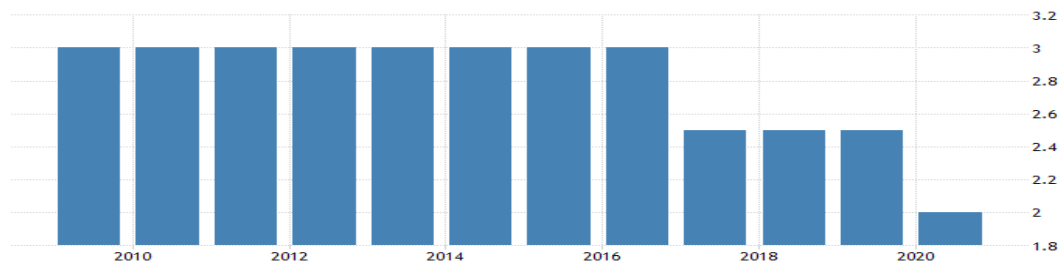
organization in general. A customer is regarded as satisfied when the performance is greater than the expectation and dissatisfied when the expectation is greater than the performance (Parasuraman et al., A conceptual model of service quality and its implications for future research, 1985). For this study, this definition is considered to measure customer satisfaction.

By definition, service quality and customer satisfaction are interrelated but slightly distinguishable notions. Consumers' own judgment about a service is service quality, and the emotional impact of the perceived service is customer satisfaction (Hoyle, 2007). The casualty relationship between services is often a debatable point among quality gurus, but **service quality is regarded as the antecedent of customer satisfaction based on empirical research** (Chen et al., 2014; Kasper et al.,1999). Perceived service quality and customer satisfaction are often applied interchangeably despite conceptual differences, but both deal with a customer's experience with an organization (Hoyle, 2007). Perceived service quality and customer satisfaction are used interchangeably in this paper to find the dynamics of the service quality dimensions with customer satisfaction.

1.3. Problem Statement

The world bank's Country Policy and Institutional Assessment Report (CPIA) 2020 reveals that the quality of public administration in Bangladesh is 2.00 on the rating scale of 1=low to 6=high (The World Bank, 2022).

Figure 2: Quality of Public Administration in Bangladesh



Source: (World Bank Group, 2021) Link: <https://data.worldbank.org/indicator/IQ.CPA.PADM.XQ>

The country's current policy and frameworks are evaluated by CPIA, and the score is used in the IDA allocation process (World Bank Group, 2021, p. 3). The CPIA criteria which include 16 criteria divided into four clusters, where the quality of the public administration (Criterion 15) and transparency, accountability, and corruption in the public sector (Criterion 16) are included in the fourth cluster, namely, public sector management and institutions. Since 2017 Bangladesh has been down sliding, and in 2020, it's the lowest in the last ten years. The

consecutive failure to maintain good scores extensively impacts the capacity of public sectors to utilize development assistance from partners.

Moreover, Bangladesh is ranked 121st among 127 countries in the world internal security and police index 2016, which measures security providers’ performance (WISP Index, 2016, p. 46). The overall score of Bangladesh is 0.375, whereas the highest score is 0.898 by Singapore. The WISPI 2016 calculated the overall score based on four domains: i.) Capacity ii.) Process iii.) Legitimacy and, iv.) Outcome. Here, the legitimacy domain is measured through the public view regarding the security providers, especially the police. The score of Bangladesh under each domain is shown below.

Table 2: Bangladesh Police in World Internal Security and Police Index

<i>Country</i>	<i>Overall Score</i>	<i>capacity</i>	<i>Process</i>	<i>Legitimacy</i>	<i>Outcome</i>
<i>Bangladesh</i>	0.375	0.244	0.195	0.328	0.701

Source: (WISP Index, 2016, p. 46)

Human Rights Watch (HRW) reported the increase of violence against women in Bangladesh increased by 70% during the Covid-19 pandemic, and they identified the poor enforcement of law and institutional barriers as the main obstacle to availing the support provided by the existing criminal justice system (Human Rights Watch, 2020). UNDP (2022) termed the increase in Violence Against Women (VAW) as a ‘Shadow Pandemic.’ The HRW report (2020) also argued that the judgmental attitude of police and negligence discourage the victims from taking legal steps that result in lesser reporting. So, it has become a challenge for Bangladesh Police to provide a proper response to the victims of VAW. In addition, an investigation by Shafiqul et al. (2020) portrayed the perception of people about various service qualities of Bangladesh police, where more than 60% of respondents labeled the service quality of Bangladesh Police as ‘Ba.’. The study also showed that more than 70% of respondents found the behavior of police officers is below average, and they use excessive force for political causes.

Experts noted that because of the absence of gender sensitivity, women victims of Violence Against Women (VAW) in Bangladesh are not reported to the police (Chowdhury K. R., 2020). So, improving women-related services is critical for Bangladesh police. It stimulated the introduction of the Woman Help Desks (WHDs) to increase service quality for women service seekers in every police station in 2020 (The Daily Star, 2022). Measurement of service quality

is the baseline to take further initiative for quality improvement, and very little is known about the targeted outcome unless the measurement of services using suitable tools (Hoyle, 2007). As WHDs are a new initiative to improve service quality, it is critical to know the present status of service quality and the associated factors that lead to customer satisfaction.

1.4. Research Objectives

The primary objective of this study is to measure customer satisfaction from perceived service quality. The baseline assumption of this study is that **service quality is the antecedent of customer satisfaction**. Consequently, service quality and customer satisfaction are interchangeable despite their conceptual differences, as both of them deal with customers' experiences. The baseline assumption is supported by existing pieces of literature on service quality and customer satisfaction (Chen et al., 2014; Hoyle, 2007 & Kasper et al., 1999).

Moreover, some other specific objectives associated with service quality will be in focus.

Firstly, This study will explore the the present status of customer satisfaction with service quality of WHDs

Secondly, It will unearth the factors that are critical for expected service and perceived service.

Finally, It will uncover service-specific factors that are essential for perceived service quality that provides customer satisfaction.

1.5. Research Questions

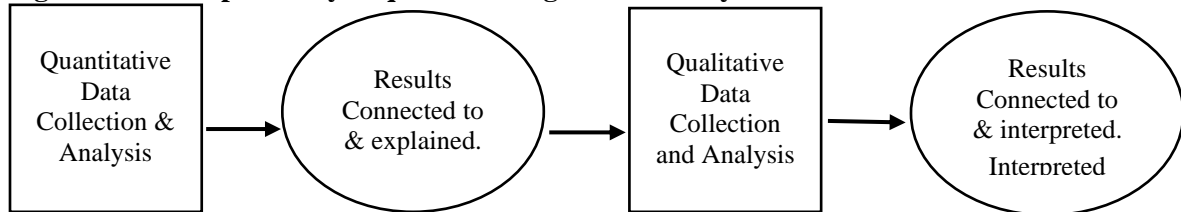
To achieve the abovementioned research goals, the author formulated the following two research questions. The author also formulated two supplementary sub-questions for the second research question.

- 1. To what extent are the customers (service recipients) satisfied with the service quality of WHDs?**
- 2. What are the influential dimensions of service quality that affect customer satisfaction with WHDs?**
 - 2.1 What are the main factors that affect expected service?**
 - 2.2 What are the main factors that affect perceived service?**
 - 2.3 What are the service-specific dimensions and factors that affect customer satisfaction?**

1.6. Research Methodology

The author designed an explanatory sequential design of mixed-method research where two distinctive phases were in data collection and analysis, as shown in Figure 3.

Figure 3: The Explanatory Sequential Design of this study



Source: (Creswell & Clark, 2018)

The survey was conducted to collect quantitative data in the first phase, and The questionnaire was developed based on the SERVQUAL theory proposed by Parasuraman et al. (1988) using the dimensions Reliability, Assurance, Tangibles, Empathy, Responsiveness, and Security (RATERS model instead of RATER model) where Security dimension is employed here based on the job description of the WHDs as service-specific dimension. SERVQUAL theory employs the gap between expected service and perceived service to measure perceived service quality which is the antecedent of customer satisfaction (Kasper et al., 1999). Four police stations of Chittagong Metropolitan Police (CMP) were selected as an average case for their location and divergence of service recipients. The author used a census-type sampling model to reach a maximum number of service recipients who took service from WHDs from July 2022 to September 2022. One hundred four service recipients responded properly to the questionnaire both online by using Google questionnaire and offline by taking the support of an interested research group. Moreover, The SPSS (Statistical Process for Social Sciences) version 29 Will be employed to analyze the quantitative part.

A semi-structured interview was conducted with the purposefully selected four participants (two highly satisfied and two extremely dissatisfied) from the respondents (extreme case selection) in the quantitative part. Besides, the response to an open-ended question about the service quality of WHDs was also a source of qualitative data. An interview protocol suggested by the Imperial College of London Interview protocol Design was followed for the interview (Imperial College London, 2022). To analyze the qualitative data, the author used both deductive and inductive approaches of thematic analysis to identify service-specific factors.

1.7. Significance of Study

To improve service quality, the starting point is to know the present status of service quality and the level of satisfaction that the service recipients experience. Measuring service quality is also important to establish a system that facilitates identifying the factors that are imperative to satisfy customers with quality service (Hoyle, 2007). As the service of WHDs is specialized and formulated to increase the service quality, so measurement of service quality is the baseline to know the dynamics of the service quality factors and customer satisfaction. Besides, this study is noteworthy in the following ways as well.

Firstly, this study will find the gap between expectation and perception, which is essential to know for further service design to achieve the intended customer satisfaction.

Secondly, the influential service quality dimensions and corresponding SERVQUAL factors will be identified, which will help the management to know the field where intervention is needed.

Thirdly, this research will unlock the service-specific factors and dimensions other than usual dimensions, which have huge theoretical and practical implications.

Finally, Most of the customer satisfaction or service quality-related studies are quantitative. Those papers explore the statistically significant aspects of the study but do not provide how those issues interact with service quality. But, this explanatory sequential design will provide a more insightful outcome that will be supportive of knowing the dynamics of service quality dimensions that result in customer satisfaction or dissatisfaction.

1.8. Thesis Structure

The author organized the thesis dividing into six chapters, namely I.) Introduction II.) An overview of WHDs III.) Literature Review IV.) Methodology V.) Data Collection and Analysis VI.) Discussion and VII.) Conclusion.

Chapter I, Introduction, reflects a brief background of the research that explains the necessity of service quality and how the necessity of measuring service quality has evolved. This section also explains the issues with the service quality of police and why the study on the customer satisfaction of WHDs is important. The chapter also gives a brief overview of the research objective and the research questions to realize the objectives, methodology to be

followed, and expected significance of the study. Besides, Chapter II (an overview of WHDs) describes the organizational structure of police stations, the monitoring system, the background of introducing WHDs, and situation analysis to explain the problem from a broader aspect.

Chapter III (Literature Review) describes the definition of key terms like service quality, customer satisfaction, and TQM and the applicability of TQM in police service. The chapter also explains the interaction between service quality and customer satisfaction and outlines the existing literature from the global and local contexts to clarify the research gap.

Chapter IV (Methodology) explains different theoretical models that enable measuring service quality and justify the worth of the SERVQUAL model from the comparative study on other models. This part also describes the research design that includes a method of the research, justification of mixed method research, and research framework. The data collection process in both qualitative and quantitative parts, analytical tools, and integration process of both kinds of data are also described thoroughly in the later part of the methodology part.

Chapter V (Data Analysis) describes the data for the quantitative and qualitative parts separately. The quantitative data analysis part includes mainly descriptive statistics and required inferential statistical analyses to answer research questions. The qualitative data analysis part describes the coding process. The deductive approach of thematic analysis is used to connect the findings to explain the quantitative findings, but the inductive approach of thematic analysis is employed to find new service-specific dimensions that affect service quality.

Chapter VI (Discussion) responds to each of the research questions based on the findings. How the service quality factors shape service quality dimensions and customer satisfaction are discussed from a realistic context. Finally, Chapter VII (Conclusion) summarizes the findings of the research. It also outlines the policy recommendations, limitations, practical implications, and scope of future research.

Chapter 2: Research Background

Summary

Despite various initiatives from the government of Bangladesh to improve service quality, such as APA and NIS, public organizations are still struggling to achieve the confidence of the customers. The concept of service quality, quality management, customer satisfaction, and Total quality management need to be familiar to the service providers to improve service quality. The case of Women Help Desks (WHDs) of Chittagong Metropolitan Police is taken in this study as an average case to measure service quality.

2.1 Bangladesh Police in Brief

Bangladesh Police is one of the most vibrant public organizations with the authority to enforce laws guided by the law. Police are regarded as the key component of the criminal justice system and work as the entry point to the system in the Bangladesh context. It was established under ‘The Police Act¹ of 1861’ and guided by ‘The Police Regulations of Bengal 1943’ (Laws of Bangladesh, 2019). Though the laws seem antique, the regulation was revised from time to time. Each Metropolitan units also have separate dedicated laws like The Dhaka Metropolitan Ordinance 1976 and The Chittagong Metropolitan Ordinance 1978². Bangladesh Police serves the nation with a commitment to upholding the rule of law and ensuring human rights. Providing quality service through active community support is echoed in the mission and vision of Bangladesh (Bangladesh Police, 2022).

Mission

“Bangladesh Police is committed to enforce law, maintain social order, reduce fear of crime, enhance public safety and ensure internal security with the active support of the community.”

Vision

“To provide quality service by competent, efficient and dedicated professionals enjoying trust and respect of citizens to make Bangladesh a better and safer place to live.”

The vision of the Bangladesh Police portrays the commitment to providing quality service. This commitment is also reflected in the statement of the IGP (Bangladesh Police, 2022).

“We have been changing every day in every way, and today, policing here is pro-people, proactive, community-oriented, technology-based, and sensitized to issues regarding human rights, gender, and children.”

¹ Act V of 1861; link: <http://bdlaws.minlaw.gov.bd/act-details-12.html>

² Link: <http://bdlaws.minlaw.gov.bd/act-578.html>

Women, Children, and Senior Citizens are given priority in service delivery. Gender sensitivity and human rights are the major areas that police emphasize in training to create a positive impact in society. Bangladesh Police is an essential public service organization with a commitment to maintaining internal peace and security. The primary job description can be categorized as follows:

Table 3: Functions of Bangladesh Police

No.	Aspects	Functions
1.	Crime Management	<ul style="list-style-type: none"> ▪ Intelligence Gathering ▪ Crime Response ▪ Investigation ▪ Verification ▪ Public Order Management (POM) ▪ Traffic Management ▪ Assisting Prosecution
2.	Internal Security	<ul style="list-style-type: none"> ▪ Patrolling (Online and offline) ▪ Security Watchdog ▪ VVIP movement management ▪ KPI³ Security ▪ Security at National Events
3.	Social Integration	<ul style="list-style-type: none"> ▪ Awareness Programs ▪ Community Policing and Bit Policing ▪ Humanitarian Activities ▪ Participation in Social Events ▪ Observing Open House Day ▪ Blood Donation and Charity ▪ Victim Support Centers
4.	International mandate	<ul style="list-style-type: none"> ▪ Addressing Transnational Crimes (Interpol, SAARCPOL⁴, etc.) ▪ UN Peacekeeping Missions

Source: (Bangladesh Police, 2022)

The citizen charter of Bangladesh police describes the right of both internal and external customers. It clearly defines the customer service process, value, and time. The organization designed a Grievance Redress system⁵ (GRS) for aggrieved customers to ensure their rights like other public organizations in Bangladesh. Bangladesh Police designed several

³ KPI- Key Point Installments such as Important infrastructure.

⁴ South Asian Association for Regional Cooperation (SAARC) Police (POL) is a regional organization.

⁵ GRS has been introduced in Bangladesh with a view to ensuring the accountability of public servants since 2007. Source: Grievance Redress System Guideline 2014 (https://www.grs.gov.bd/assets/grs_guideline.pdf)

services for women, such as Police Cyber Support for Women (PCSW)⁶, Women Help Desks (WHDs) in every police station, and Victim Support Centers (Bangladesh Police, 2020).

2.2 Chittagong Metropolitan Police

Chittagong Metropolitan Police (CMP) is one of the units of Bangladesh police, established under 'The Chittagong Metropolitan Ordinance 1978', and it is the second largest police unit following Dhaka Metropolitan Police (DMP). The Commissioner, who is a police officer of the rank of DIG⁷, is the head of the unit. This unit consists of 5785 employees, and the police-people ratio is 1:900 (Chittagong Metropolitan Police, 2023), much lower than the standard ratio of 1:500 (McGlinchy, 2021). CMP has many subunits, but the service delivery points, mainly the police stations, are under the crime unit, which is divided into four divisions: South Division, North Division, West Division, and Port Division. Deputy Commissioner (DC) is the head of each division. Each division includes four police stations headed by an Officer-In-Charge (OC), a police officer of grade nine. The activities of the police stations are controlled mainly by Deputy Commissioner (DC). Assistant Commissioners (AC) and Additional Deputy Commissioners (ADC) help DC to supervise the service delivery and administrative activities of each police station. Police stations are the pivotal service delivery point, and the service recipients mainly visit police stations for service. The services provided in the police stations are so many, but mainly General Diaries (GD) and Complaints (Criminal Cases). Eventually, customer satisfaction primarily depends on the function of police stations, and evaluation of the service quality of police stations provided is the best way (Shahjahan, 2020).

2.3 Women Help Desks (WHDs) in Police Stations

Women victims need special care in police stations as they go through mental stress as a victim. Sharing incidents of harassment or sexual violence with a male police officer is not a conducive environment to ensure the human right to access justice. Human Rights Watch (HRW) report (2020) argued that the lower enforcement of the law and failure to ensure accountability as the main reason behind the increasing trend of Gender-Based Violence (GBV). Their observation on Bangladesh's Response to GBV is 'inadequate.' Therefore, it is a matter of great concern

⁶ Police Cyber Support for Women is a round-the-clock service point online, especially using Facebook.

⁷ Deputy Inspector General (DIG) is a high-ranked (Grade 3) officer of Bangladesh.

for the police as a leading law enforcement agency to design a service that encourages the victim to access the legal procedure. Women Help Desks (WHDs) are the one-stop service points for women though it is designed to serve women, children, the disabled, and elderlies. However, commonly, women are the main customers of this special service desk, and a separate room comprised of women officers only is arranged in each police station to enable a women-friendly service delivery point (The Daily Star, 2022, p. 1). 659 WHDs were inaugurated by the Prime minister in 2022 formally on the occasion of the centenary birth celebrations of the father of the nation Bangabandhu Sheikh Mujibur Rahman. However, it started working in January 2020 (The Daily Star, 2022). A women police officer is responsible for taking care of the specialized service desk, and she is trained in that service. Moreover, a guideline about how to deal with women service seekers and women victims was introduced in 2016 under a UNFPA-supported project. However, the objective of the WHDs is to create an environment in the police stations where women service seekers will feel free to share their problems and views. Improving the rate of reporting Violence Against Women (VAW) and ensuring fearless access to the police service are also primary objectives of the WHDs. In addition, the desk is entrusted to provide information to the insolvent victims about other government-provided facilities to ensure access to justice (The Financial Express, 2022).

2.4 Situation Analysis and Explanation of the Problem

A JICA-supported project, ECPUST-BD,⁸ in 2007 endeavored to answer a simple question: ‘Why does good public policy in Bangladesh result in the poor delivery of public services?’ (JICA, 2009). The investigation revealed that the problem is with service delivery, not resources or policy. They demonstrated that the incorporation of localized TQM, named Banglanization, could increase efficiency for improved service delivery. The same project completion report in 2017 recommended that Work Improvement Teams (WITs) and *KAIZEN*⁹ in every organization could be supportive of improving the efficiency of service delivery. Following the policy recommendation and as a part of continuous reform to improve the service delivery system, the Bangladesh government took several initiatives.

⁸ Enhancing the Capacity of Public Service Training in Bangladesh (ECPUST-BD)

⁹ *Kaizen* is a Japanese word that means small but continuous improvement.

Innovation in Service Delivery- It encourages public servants to take the initiative to improve service quality. Every public organization has an innovation team to plan for continuous improvement and process simplification in service delivery (Ministry of Public Administration, 2021). The a2i¹⁰ project promotes innovation in public services to ensure affordable access for all citizens of Bangladesh [a2i Programme, 2022]. The program is also fostering *Govpreneur*¹¹ to reduce TCV (Time, Cost, number of Visits) through a trial-and-error process.

Annual Performance Agreement (APA): It is a yearly agreement between the controlling office and subordinate office that describes the action plan of that unit for the upcoming year and the Key Performance Indicators (KPI) to evaluate the performance. The performance-oriented system was outlined in 2014-15 to increase institutional efficiency and to create an accountable system for the best use of allocated resources (Sharifun Nesa, 2021). The objective part is divided into two parts: (i) Mandatory Strategic Objectives (MSOs) are general objectives for all public offices (ii) Respective Strategic Objectives as per the job description or citizen charter of the department. A study on the implementation of APA uncovered that the inclusion of MSOs in APA is improving accountability and transparency despite some gaps between ministries and field offices in implementation strategy (Rahman et al., 2019). The KPIs of the respective strategic objective create the goal in continuation of previous years that provides the scope of comparison to understand the trend of changes.

National Integrity Strategy (NIS): Bangladesh adopted the National Integrity Strategy in 2012, and it has been incorporated into the APA as an MSO for all organizations (Ministry Of Public Administration, 2022). The objective of this paper is to establish good governance in state organizations and reduce corruption in society. NIS is a collection of idealistic thoughts to encourage people to do the right thing in the right way. It is challenging to implement without solid political commitment along with administrative enforcement mechanisms (Rifat, 2021, p. 58). At least, a strategic outline is created by adopting it in performance evaluation through the KPIs that are still difficult to verify.

Grievance Redress System (GRS): The grievance Redress System was introduced to address the complaints of service seekers in a formal manner. It also carries weight in

¹⁰ a2i aspires to innovate programme to motivate innovation and digital transformation.

¹¹ *Govpreneur* is used for government entrepreneurs (public officials) for innovation.

performance evaluation by APA. A study on GRS at the field level marked the lack of publicity from field officers (Alom, 2021). It detected three prime reasons for the ineffectiveness of NIS at the field level: (I) Lack of Trust in the GRS system, (II) Risk of return with retaliation for complaints, and (III) High level of tolerance of harassment. Every organization appoints an 'Onik' who is responsible for redressing formal complaints within the stipulated time. Otherwise, the aggrieved can seek remedy from appealing authority.

Right To Information: The Right to Information Act (RTI Act) was enacted in 2009 to ensure access to government information as a part of the fundamental right of freedom of thought, conscience, and speech (Article 38) ensured by the Constitution of Bangladesh (Ministry of Public Administration, 2023). It creates a legal binding to appoint Information providing officers, the process of information disclosure, and the formation of Information to oversight the activity.

To conclude, Bangladesh Police implements all the initiatives from the government to improve service quality as a part of public service. Every Police Stations have its APA with the Superintendent of Police or Deputy Commissioners of police. Citizen Charter is supposed to be visible in each police station with proper mechanisms of GRS for aggrieved or dissatisfied customers. The APA of police stations covers each service as per the citizen charter as the strategic objective, and KPIs are there for justifications. Despite all administrative arrangements to ensure the rights of the customers, there is still a low rate of reporting of violence against women (Human Rights Watch, 2020). Moreover, women victims still feel a lack of confidence in taking services from the police stations (The Daily Star, 2022). A dedicated desk was formally inaugurated in 2022 though it has been working on a pilot basis since 2020 to address the issue. The endeavor of the Bangladesh Police is to provide quality service reflected through designing a special service desk for improved service quality and customer satisfaction. In the meantime, the research of Shafiqul et al. in 2020 revealed that about 60% of customers of police labeled the overall service quality as bad. It is equally important to know the perceived service quality or customer satisfaction with the WHDs to know the coherence with the intention of improved quality. It will also enable the revealing of the service quality factors that are associated with customer satisfaction, which could be helpful in setting Key Performance Indicators (KPIs) for WHDs for performance evaluation.

Chapter 3: Literature Review

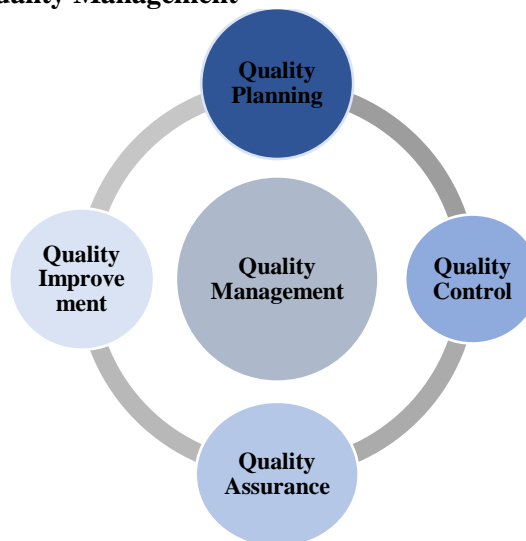
Summary

Public service quality components are different from the general quality components for their unique characteristics like intangibility, heterogeneity, and inseparability. The significant factors of WHDs need to be identified to avail continuous improvement subject to the mitigation of the ‘Deadly Sin’ in the public sector. Existing studies depict that the significant factors are different in different organizations. Thus, WHDs service also might have specific components for its unique characteristics of services. Thus, the study focuses on both the usual service dimensions suggested by SERVQUAL theory and service-specific dimensions.

3.1. Quality Management Components

The components of quality management are quality planning, quality control, quality assurance, and quality improvement (Quality Gurus, 2022). Juran described three managerial processes for quality control, known as the “Juran Trilogy” (J.M.Juran, 1998). He argued to consider quality assurance as a part of quality control, not a distinct one. Nevertheless, in practice, they are now considered separately, but each of them is interrelated.

Figure 4: Components of Quality Management



Source: (Quality Gurus, 2022)

In every organization, a Quality Management System (QMS) is required for consistent improvement of quality and better customer satisfaction (American Society for Quality, n.d.). ISO 9001:2015 identified seven principles for effective quality management (ISO 9001:2015, 2015). They are:

Table 4: Principles for Effective Quality Management

<i>Principles</i>	<i>Description</i>
Customer Focus	To focus on customer’s requirements and expectations
Leadership	Organize and lead the human resources to achieve quality.
Engagement of People	Facilitates competency, empowerment of employees, and Reward for quality
Process Approach	Functioning as a coherent system through an inter-related process
Improvement	Consistent improvement through problem identification for better customer satisfaction.
Evidence-based decision making	The use of data for decision-making to achieve the desired goal.
Relationship Management	Emphasize relationships with concerned parties for mutual development.

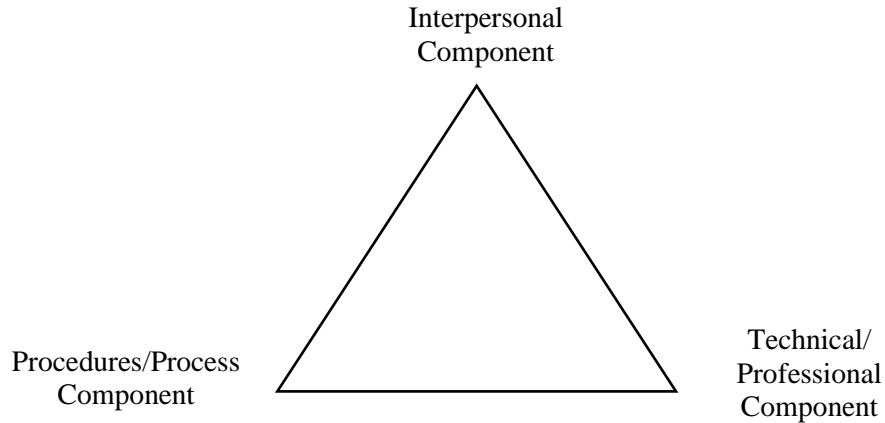
Source: (ISO 9001:2015, 2015)

Thus, customers are the pivotal part of a service and customer-focused service is the key for effective quality management.

Quality Components and Triangle Model

To generalize the concept of quality for both private and public enterprises, a “triangle model of service quality” is often used, as in Figure 5 proposed by Morgan and Murgatroyd (1994) based on the Lewis (1987) model for commercial services and Donabedian (1980) model for public services. The equilateral triangle's apices represent the service's interpersonal component, the procedures or process component of the services, and the technical or professional component of the services. A balance among the three components of the services is critical for quality service delivery (Morgan & Murgatroyd, 1994). The prioritareof components is purely dependent on customer satisfaction and periodic evaluation of the dynamics of their need.

Figure 5: Triangle Model of Service Quality



Quality Dimensions

The attributes or characteristics that are needed to serve the purpose of the customers are known as Dimensions of Quality. There are some features that are common for both the manufacturing sector and service sectors. Technical attributes are dominant for product quality, whereas interpersonal attributes or human dimensions are dominant for service quality (Hoyle, 2007). Some standard quality features are listed for the product (Table 5)

Table 5: Quality Dimensions of Products

Accessibility	Functionality	Size
Availability	Interchangeability	Susceptibility
Appearance	Maintainability	Storability
Adaptability	Odor	Strength
Cleanliness	Operability	Taste
Consumption	Portability	Testability
Durability	Producibility	Traceability
Disposability	Reliability	Toxicity
Emissivity	Reparability	Transportability
Flammability	Safety	Vulnerability
Flexibility	Security	Weight

Source: (Hoyle, 2007)

All the quality characteristics (dimensions) do not equally fit with all the services. Public service is different from other services due to its commitment and operational variety.

Among the public services, the police service is unique based on the nature of provided service and the variety of customers, which might have general and service-specific dimensions.

Table 6: Service Quality Dimensions

Accessibility	Credibility	Integrity
Accuracy	Dependability	Promptness
Courtesy	Efficiency	Responsiveness
Comfort	Effectiveness	Reliability
Competence	Flexibility	Security

Source: (Hoyle, 2007).

Empirical research by Giovanis et al. (2015) depicted the existence of service “Fairness” as a distinct service quality determinant based on the theory of justice originating from the theory of equity of Adam in 1965. Service fairness dimension can be divided into three sub-dimension as presented in Table 7 with definition.

Table 7: Fairness Sub-dimensions

No.	Sub-dimensions	Definitions
1.	Distributive Fairness	Fairness is based on tangible outcomes like cost-benefit outcomes among customers.
2.	Procedural Fairness	Impartiality to all customers based on service-giving protocol, rules, and ethical standards. Respect all customers fairly.
3.	Interactional Fairness	Interpersonal fairness during the transaction of service in manner, courtesy, and consideration.

Source: (Giovanis et al., 2015, p. 748)

There are three characteristics of services needed to be considered for a better understanding of quality in service sectors (Parasuraman et al., 1985; Haywood-Farmer, 1987). They are Intangibility, Heterogeneity, and Inseparability.

TQM in Public Sectors

Becker (As cited in Moreira, 2000) defined TQM as a people-oriented public management system with incremental customer satisfaction on a permanent basis without raising charges. Customer satisfaction should be on focus every time and doing the right thing the first time. To make it permanent, customers’ expectations and needs are required to be evaluated as a routine activity. TQM is found effective in addressing the issue of service quality of service in different public organizations, Such as local government, public utilities, hospitals, and executive agencies (Milakovich, 1991). But the way of application in the service sector is

different because of its unique characteristics such as intangibility, heterogeneity, and inseparability (Parasuraman et al., A conceptual model of service quality and its implications for future research, 1985). For example, statistical quality control is the most useful tool in the manufacturing sector for quality control, but it is not directly applicable to service enterprises (Schneider & White, 2004). Previously, motivational initiatives such as bonuses for service providers were considered to improve service delivery, but they increased the costs of those organizations, and the expected outcome was elusive. Moreover, pressure on the fiscal budget, continuous pressure from the taxpayers for expected service, and a competitive environment with the private sector created pressure on the public sector to deal with the issue of service quality. “To sustain a long-term quality effort, however, basic systematic changes, coupled with new management practices, are needed” (Milakovich, 1991). A survey from the Kennedy School of Government of Harvard University found TQM has substantial recognition in improving organizational performance in the federal government, and a similar impact was observed in improving service quality in the Internal Revenue Service of the USA (As cited in Cohan & Brand, 1993).

The explanation of TQM in the public sector is slightly different from that in the manufacturing sector as the public sector does not provide any physical product, and the moments of interaction with a customer are the prime determinant of service quality. Besides, government organizations provide services under rules and regulations. Milakovich (1991) described TQM as a method of process improvement for organizational transformation to realize desired quality and productivity within existing resources for public sectors (Milakovich, 1991). Two important aspects are ‘organizational transformation’ and ‘quality and productivity.’ Organizational transformation seems difficult but becomes realistic when there is a commitment from executives and involvement of all levels in this change. The change should be directed toward the desire of the customer. But quality and productivity are mostly associated with customers who are the consumer of the service. Customer-focused service delivery would be helpful in determining the way of organizational transformation and, of course, the essential element to achieving quality.

To sum up, Customer focus is pivotal due to the distinguishing feature of public services. For the organizational transformation to increase productivity and quality, TQM is

effective if sustained commitment is achieved (Cohan & Brand, 1993), and the deadly ‘Sins’ could be addressed in public service (Drucker, 1980).

Impediments in Achieving Quality in Public Sector

Milakovich, 1991 pointed out seven impediments that limit the endeavor to achieve quality in the public sector.

1. The hidden consequences of performance appraisal
2. Reliance on Hierarchical ‘Top-Down’ Management
3. Overspecialization or compartmentalization
4. Management by Objective (MBO) or Intuition
5. Obsolete methods and techniques of productivity
6. Fear of Change
7. Fiscal budget planning

Peter Drucker (1980) identified six deadly ‘Sins’ that hamper quality and productivity in the public sector and are committed to ‘regular and out of Cowardice.’ The concurrent existence of two or more ‘sins’ in an organization may lead to the obvious failure of a program (Milakovich, 1991). They are the following:

1. Non-existence of clear-cut performance Goal
2. Struggling with too many things at a time
3. Solving Problems only by throwing people at them
4. A dearth of Experimental Mindset
5. Problem with proper evaluation and lessons from it, if any.
6. Foot-dragging to halt a program.

W. Edward Deming (1986) pointed out a similar kind of ‘disease’ with respect to American Organizations and compiled it in his famous book ‘Out of the Crisis.’ Those are-

1. Lack of Purpose in Public Managers
2. Short-termed thinking and regulated within fiscal cycles.
3. Faulty annual merit review and individual evaluation
4. Mobility of executives
5. Managing by visible figure alone
6. Contingency fees

Public service-providing agencies in Bangladesh are experiencing almost all those problems, which could be different based on the service type and leadership. Transformation is necessary to cure those symptoms. Transformation is a cache word to say but too difficult to achieve as it is a never-ending process of continuous improvement (Hunter, Zero Defects:

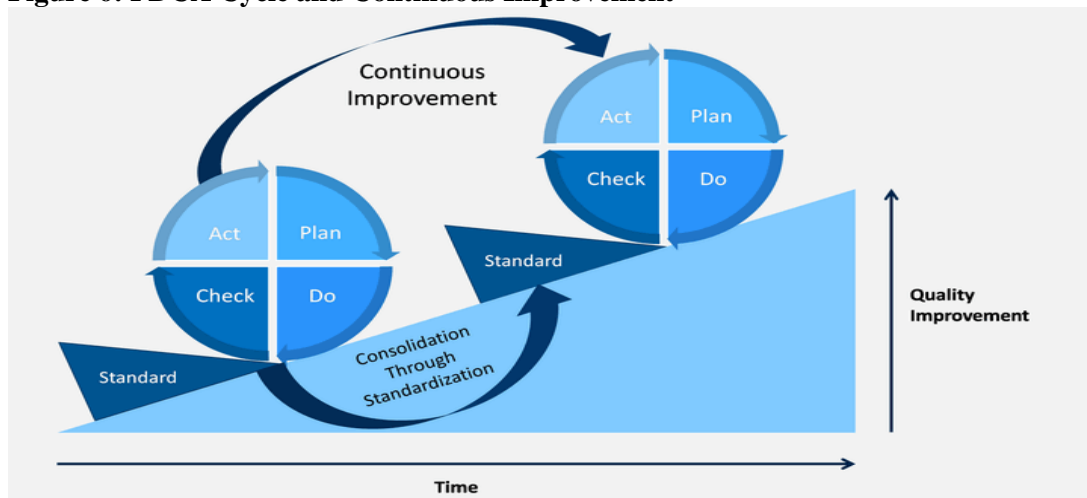
Curious Cat Management Improvement Blog, 2006), and Transformation through the Deming Management system is an iterative process (Hunter, 2014), widely known as Plan, Do, Check and Action (PDCA) cycle.

PDCA Cycle for Continuous Improvement

A PDCA cycle, renowned as Deming Wheel, is a four-step model for continual improvement through agile repetition of the cycle to carry out the transformation (American Society for Quality, n.d.). It was popularised by W. Edward Deming, but he often regarded it as ‘Shewart’s Cycle’ for quality improvement and modified it as PDSA (Plan, Do, Study, Act) by emphasizing study for adjusting it with the objective (Quality Engineer Stuff, 2022). There are four phases in the PDCA cycle, namely, **Plan**, **Do**, **Check**, and **Action**.

A PDCA cycle is an effective tool when an organization plans to go through transformation for continual improvement. The achieved standard need to be maintained, and repetition of the cycle for further improvement is a never-ending process for a quality management system.

Figure 6: PDCA Cycle and Continuous Improvement



Source: (Hosotany, 1992)

Deming’s wheel is widely recognized for its effectiveness in improving services in different organizations (Gorenflo, 2010; Moen & Norman, 2009). For the public sector, public complaints would be a basis to identify problems, and a PDCA cycle can lead to a solution that will bring solutions with more customer satisfaction (CItoolkit, 2022). The practice of the PDCA tool is mandatory for continuous improvement in police service as well.

3.2. Customers in Public Sector

3.2.1. Hierarchy of Needs and Customers in public service

Every service in the public sector is designed to meet certain needs, and it changes over time. Maslow described the man as a wanting being, and there are always some needs to satisfy (Maslow, 1954). Once one need is met, then another one takes its place, or a new need evolves that requires new aspects to satisfy. A 'Hierarchy of Needs' explains different kinds of needs and their changes over one another, which is applicable to an organization (Hoyle, 2007). It benefits an organization in understanding the type of need of a customer to satisfy individual needs that lead to collective response needs.

Figure 7: Hierarchy of needs



Source: (Hoyle, 2007)

The service recipients in the public sector are regarded as customers, and this concept is more person-oriented that requires tailored service based on the user (Needham, 2006). Thomas (2013), a professor of public administration at Georgia State University, depicted three relative roles of the public to the government, namely citizen, Partner, and customer. He emphasized the capacity of a manager (civil servant) to work with the public in all three conditions. As a citizen, the public contributes to decision-making; as a partner, the public engages himself in coproduction. And as a customer, the public contributes to improving service quality. The customer is the one who determines the quality of service and brings benefits to the organization (Hoyle, 2007). For the improvement of organizational performance, the government is recommended to consider the public as a customer in new public management and aim for a 'customer-focused' public service (Osborne & Gaebler, 1993).

Thus, the Voice of the Customer (VOC) is critical for the sustainable progress of an organization.

3.2.2. Voice of the Customer and Public Service

Voice Of the Customer (VOC) is often regarded as the basis of service or product design, and it is the driving force to define functions, features, and performance attributes of products and services (Shillito M. L., 2001). The VOC is critical for long-term sustainability and achieving the trust of the consumer of the service. It is the process of knowing the customer's needs and wants (Gaskin et al., 2010), which can be utilized in services designed to achieve customer satisfaction (Eng, 2011). The pursuit of quality service, customer satisfaction, and the VOC are interrelated. So, the Voice of the Customer (VOC) is the system to identify the needs, wants, solutions, and features conveyed by the customer.

Voice of the Customers (VOC) is employed to create a customer-focused organizational culture that meets and exceeds the expectations of the customer through proper service design (George et al., 2005). A customer-focused culture underscores a profound understanding of customer support by a customer-oriented management system that provides superior value to the customer for long-term sustainability (John, 2003). A structured system is required to translate the VOC into action to improve customer satisfaction.

3.3. Quality Management and Customer Satisfaction in Police Service

Satisfactory customer service is a right for respected taxpayers, which is value for money indirectly. Police service is one of the core public service-providing agencies in every country, and every citizen has the right to get the expected service as a taxpayer. Besides, the police are such an organization in a state where there is no other alternative to seek service and no way to compete with a similar type of organization. In such cases, the system needs to be supportive for continuous improvement (Leicestershire Constabulary, 1991, as cited in Hanney, 1995). In 1993, Leicestershire Constabulary introduced 'Policing expectations' to meet the expectations of the community and set standards of response, for example, 'Our standard of service: When you telephone us' to reduce the response rate of emergency 999 services. They established a 'Quality service working group' designed to introduce service to meet the community expectations (Hanney, 1995), customers' expectations, in other words. UK police established a 'customer service excellence standard' under the umbrella of the Independent Office for

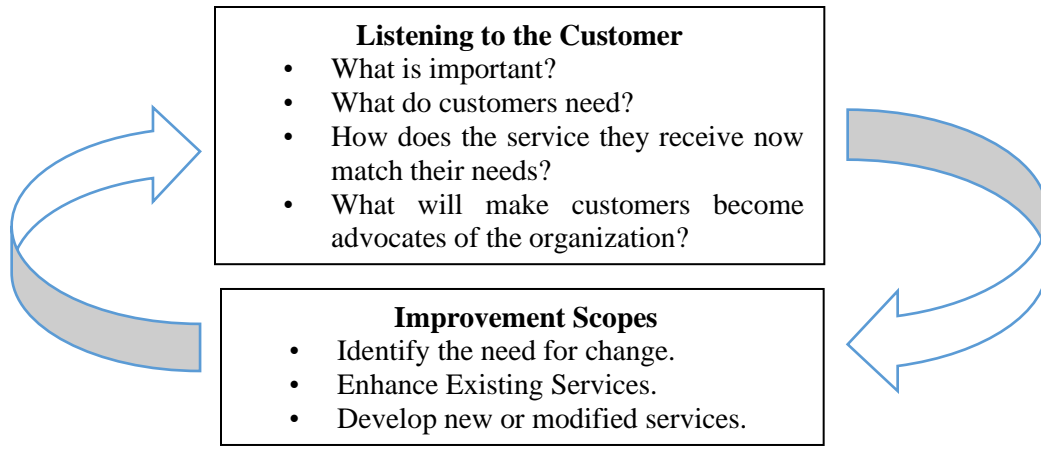
Police Conduct (IOPC) to realize customer-focused service design for better customer satisfaction, which is regarded as critical for TQM (IOPC UK, 2020). New South Wales (NSW) Police of Australia designed customer service guidelines admitting the significance of customer satisfaction and the feedback from customers-end to improve service quality (NSW Police, 2011). They explained that improved customer service increases confidence and the willingness of victims to get police support.

The introduction of 'Community-Oriented Policing' and 'Problem-driven policing' let out the citizens' participation in policing and shaped the democratic policing model. The democratic model of policing ensures active engagement of their customer in improving the quality of service and in understanding the need of the customers, which is the central idea of TQM. An interim report on the Omaha Police Department in the USA found that TQM is applicable in improving service quality, and the commitment of senior officials is found critical to use effectively in police service. (Zhao, 2000) The report also pointed out three criteria to evaluate the implementation of TQM, such as Planning and Training, Structural Change, and Process Action Team (PAT). Many police agencies around the globe have now adopted the philosophy of TQM for organizational transformation to be more outcome-oriented to meet the expectations of their customers. Application of TQM in police service increases not only organizational performance in terms of satisfaction but also job satisfaction of internal customers (Wycoff & Skogan, 1994). Moreover, an analytical report by Professor William Riley, Ph.D., of the University of Minnesota, USA, depicted quality improvement techniques of police and potential barriers to implementing TQM in police service (Riley, 2007).

3.4. Measuring Service Quality and Customer Satisfaction

Sarah Cook (2004) illustrated the importance of the service measurement process and its importance with service strategy using Figure 8.

Figure 8: The process of Customer Service Management



Source: (Cook, 2004)

Measuring service quality and customer satisfaction is the starting point of continuous improvement, which is the key feature of TQM (Senge, 1991). Moreover, the best service-providing organizations practice the service strategy that formulates all their activities based on customers' needs towards achieving service excellence (Cook, 2004). Service quality measurement is the linchpin to developing the culture of achieving service excellence (Cook, 2004). Subsequently, a 'lens of the customer' is needed to be embedded in the system to establish a sustainable customer-focused service delivery organization (Michael D. & Gustafsson, 2000).

The method of Measurement of service quality and customer satisfaction is no more an objective activity, perhaps a subjective activity (Bouckaert, 1995), and the method of measurement depends on the purpose of the researcher. Bouckaert (1995) described a set of three conditions for a good measurement of quality such as validity and reliability, functionality, and legitimacy. Numerous models have been developed to measure service quality, and it is regarded as a multidimensional construct (Schneider & White, 2004). SERVQUAL model developed by Parasuraman et al. (1985) is the widely employed structure to measure service quality and identified ten dimensions in general, namely: Tangibles, Reliability, Responsiveness, Competence, Courtesy, Credibility, Security, Access, Communication, and understanding the customer. Through a series of modifications and revisions, those ten dimensions were reduced to five dimensions known as the RATER model (Reliability, Assurance, Tangibles, Empathy, and Responsiveness), but these are not fixed;

rather, they vary from industry to industry (Schneider & White, 2004). Babakus & Boller (1992) opined that,

“The domain of service quality may be factorially complex in some industries and very simple and unidimensional in other industries. As such, measures designed for specific service industries may be a more viable research strategy to pursue.”

Due to the complex phenomenon of police service as a part of public service, the domain of service quality is also expected to be diverse and requires customization to identify the service-specific dimensions related to service quality of WHDs.

3.5. Related Studies on Service Quality of the Public Sector

3.5.1. Existing literatures on service quality of police (Global Context)

Literature for introducing customer-oriented oriented policing in London emphasized Matsofroski’s principle of achieving customer satisfaction and community engagement (Kate & Janet, 2009). Matsofroski’s principles are attentiveness, reliability, responsiveness, competence, manners, and fairness. It is also argued that responsiveness and reliability are crucial factors for customer satisfaction which take place during the interaction with the customers. Consequently, the quality of interaction has a decisive association with the satisfaction of the customers.

The study on the service quality of Jamaican Constabulary Forces (JCF) using the SERVQUAL method found assurance and reliability dimensions statistically significant for service quality among five dimensions of the RATAR model (Bourn, 2016). He found all the dimensions pertinent to customer satisfaction and asserted the contribution of customer satisfaction to the image of the organization. Reliability is also found to be the most influencing dimension of SERVQUAL while evaluating the service quality of Strathclyde police of Scotland from the customers' end, but the study found measuring service quality is complicated for four service-specific situations, such as people who never come into contact of police, victim, and perpetrator as a concurrent customer, people who are protesting for rights but customer, and arrestees as a customer (Mike et al., 2006).

In another study on the service quality of Taiwanese police in a rural area, responsiveness and empathy as equally influential dimensions for customer satisfaction, and the factors, explored the interaction between customers and citizens where the gap is greatest

(Chen et al., 2014). They also supported service quality as the antecedent of customer satisfaction (Kasper et al., 1999). Responsiveness is marked as the most pertinent dimension for service quality in handling traffic crash reporting in Denmark (Janstrup et al., 2017). They used the Accessibility, Care, and Fairness dimension as case-specific dimensions, as suggested by Parasuraman et al. (1988).

3.5.2. Existing studies on service quality of public organizations in Bangladesh

An investigation by Islam & Ali (2008) on thirty-three police stations in Dhaka district depicted the relationship between the overall service quality and the service quality factors revealed in a study on the service quality of the Bangladesh Police. The study demonstrated that ‘the customers of police expect that the police should keep the interest of the clients at their hearts.’ This indicates that customers’ interest is overlooked by police which is opposite to the quality improvement concept and hampers customer satisfaction drastically.

Another empirical study by the Deputy Inspector General of BD Police on the public relations of Bangladesh police revealed that the public image of Bangladesh Police is not satisfactory due to inefficiency and corruption (Nabi, 2011). He recommended a more customer-oriented approach, such as policing by consent, creating a legal framework to increase customer interaction, and setting a strategy to increase collaboration. This police-public deficiency in relation is an obstacle to achieving community trust and confidence.

A case study on the ‘Citizen Help Request’ (CHR), an electronic service of Bangladesh Police, found that the lack of user-friendliness and inadequate promotion failed to receive the expected response from the customers (Hasan, 2015), which echoes the significance of customers’ participation for a successful implementation of any service (Kate & Janet, 2009). The use of ICT is bringing qualitative change to Bangladesh Police and reducing the gap between customers and police (Mohiuddin & Mohammad, 2016). They pointed out that the use of social media is increasing pressure on police departments to get the expected service.

Rahman & Hossain (2017) explored the factors of citizens’ trust in Bangladesh police, which revealed that political lobbying or connection increases the quality of service. They also claimed that the responsiveness and promptness of police are changing positively, which affects citizens’ trust.

3.5.3. Literature Gap

With the increasing implication of quality management techniques in the public sector, measuring quality is working as a starting point to know the status quo and to find the area that requires prioritized attention to improve service quality. There is a plethora of literature on the service quality of public service using SERVQUAL dimensions. The literature used fundamental dimensions introduced by Parasuraman, Zeithaml, & Berry (1988) and service-specific dimensions as per required. Bangladesh is going through rapid changes to be a developed country by 2041 and the improvement in public sector is mandatory to achieve such a vision. In Bangladesh, there is little literature found that investigated the service quality of the public sector, especially the police service, which carries a complicated phenomenon explained by Mike et al. (2006). The only SERVQUAL analysis on the police service of Bangladesh done by Islam & Ali (2008) didn't address the complexity marked by (Donnelly et al., 2006) organisationally. That paper focused on the generic quality of the police stations, which is known as the macro level of quality (Pollitt & Bouckaert, 1995). Moreover, his analysis was limited in factor analysis of the overall activity of the thirty-three police stations of Dhaka district instead of focusing on a particular service which provides limited practical implications towards improving the service quality. As a specialized service desk to provide better service to women, WHDs generated vast expectations to deal with gender-based issues from societal and global points of view (Balbir et al., 2020). The key question about the status quo of service quality at the 'Meso Level' (Pollitt & Bouckaert, 1995) and customer satisfaction of such a vital specialized service remains unexplored, which is significant for quality improvement, a crucial principle of TQM. This paper elucidates the service quality of WHDs of CMP to support the ongoing quality improvement initiatives of Bangladesh police (Bangladesh Police, 2014).

Chapter 4: Research Methodology

Summary

An explanatory sequential design is employed in this research based on the SERVQUAL theoretical framework. The perceived service quality of the customers is derivable from the difference between the expectation and perception in service quality dimensions. Nevertheless, a qualitative approach will be utilized to know how service quality factors interact and to know if there are any service-specific dimensions. A binomial logistic regression is performed to know the influential service quality dimensions for customer satisfaction based on survey data. For the Interview, four extreme cases (Two highly satisfied and two highly dissatisfied) respondents in the survey are selected purposively to know the change-making service quality factors of WHDs. A thematic approach is used to know the interaction of service quality factors with customer satisfaction.

4.1. Theoretical Models

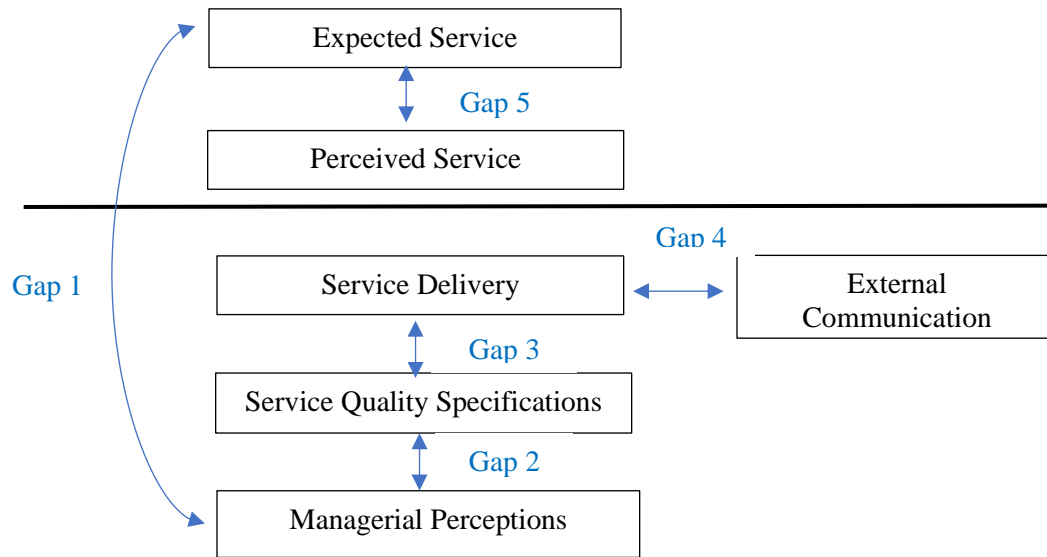
A plethora of studies have been done to formulate models to measure the service quality, loyalty, and customer satisfaction of different organizations. Some of the significant modules are discussed here, which are frequently used to evaluate service quality, customer satisfaction, performance, and loyalty.

The Gap Model (SEVQUAL) (Parasuraman, Zeithaml, & Berry, 1985)

Different quality scholars conceptualized dimensions of service quality depending on the service or industry. The basis of most of the other models is the 'Gap Model' or 'SERVQUAL model' proposed by (Parasuraman et al., SERVQUAL: A multiple-item scale for measuring consumers perceptions of service quality, 1988) where ten dimensions (later on five dimensions) were introduced. There are five gaps in this model, as listed below (Emel, 2014):

1. The knowledge gap
2. The policy gap
3. The delivery gap
4. The communication gap
5. The service quality gap

Figure 9: Gap Model (SERVQUAL Theory)



Source: (Parasuraman, Zeithaml, & Berry, 1985)

Table 8: All Dimensions of SERVQUAL Theory

<i>Dimensions</i>	<i>Descriptions</i>
Reliability	Ability to provide dependable Service, Consistently, Accurately and on time.
Assurance	The competence to apply expertise for trust and confidence
Tangibles	Physical Appearance and Equipment
Empathy	Relationship between employee and customer for caring and personalized service
Responsiveness	Willingness to provide timely, high-quality service to meet customers' need
Security	Risks, safety, and confidentiality of the customers are included here.
Communication	Providing on-time updated information to the customer in the Customer's verbatim ¹² .
Credibility	Existing image or reputation as a service-providing organization.
Courtesy	Friendliness, politeness, and respect for the customers during the interaction.
Competence	Required knowledge, skill, and information for efficient service delivery.

Source: (Ghobadian et al., 1994)

¹² 'Verbatim' means 'exactly the same word' the customer used for effective communication (Source: <https://dictionary.cambridge.org/dictionary/english/verbatim>)

Parasuraman et al., (1988) recognized the RATAR dimensions of the SERVQUAL model as a skeleton and emphasized the incorporation of suitable dimensions based on service type. Therefore, five precise dimensions are the general content of service quality measurement, and there might have service-specific dimensions to evaluate service quality and customer satisfaction (Gummesson,1992, as cited in Schneider & White, 2004).

Here, Gap 5 is used to find the overall service quality of an organization. According to Gap Model, Service Quality Can be determined by applying the following equation (Seth et al., 2005)

$$SQ = \sum_{j=1}^k (P_{ij} - E_{ij})$$

Here, SQ- Overall Service Quality

k- Number of attributes

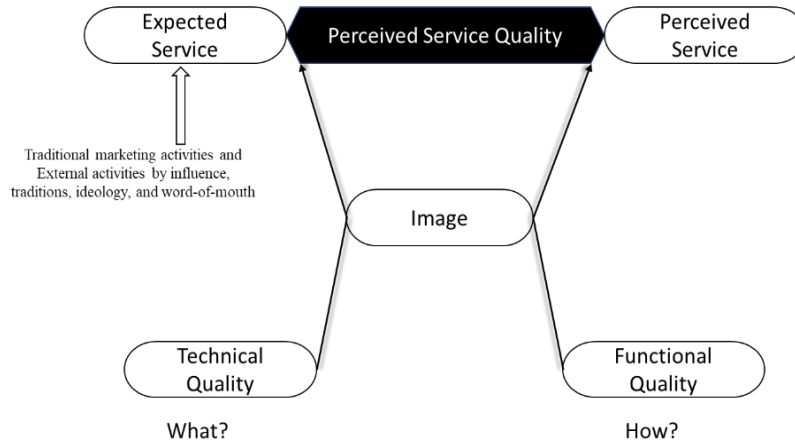
P_{ij} -Perception of stimulus i with respect to the attribute j

E_{ij} -Expectation of stimulus i with respect to the attribute j

The technical and functional quality model of service quality (Grönroos, 1984)

Grönroos (1984) proposed a service quality model consisting of technical quality, functional quality, and image to generate perceived service quality. The dimensions of Grönroos’s model are shown in Figure 10 :

Figure 10: Grönroos’s model of service quality



Source: (Grönroos, A Service quality model and Its Marketing Implications, 1984)

In a broader sense, the dimensions proposed by Grönroos (1990), which also follow the typology of SERVQUAL (Schneider & White, 2004), are listed in Table 9. He argued the recovery dimension is a crucial element of service quality and a unique dimension to measure service quality.

Table 9: Grönroos Service Quality Dimensions

Dimensions	Explanation
Professionalism & Skill	Physical resources and an operational system with knowledge and skill to solve customer’s problems (Similar to Assurance in the SERVQUAL Model)
Attitudes & Behaviors	Interest and concern of the employee to solve the problem. (Correspond to the Empathy dimension of the SERVQUAL)
Accessibilty & Flexibility	Location, operating hours, and operational system for easy and flexible access of the customer. (Those factors are included in the Empathy Dimension of the SERVQUAL Model)
Relaibility & Trustworthiness	Reliability of the service to serve the best interest of the customer. (Like the Reliability dimension of the SERVQUAL Model)
Recovery	Customization of services for unlikely situations (A factor of the Responsiveness dimension of the SERVQUAL model)
Reputation & Credibility	Related to the overall image of the organization and an essential ‘filter’ of service quality. (It is reflected in the Reliability dimension of the SERVQUAL model)

Source: (Grönroos, A Service quality model and Its Marketing Implications, 1984)

Gummesson Model

Gummesson (1992, as cited in Schneider & White, 2004) segregated ‘Tangibles’ as a significant element and proposed three elements to evaluate the overall offered services, where the other two elements are service elements and Information Technology (IT) elements, comprised of a number of factors as shown in Table 10.

Table 10: Service Quality Elements from Gummesson Model

Elements	Dimensions	Factors
Service Elements	Reliability	Various factors similar to the SERVQUAL model
	Responsiveness	
	Assurance	
	Empathy	
Tangible Elements	Goods Perspective	Numerous factors designed by the author
	Psychological Perspective	
	Environmental Perspective	
IT Elements	Reliability	Several factors different from the SERVQUAL model
	Extendability	
	Integrity	
	User-friendliness	

Source: (Gummesson, 1992, as cited in Schneider & White, 2004)

Gummesson E. depicted the importance of unique dimensions with an example of an airline flight. So those dimensions are pertinent to those who have customer interaction based on information technology with the aesthetic appeal of the tangibles in service delivery.

SERVPERF model

The SERVPERF model was developed by Cronin and Taylor (1992) (As cited in Adil, Ghaswyneh, & Albkour, 2013), critiquing the SERVQUAL model. They argued that service quality cannot be measured from the gap between expected and perceived service; rather, it is consumers' attitude towards the service. This model depends on the SERVQUAL model. Consequently, it uses similar dimensions for measuring perceived service quality. SERVPERF model uses the following formula to measure service quality (Seth et al., 2005)

$$SQ = \sum_{j=1}^k P_{ij}$$

Here, SQ- Overall Service Quality

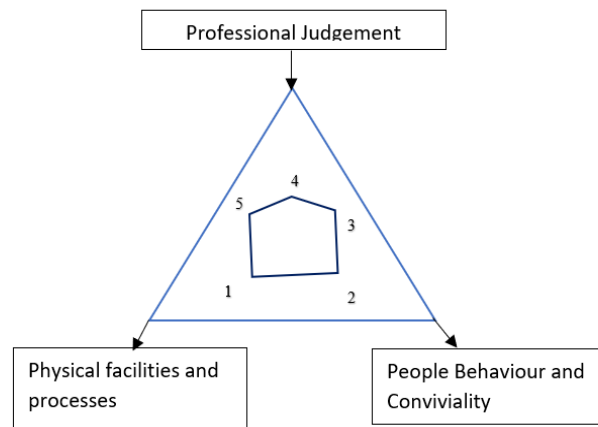
k- Number of attributes

P_{ij} -Perception of stimulus i with respect to the attribute j

Attribute Service Quality Model (Seth et al., 2005)

The Haywood-Farmer Service Quality Model (1988, as cited in Emel, 2014) includes three service quality attributes, namely Professional Judgement, Physical facilities and processes, and People's behavior and conviviality for measuring service quality (Figure 11).

Figure 11: Attribute Service Quality Model



Source: (Seth et al., 2005)

The attributes of this model correspond to Parasuraman et al.'s (1985) service quality dimensions, as shown in Table 11 (Emel, 2014):

Table 11: Attributes and SERVQUAL dimensions comparison

Haywood-Farmer Attributes	Corresponding SERVQUAL Dimensions
Physical facilities and processes	Tangibles
Professional judgment	Competence, Credibility, Security and Understanding Consumer
People's behavior and conviviality	Reliability, Responsiveness, Access, Communication, and Courtesy

Source: (Emel, 2014)

This model organized services into five types such as (Seth et al., 2005):

1. Short interaction intensity-low customization
2. Medium interaction intensity -low customization
3. High interaction intensity-low customization
4. Low interaction intensity- High Customization
5. High interaction intensity-high customization

Based on the categories, services provided by police are high interaction intensity with low customization. Eventually, It requires special attention in terms of customer satisfaction, which largely depends on the quality of interaction.

There are also numerous service quality models that are developed over time to measure the services of specific organizations, such as the synthesized service quality model, IT alignment model, Internet Service quality DEA method, and Model of E-service quality (Seth et al., 2005).

4.2. Pros and Cons of Different Service Quality Models

A chart of the above-discussed model is listed below, with comparative advantages and limitations of each service quality model in Table 12.

Table 12: Comparison among Service Quality Models

No.	Service Quality Models	Advantage	Limitations
1.	SERVQUAL Model	It is a widely used diagnostic tool to detect specific quality gaps (Ghobadian et al., 1994). It is the basis of some other models. A purposeful use facilitated quality improvement strategy and is regarded as a comprehensively applicable model. Service quality is considered as an antecedent of customer satisfaction in this model. (Hoyle, 2007)	This model doesn't provide a clear guideline to measure different service gaps (Seth et al., 2005).
2.	Technical and Functional Quality Model	It takes technical, functional, and image quality separately, where image quality is associated with the other two.	There is a grey zone between technical and functional quality. The measurement method is not well-defined, and the model is fit for specific services.
3.	Gummesson Model	It is an extended version of the technical and functional quality model. It is appropriate to use for technical services where tangibles carry greater implications.	Unlike the technical and functional quality model, it is mostly applicable in specific service sectors.

- | | | | |
|----|---------------------------------|--|---|
| 4. | SERVPERF model | This model considers customers' attitudes towards service quality and reduces the quality factors significantly, which facilitates the researcher and the respondents during the survey and analysis. | It is a perception-based measurement model (Emel, 2014) and requires generalization for purposeful application in various service sectors. A quantitative relationship between customer satisfaction and service quality is a pre-requisite to employing this model (Seth et al., 2005) |
| 5. | Attribute Service Quality Model | This model establishes the potential relationship between three quality dimensions and the level of customization based on interaction which facilitates the managers to identify the affected customer segments (Seth et al., 2005) | It is not supportive of measuring service quality as an antecedent of customer satisfaction. Thus, less helpful for managers to detect the right factor for betterment. |

4.3. Theoretical Framework and Justification

To evaluate the overall service quality of WHDs and the influencing factors that affect service quality SERVQUAL model proposed by Parasuraman, Zeithamsi, & Berry(1985) is the best fit from the author’s assessment considering the pros and cons listed in Table 12. Using the formula of Gap 5 (listed in Table 13), service quality and customer satisfaction will be measured.

Table 13: GAP Model explanations

<i>Gap No.</i>	<i>Type of gap</i>	<i>Formula of measurement</i>
<i>Gap 1</i>	The knowledge Gap	Customers Expectations – Managerial Perceptions
<i>Gap 2</i>	The Policy Gap	Managerial Perceptions – Service Quality Specifications
<i>Gap 3</i>	The Delivery Gap	Service Quality Specifications – Service Delivery
<i>Gap 4</i>	The communication Gap	Service Delivery – External Communication
<i>Gap 5</i>	The Service Quality Gap	Expected Service – Perceived Service

Source: (Parasuraman et al., 1985)

The SERVQUAL model allows us to evaluate perceived service quality by comparing the perceived service with the expected service. At least the first evaluation of any service like WHDs requires a comparison to understand the level of quality. Oliver (1997, as cited in Schneider & White, 2004) argued that

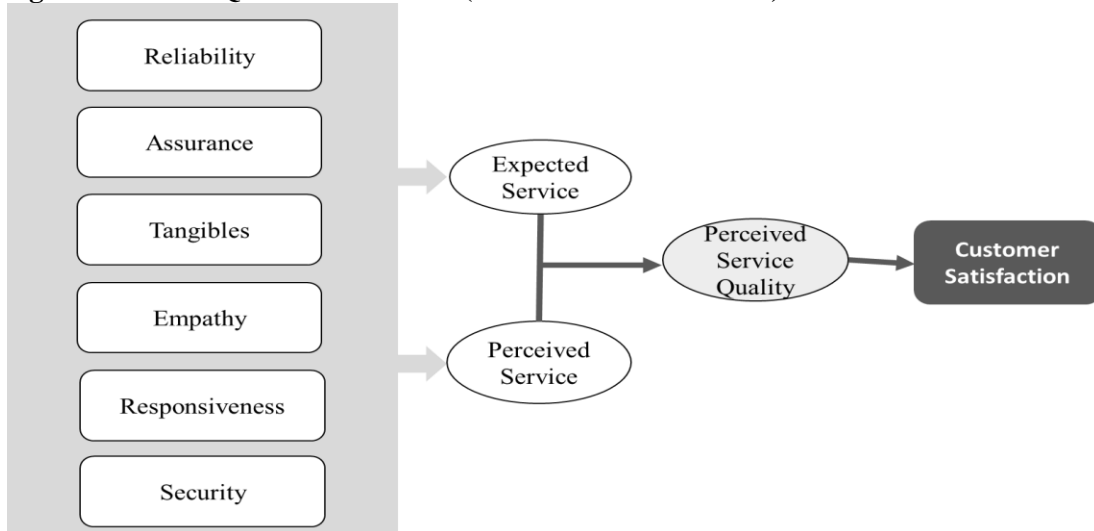
“Quality is a customer-generated comparative judgment since individuals have no implicit sense of quality unless a standard of comparison is provided.”

This model has greater practical implications for managers in at least two ways (Schneider & White, 2004):

- i. To evaluate status-quo of overall service quality
- ii. To find the shortfalls specifically

Therefore, the theoretical framework of measuring perceived service quality supported by the SERVQUAL model is the best fit to serve the purpose of this study. The detailed framework for measuring perceived service quality (Gap 5) can be displayed as follows:

Figure 12: SERVQUAL Dimensions (Theoretical Framework)



Source: The Author, using SERVQUAL Theory (Security is considered as service-specific dimension)

The author will employ security as a service-specific dimension (Mike et al., 2006; Schneider & White, 2004) with the RATER (Reliability, Assurance, Tangibles, Empathy, and Responsiveness) dimension for this research. Thus, the dimensions can be termed RATERs dimensions. The definition and factors associated with each dimension (RATERs) will be explained in the variable coding section (4.8).

4.4. Research Design

Method

A research design enables the researcher to collect, analyze and interpret the findings reasonably to answer the research questions persuasively. It is the logical connection to get the answers to the posed research questions (Clark & Ivankova, 2016). The author found the mixed method, specifically the explanatory sequential design, appropriate to answer the proposed research questions (Cook, 2004). In this research design, the author planned two data collection phases and a qualitative approach following the quantitative approach, which is termed explanatory sequential design.

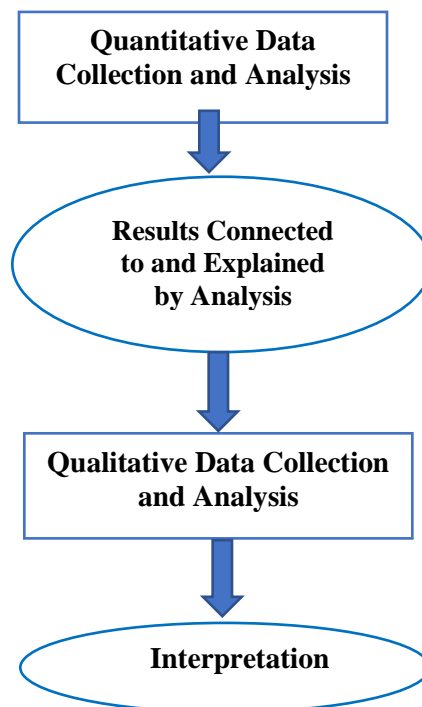
Mixed-method research combines quantitative and qualitative research approaches for an in-depth understanding and corroboration (Creswell & Clark, 2018). Hesse-Biber (2015, as cited in Creswell & Clark, 2018) proposed mixed methods as the mixture of at least one quantitative method and one qualitative method in a single research project. The mixed method

is, in fact, more than a research method but ‘a multiple ways of seeing’ (Greener,2007 as cited in Creswell & Clark, 2018), which spreads out a broad application.

Justification

There are three core designs of mixed method research design such as the convergent design, the explanatory sequential design, and the exploratory sequential design (Creswell & Clark, 2018). Among mentioned designs, the author reasonably preferred the explanatory sequential mixed method design based on the research questions and objectives. Quality management in the public sector poses the characteristics of a ‘heterogeneous customer’ (Parasuraman et al., 1985; Haywood-Farmer, 1987) and the complexity of measuring service quality and customer satisfaction (Donnelly et al., 2006). Hence, it requires ‘multiple ways of seeing’ (Greener,2007 as cited in Creswell & Clark, 2018) for understanding the service quality and customer satisfaction that lead to the explanatory sequential design of mixed method of study. Besides, Each of the measurement methods has pros and cons (Table 12), but a combination of both quantitative and qualitative methods is to understand the customers’ views (Cook, 2004).

Figure 13: Explanatory Sequential Design



Source: The author based on the concept in Creswell & Clark (2018)

4.5. Research Framework

Table 14: Detailed Research Framework Explanatory Sequential Design.

Phase	Procedures	Outcome
Quantitative Data Collection	<ul style="list-style-type: none"> Web-Based Survey (N=104) 	<ul style="list-style-type: none"> Numeric Data
↓	<ul style="list-style-type: none"> Data screening Data cleaning Data processing for analysis Factor Analysis Binary Logistic Regression 	<ul style="list-style-type: none"> Descriptive Statistics Factor Loadings Level of satisfaction Influencing service quality factors
Quantitative Data Analysis	<ul style="list-style-type: none"> Purposefully selecting 4 participants from overall satisfaction and comments to open-ended questions Developing interview questions 	<ul style="list-style-type: none"> Cases N=4 Interview Protocol
Case Selection; Interview Protocol Development	<ul style="list-style-type: none"> Individual in-depth face-to-face interview 	<ul style="list-style-type: none"> Text data (Interview transcript)
↓	<ul style="list-style-type: none"> Coding and Thematic Analysis Cross-Thematic Analysis 	<ul style="list-style-type: none"> Codes and Themes Cross-Thematic Matrix
Qualitative Data Collection	<ul style="list-style-type: none"> Interpretation and explanation of the quantitative and qualitative results 	<ul style="list-style-type: none"> Discussion Implications Future Research
↓		
Qualitative Data Analysis		
↓		
Integration of Results		

Source: The Author

The primary intent of this research is to use a qualitative strand to supplement the initial findings of the quantitative analysis. As the SERVQUAL model is service-specific and subsequent, qualitative analysis will help to understand how the quality dimensions interact with overall service quality. A research framework is the pictorial demonstration of the different activities with their relationships to answer the research questions. Based on the above-discussed theoretical and practical aspects, the framework in Table 14 is the outline of the process.

4.6. Research field and sampling frame

To measure the service quality and customer satisfaction of the WHDs, the author developed a sampling procedure that involves determining the site of the study, participants for data and their selection procedure, and the number of participants that needed to answer the posed research questions. A sampling frame is the accessible list of names from which a sample can be drawn effectively (Hill & Alexander, 2000).

From the situation analysis of service quality in the public sector of Bangladesh and the problem statement, the author felt the need to find the service quality of Women Help Desks (WHDs) as the service desk is specially introduced to increase service quality. Moreover, evaluating perceived service quality and customer satisfaction of such desks will help to understand the dynamics of quality management in police stations in improving access to justice for women. Chattogram Metropolitan Police (CMP) is the administrative area for this research. There are nine metropolitan areas in Bangladesh, and the laws for all metropolitan police are similar except for the capital city Dhaka. So, CMP will be an average case for other metropolitans.

The data collection procedure requires collecting quantitative data, analyzing the quantitative data, and follow-up qualitative data collection based on the findings of the quantitative part (Creswell & Clark, 2018), as the author employed mixed method analysis with explanatory sequential design. Thus, the sampling occurs in two inter-dependent phases in this design. The participant in the qualitative part is a subset of the respondents in the quantitative part.

Sampling needs to be ‘truly representative’ of the population being surveyed, and the degree of accuracy depends on the sample size; the larger, the better (Hill & Alexander, 2000). Creswell & Clark (2018) argued that to meet the requirements of the statistical tests, the sample

size needs to be large enough in the quantitative part. In my study, the number of independent variables is 6. So it requires at least 90 (6×15) respondents according to Steven (1996), and 98 ($N > 50 + 8M$ where M is the number of predictors) respondents as per the formula of determining sample size by Tabachnick & Fidell (2018). As the author intends to use exploratory factor analysis and logistic regression for the quantitative part, it requires at least 100 respondents (Hair et al., 2009). For the qualitative part, four extreme customers (Two highly satisfied and two highly dissatisfied customers) will be selected purposively based on the responses to the fourth part of the questionnaire survey. For the purpose of sampling, the author prefers the 'Extreme case sampling' (Creswell & Clark, 2018) approach to explore the service quality disconformity to supplement the findings of the quantitative part.

For the quantitative part, 118 service recipients ($N=118$) responded to the questionnaire survey from four police stations out of 16 police stations of CMP, one police station from each division. The number of average service recipients from each police station is around fifty. So the total number of service recipients in three months (July 2022 to September 2022) is 2400, and the survey questionnaire was sent to all service recipients of four police stations within the mentioned time, which is around 600, which is 25% of the population. The official register of WHDs was used to get information about service recipients. The response rate is about 20 percent. For the qualitative part, four participants are selected using the extreme case sampling strategy. As this study is a case study using a mixed method, so four participants are large enough to explore the central concept of the research objectives (Creswell & Clark, 2018).

This research is intended to employ the mixed method, namely the explanatory sequential approach. It facilitates in-depth investigation analytically and conceptually to integrate quantitative analysis with qualitative data (John Hopkins School of Public Health, 2022). For the qualitative part, a sample of four customers will be selected using the purposive selection method. The participants of the interview will be the highly satisfied and dissatisfied customers from the quantitative data set.

4.7. Data Collection for Quantitative Part

Pilot Survey

A pilot survey was conducted on ten selected service recipients in September 2022 to observe the understanding of the questionnaires from the respondents' end. The questionnaire was

modified after the pilot survey, and more verbatim (Customers' own words) was introduced to avoid misunderstanding. For example, in question number 5 of a second and third party (R5), performing services right for the first time was elaborated in the native language to make it understandable. Moreover, the author got the idea of developing a face-to-face questionnaire together with the online questionnaire, which was critical from a local perspective as the access to online and education levels is considerably low among the service recipients. The author revised the preface of the questionnaire to explain the objectives of the research and to clarify the confidentiality measures to get a realistic view from the respondents. Thus, a pilot survey allows to address any wording problems with the questions and increases the validity of the survey (Schneider & White, 2004)

Survey Instrument

The quantitative survey was conducted both face-to-face and online (google forms). The quantitative survey in both media increased the quality of data by taking the unaffordability of a major portion of service recipients online. The questionnaire was available in Bangla (the local language) and English. The author double-checked the translation using a proofreader to avoid misunderstanding. For the face-to-face survey, a support team comprised of eight students at a local university was formed, and an online workshop was conducted to let them know the systematic approach to face-to-face survey efficiently by ensuring confidentiality.

Survey Design

The SERVQUAL theory is used to formulate survey questionnaires, identify the variables, and form hypotheses for the quantitative phase of the study. The author formulated a survey questionnaire of 54 questions for the quantitative part keeping the theoretical framework and objective of this research in consideration. The questionnaire is divided into four parts.

Table 15: Questionnaire Survey Outline

PARTS	FACTORS	NO. OF QUESTIONS
PART I	Demographic and general information about respondents	6
PART II	Expected Service	24
PART III	Perceived Service	24
PART IV	Overall service quality and comments about satisfaction/dissatisfaction	4
TOTAL		58

Source: The Author

A survey based on the questionnaire is one of the most prevalent methods of collecting the VOC, and different media such as mail, phone call, online platforms, and survey forms are employed to collect the views from the customers' end.

4.8. Variable Coding

A variable can be defined as something that can take more than one value, whether words or numbers. Defining variables, searching for associations among variables, and interpreting how or why they are changing is the outcome of social research (Creswell & Clark, 2018). The author separated the questionnaire into four parts (Table 15). The second and third parts of the questionnaire are based on the SERVQUAL model (Parasuraman, Zeithaml, & Berry, 1988), and other parts are demographic and overall service-related contents that may be associated with service quality and satisfaction.

Demographic Factors

The author formulated this part based on six questions that include Name, Age, Education Level, Monthly income, Occupation, and marital status. To ensure confidentiality and not to cross the privacy line, name, monthly income, and marital status were optional to answer, and the rest are mandatory to respond to as the author considered those items may have a strong influence on service quality and satisfaction of the customers of WHDs. Education level was divided into four categories (1. Primary, 2. Secondary, 3. Higher Secondary, and 4. Graduation or above). Occupation was divided into five categories (1. Housewife, 2. Service Holder, 3. Student, 4. Entrepreneur, and 5. others). The option to answer the question of age is kept open-ended to write the cardinal number, and it is a ratio variable.

Dependent Variable

The author is applying the theoretical model of SERVQUAL to find the service quality and satisfaction. So Perceived service quality is the dependent variable here which is an antecedent to customer satisfaction (Kasper et al., 1999). Expected service and Perceived service quality are derived from the service quality dimensions (RATERS dimensions), and the gap between these constitutes perceived service quality and customer satisfaction.

Independent variables

The author conceptualized that the perceived service quality depends on six dimensions (dependent variables), namely **Reliability**, **Assurance**, **Tangibles**, **Empathy**, **Responsiveness**, and **Security** (RATERS Model). Each of them is derived from some items that are shown in

the following table with codes. Reliability, Assurance, Tangibles, Empathy, and Responsiveness (RATER dimensions) are basic dimensions of the SERVQUAL model (Schneider & White, 2004), and Security is the service-specific dimension for the WHDs services (Gummesson, 1992; Schneider & Bowen, 1995 as cited in Schneider & White, 2004). There are 22 items in the basis SERVQUAL model for RATER dimensions, and the author added two more items with the basic dimensions to evaluate service dimensions based on practical experience. So, a total of 24 items in each of Parts II and Part III to calculate perceived and expected service. A 7-point Likert scale (1= Very Poor to 7= Excellent) was used to know the opinion of the WHDs customers for each of the items. The Likert scale is useful to measure ‘unobservable individual characteristics’ like opinions about service quality and feelings about satisfaction level (Bhandari & Nikolopoulou, 2022).

Table 16: SERQUAL Dimensions with corresponding Factors

SL.	Codes	Factors	Dimensions
1.	R1	Providing services as promised	Reliability
2.	R2	Dependability in handling problems	
3.	R3	An error-free complaint or GD	
4.	R4	Providing services as promised time	
5.	R5	Performing services right the first time	
6.	r1	Prompt services	Responsiveness
7.	r2	Willingness to listen	
8.	r3	Willingness to help	
9.	r4	Readiness to respond to queries	
10.	A1	Knowledge of the concerned officer about the intended service	Assurance
11.	A2	Good attitude toward service seekers	
12.	A3	Comfortableness of sharing information	
13.	A4	Employees are consistently courteous	
14.	E1	The best interest of the service seekers	Empathy
15.	E2	Dealing with service seekers in a caring fashion	
16.	E3	Giving service seekers individual attention	
17.	E4	Understand the needs of the customers	
18.	E5	Convenient business hours	Tangibles
19.	T1	Professional appearance/smartness of the officer	
20.	T2	Up-to-date equipment	
21.	T3	Physical facilities of the Police Station	
22.	T4	Visually appealing materials related to service	Security
23.	S1	Feeling secure in informing the police	
24.	S2	Security of provided information	

Note: Factors for Security dimensions are service specific and considered by the author based on the works of literature.

Table 16 interprets each dependent variable with corresponding items based on the SERVQUAL model of Parasuraman, Zeithamsi, & Berry in A conceptual model of service quality and its implications for future research (1985, as cited in Schneider & White, 2004).

Miscellaneous Part

The author framed this part to know the overall service experience and the specific points related to service satisfaction or dissatisfaction, which is a basis for the selection of interviewees. To share observations about the perceived services of the WHDs was optional to respond to keep the respondents comfortable with the questions and codes for this part in Table 17.

Table 17: Miscellaneous Part Questions with Comments

Q. No.	Codes	Questions	Comments
1.	M1	Prior experience of getting police service	Yes/No
2.	M2	How many days does it take to get service?	Open-ended to put the number of days
3.	M3	The overall quality of the perceived service	Dependent Variable (Likert Scale of 7)
4.	M4	Best/worst observation you experienced at the time of taking the desired service	Open-ended

Note: The Open-ended question (M4) is to know the experience that will be used in qualitative analysis.

4.9. Interview

The purpose of this interview is to understand how the service quality dimensions change with respect to expectations, especially to explore if there are any other service-specific dimensions other than the security dimension that are closely connected to the service quality. So, A thematic analysis using both inductive and deductive approaches will be performed to explain the SERVQUAL dimensions and to explore if there is any other dimension that plays a substantial role in customer satisfaction.

Participants Selection

Selecting the best participants from the quantitative part respondents is a crucial point of this research. The last two questions of the questionnaire were instrumental in selecting participants for the qualitative part. For the purpose of sampling, the author prefers the ‘Extreme case sampling’ (Creswell & Clark, 2018) approach to explore the service quality disconformity to explain the findings of the quantitative part. The customers who marked the service as very

poor (1 on the Likert Scale) in response to question number 3 (Code- M3) of the miscellaneous Part were expressive to share their observations in the open-ended questions (Code-M4). Creswell & Clark (2018) opined:

“A more systematic approach is used the quantitative statistical results to direct the follow-up sampling procedures to select the participants best able to help to explain the phenomenon of interest.”

Interview Protocol

The interview protocol suggested by the Imperial College of London Interview protocol Design will be followed for the interview (Imperial College London, 2022). The protocol includes the following points-

1. Using Script from opening to closing
2. Consent of Interviewees and Any Queries (like Icebreaking)
3. Open-ended Questions and Flexibility for interviewees
4. Questions will be Guided by Existing Research (SERVQUAL model)
5. Questions will be asked from ‘Easy to Difficult/Abstract’ for better outcomes.
6. Using Prompts techniques will be employed if needed.
7. Flexibility in Questioning (Changing Orders if needed)
8. Time Sensitivity (Interview will be finished on time)
9. Piloting will be done before conducting the real interview.

Regarding the interview recording, the participants will be requested for a video recording, but it could be hard for their privacy. So, the contingency plan is only an audio recording.

Analytical Tools and Research Method

In mixed-method research, separate analytical techniques are required to analyze both kinds of data based on the research questions and integration of two forms of data (Creswell & Clark, 2018). The SPSS (Statistical Process for Social Sciences) version 29 Will be employed to analyze the quantitative part, and Thematic analysis will be used to understand the experience (Braun & Clarke, 2012) of the extreme customers that will be instrumental in explaining quantitative findings and exploring more service-specific dimensions. A descriptive statistic will be performed first to understand the demographic factors of WHDs at the beginning. The analytical tools for the corresponding research questions are demonstrated in Table 18.

Table 18: Research Questions with corresponding Analytical tools

RQ. No.	Research Questions	Analytical Tools
1	To what extent the customers (Service Recipients) are satisfied with the service quality of the WHDs?	Descriptive Statistics based on Survey Results
Hypothesis 1 (H1)	The customers of WHDs are marginally non-satisfied.	
2	What are the influential dimension of service quality that affects customer satisfaction WHDs?	Binary Logistic Regression & Explanation using Interview Data
Hypothesis 2 (H2)	Reliability, Responsiveness, and Security are the most influential service quality dimensions for the customer satisfaction of WHDs.	
2.1	Which factors are influential for expected service?	Thematic Analysis
Hypothesis (H2)	Providing promised services, dealing with customers in a caring fashion, and creating a sense of security could be the most influential factors for the expected service of WHDs.	
2.2	Which factors are influential for perceived service?	Thematic Analysis
Hypothesis (H3)	Dependability in handling customers' problems, Prompt services to customers, and a good attitude towards service seekers could be the influential factors.	
2.3	What are the service-specific dimensions associated with customer satisfaction?	Logistic Regression & Thematic Analysis
Hypothesis (H4)	Security could be one of the service-specific dimensions, and there might have some others that could be critical for customer satisfaction.	

Note: For Hypothesis 4 (H4), Logistic Regression will verify the assumption of the security dimension as a service-specific dimension and Thematic Analysis to categorize other factors (if there are any).

Ethical Considerations

The American Psychological Association (APA) suggests research ethics guidelines, e.g., following informed-consent rules and keeping confidentiality and privacy, are the key ethical issues in the research (American Psychological Association, 2017). In this study, the author keeps ethical considerations in mind while collecting the data from the respondents. The author made a written commitment to the respondents that the data provided by the respondents shall not be used other than for research purposes.

Chapter 5: Data Analysis and Findings

Summary

The satisfaction of the customers is determined using descriptive statistics from the survey result (N=104), and 58% of respondents are found non-satisfied with the perceived service quality. From the gap analysis between expectation and perception, the tangible dimension is found to have the highest gap, whereas the reliability gap is the lowest. However, binary logistic regression revealed the significance of Reliability and Security for customer satisfaction. Besides, the interview data support the quantitative analysis and provide several new codes, which are also influential. A new dominant theme, service fairness, has evolved through inductive thematic analysis, which consists of three factors. Those three factors are political lobbying, administrative connectivity, and unethical advantages.

5.1. Quantitative Data Analysis

5.1.1. Descriptive Analysis

5.1.1.1 Demographic Factors

As shown in Table 19, among all the participants (N=104), most of the participants ages between 19Y-40Y where 49% of respondents are between the age range 19Y-30Y and 42.30% of respondents are in the range 31Y-40Y. The people above age 41 are few, and it is about 9%, where the respondents from the senior citizens' group (51-60) are the lowest. Regarding the education level of the respondents, about 60% of respondents completed higher education (Graduation). The respondents from other categories of education level are almost close to each other, and it is about 12% to 14%.

It is interesting to find from the monthly income question that about one-fourth of the respondents don't have income, and the number of respondents belonging to other categories doesn't differ that much. So, almost evenly distributed income groups are found where 4.80% of respondents didn't mention their income. The occupation of most of the service recipients is service holders (41.30%), which creates a positive impression that working ladies are more aware of the legal procedures. Students are also mentionable among the respondents (26.90%), which will support finding their valuable perception about the service quality.

There is a balance regarding marital status among the respondents of this survey. Most of them (59.60%) are married, and the rest of the 40.40% of respondents are unmarried. This

balance is important to get an insight into both categories of women, which is an important category in the Bangladeshi context. The respondents of this survey are mostly (59.60%) having multiple time experiences of taking police service before, and the rest of the service recipients are first-time service seekers.

Table 19: Demographic Factors (N=104)

<i>Socio-Demographic</i>	<i>N</i>	<i>%</i>
Age (Years)		
19-30	51	49.00%
31-40	44	42.30%
41-50	6	5.80%
51-60	3	3.00%
Education Level		
Primary	13	12.50%
Secondary	14	13.50%
Higher Secondary	15	14.40%
Graduation or above	62	59.60%
Monthly Income (BDT)		
No Income	26	25.00%
<20000	29	28.10%
20000 to 40000	28	26.70%
41000 to 60000	16	15.40%
No Answer	5	4.80%
Occupation		
Housewife	18	17.30%
Service Holder	43	41.30%
Student	28	26.90%
Business/Entrepreneur	3	2.90%
Others	12	11.50%
Marital Status		
Unmarried	42	40.40%
Married	62	59.60%
Previous Experience of Taking Police Service		
No	42	40.40%
Yes	62	59.60%

5.1.1.2 Overall Expected and Perceived Service Dimensions

The quantitative part of the research is formulated to find customer satisfaction which is preceded by the service quality of WHDs of Chittagong Metropolitan Police. The author formulated a set of questionnaires based on the SERVQUAL model (Parasuraman, Zeithaml, & Berry, SERVQUAL: A multiple-item scale for measuring consumers perceptions of service quality, 1988). The author employed SPSS version 29 to analyze the data.

Table 20: Dependent and Independent Variables

Dependent Variable	Perceived Service Quality (Satisfaction)
Independent Variables	Reliability Difference Assurance Difference Tangibles Difference Empathy Difference Responsiveness Difference Security Difference

Note: RATERS model as described based on SERVQUAL dimensions.

The opinion of respondents regarding the expectation of services of the WHDs can be expressed using Figure 14. It is quite usual to expect quality service (good or excellent) from WHDs as it is a customized public service. This very viewpoint is reflected in the respondents' answers, where the highest number of respondents (31%) expected that the service quality would be good, and the second highest, 24%, participants expected the service to be excellent.

Figure 14: Expected Service Responses

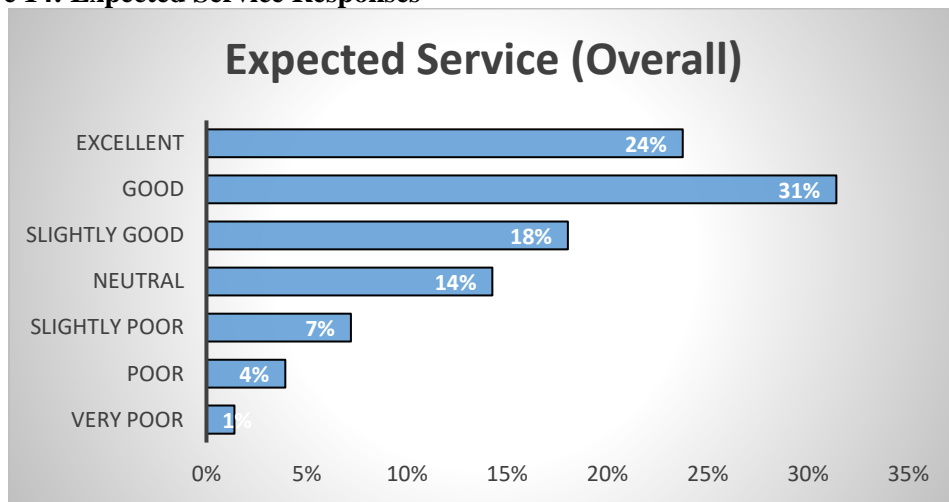
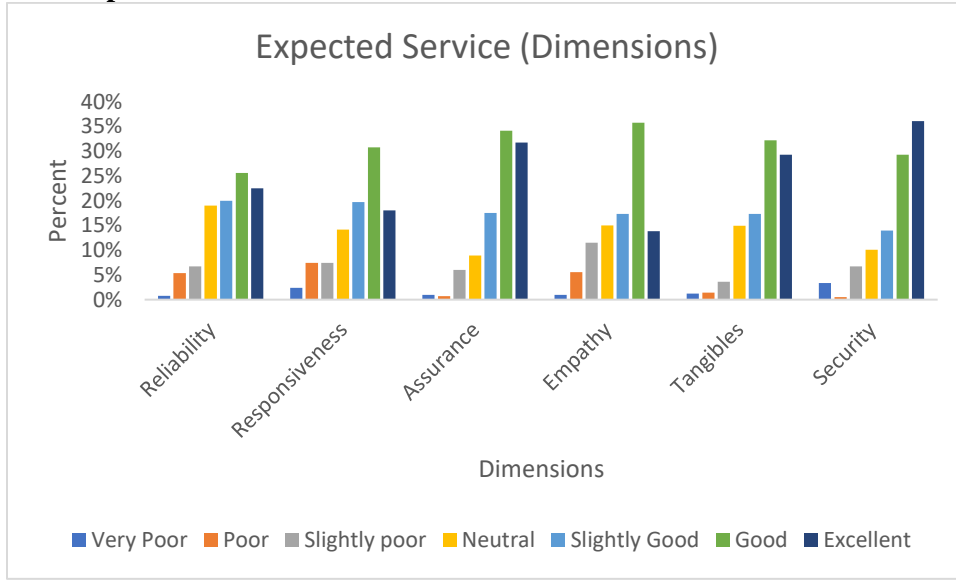


Figure 15 depicts that the expectation is very high for each of the SERVQUAL dimensions. It is noteworthy that the expectation is quite high for the service-specific dimensions, the Security dimension, from the author's point of view.

Figure 15: Expected Service Dimensions



The opinion of respondents regarding the perceived service of the WHDs can be expressed using the following charts.

Figure 16: Perceived Service Responses

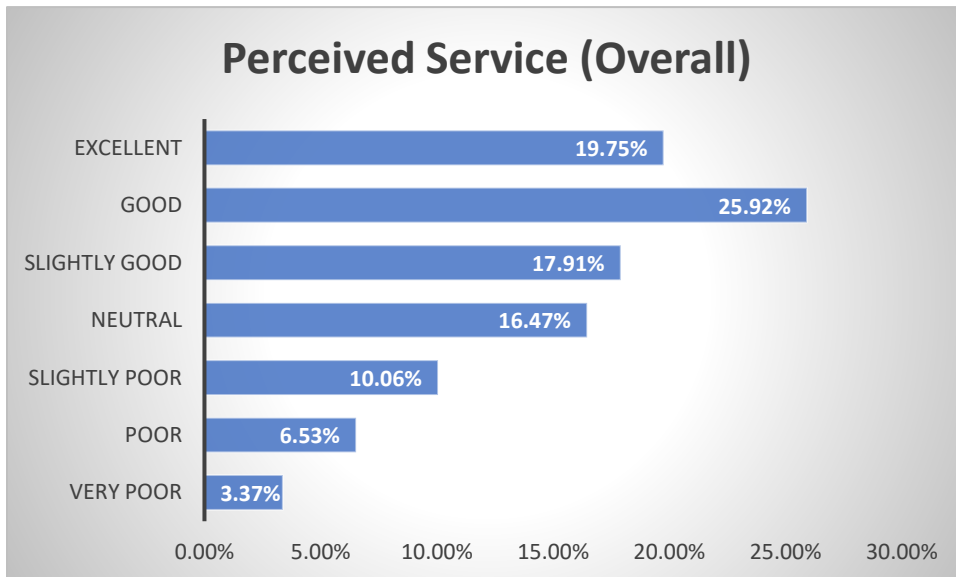
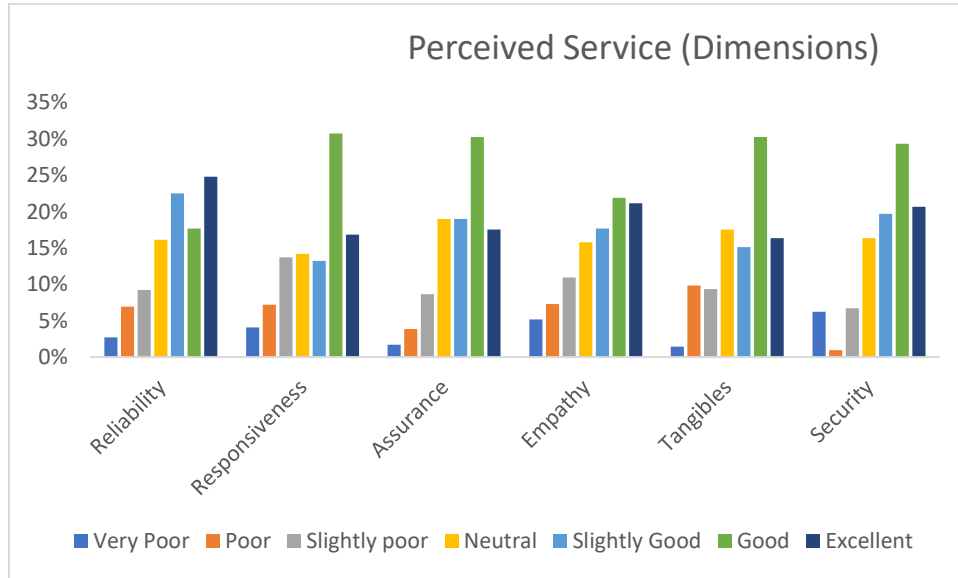


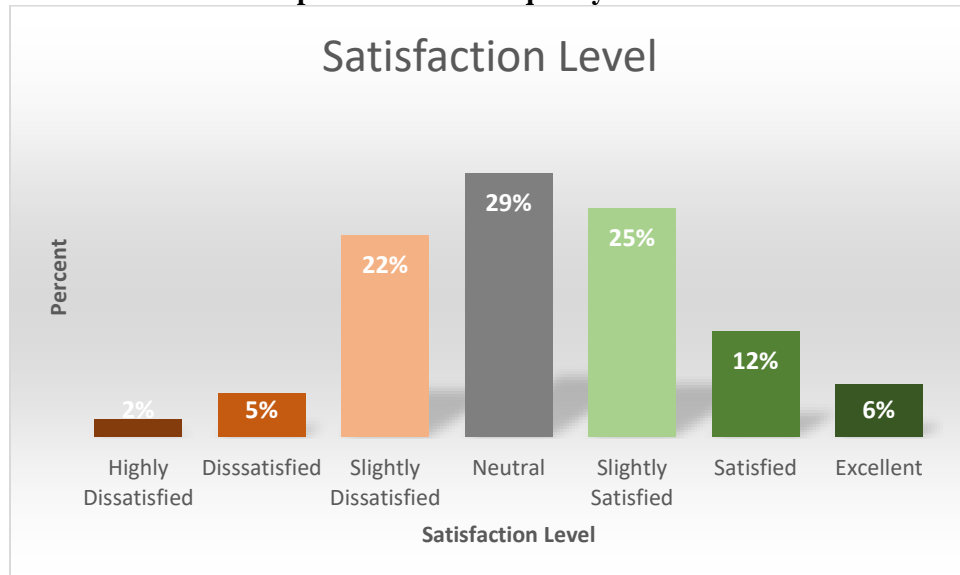
Figure 17: Perceived Service Dimensions



5.2. Satisfaction with Service Quality

Figure 18 illustrates the present service quality in detail, where 29% of the respondents marked the service quality neutral, which is neither satisfactory nor dissatisfactory. Moreover, the percentage of people who marked the service quality was slightly satisfied.

Figure 18: Satisfaction from the perceived service quality



Note: Neutral is the highest, but the specialized service is supposed to increase satisfaction.

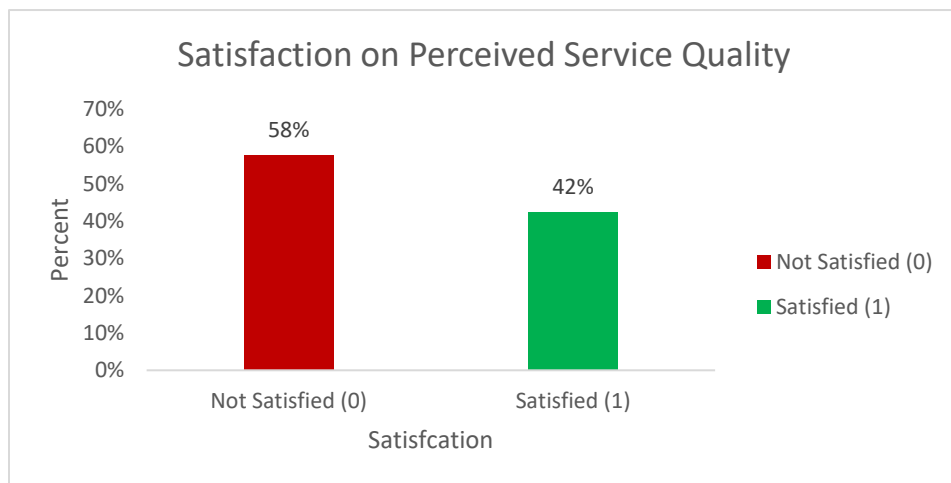
All the data related to variables were collected using a Likert scale of 7, but for the convenience of analysis and interpretation as well, the perceived service quality (Customer satisfaction) was converted to a scale of 3, as shown in Table 21. Customized service was introduced in order to increase the service quality; that’s why the responses belonging to the neutral category are counted in the ‘Not Satisfied’ group despite the ‘Satisfied.’

Table 21: Recategorization of Likert scale result

Dependent Variable	Existing Likert scale	Existing Description	New Description	New Code
Perceived Service Quality (Customer Satisfaction)	1	Highly Dissatisfied	Not Satisfied	0
	2	Dissatisfied		
	3	Slightly Dissatisfied		
	4	Neither Dissatisfied nor Satisfied		
	5	Slightly Satisfied	Satisfied	1
	6	Satisfied		
	7	Highly Satisfied		

In response to the question related to satisfaction, as shown in Figure 19 on overall service quality, 58% of respondents opined that they were not satisfied (dissatisfied and neither dissatisfied nor satisfied group together). The rest of the 42% of respondents assessed the overall service quality as satisfactory.

Figure 19: Satisfaction with Perceived Service Quality



5.3. Service Quality Dimensions and Gaps

5.3.1. Reliability

There were five different questions regarding reliability in the survey questionnaire based on SERVQUAL theory. Regarding the expectation of the factors as portrayed in Table 22 related to Reliability, the expectation is high (around 30%) for the factors ‘Providing Services as Promised (ER1)’ and ‘Dependability of handling problems (ER2).

Table 22: Expected Reliability Factors

<i>Reliability (Expected)</i>								
<i>Codes</i>	Factors	1	2	3	4	5	6	7
ER1	Providing services as promised	1	1	2	22	23	31	24
		1%	1%	2%	21%	22%	30%	23%
ER2	Dependability in handling problems	0	0	7	19	22	34	22
		0%	0%	7%	18%	21%	33%	21%
ER3	An error-free complaint or GD	0	6	6	21	23	27	21
		0%	6%	6%	20%	22%	26%	20%
ER4	Providing services as promised time	0	8	10	15	19	23	29
		0%	8%	10%	14%	18%	22%	28%
ER5	Performing services right the first time	3	13	10	22	17	18	21
		3%	13%	10%	21%	16%	17%	20%

Note: (1) Very poor (2) Poor (3) Slightly Poor (4) Neutral (5) Slightly Good (6) Good (7) Excellent

Table 23: Perceived Reliability Factors

<i>Reliability (Perceived)</i>								
<i>Codes</i>	Factors	1	2	3	4	5	6	7
PR1	Providing services as promised	1	7	11	17	23	15	30
		1%	7%	11%	16%	22%	14%	29%
PR2	Dependability in handling problems	0	5	9	18	25	16	31
		0%	5%	9%	17%	24%	15%	30%
PR3	An error-free complaint or GD	2	5	8	21	19	23	26
		2%	5%	8%	20%	18%	22%	25%
PR4	Providing services as promised time	4	7	8	16	28	21	20
		4%	7%	8%	15%	27%	20%	19%
PR5	Performing services right the first time	7	12	12	12	22	17	22
		7%	12%	12%	12%	21%	16%	21%

Note: (1) Very poor (2) Poor (3) Slightly Poor (4) Neutral (5) Slightly Good (6) Good (7) Excellent

Regarding the perception of the factors as shown in Table 23 related to Reliability, the perception is very high (score 7 on the Likert scale of 7) for the same factors as in expectation. But the overall perception is average. So, there is a reliability dimension gap, as displayed in Table 24.

The gap between the average of each of the factors is described in Table 24. The difference is very high (-0.34) for the factor ‘Providing Services as Promised (R1)’ followed by the factor (-0.29) ‘Providing Services as Promised Time (R4)’ though the mean difference is -0.18. The negative mean difference indicates the gap with the reliability dimension.

Table 24: Reliability Factors Gap

Reliability Gap (PR-ER)				
Codes	ER	PR	Difference	Mean Difference (R_D)
R1	5.44	5.11	-0.34	-0.18
R2	5.43	5.26	-0.17	
R3	5.17	5.14	-0.03	
R4	5.21	4.92	-0.29	
R5	4.68	4.63	-0.06	

Note: ER and PR are calculated by taking an average of the scores for each factor.

5.3.2. Responsiveness

There were four different questions regarding responsiveness in the survey questionnaire based on SERVQUAL theory. Table 25 shows the expectation of the respondents, and mostly they expect the service will be ‘Good (score 6 on a Likert Scale of 7)’ for prompt services (Er1), Willingness to listen (Er2), and Willingness to help (Er3).

Table 25: Expected Responsiveness Factors

Responsiveness (Expected)								
Codes	Factors	1	2	3	4	5	6	7
Er1	Prompt services	5	8	11	11	14	35	20
		5%	8%	11%	11%	13%	34%	19%
Er2	Willingness to listen	0	8	6	15	22	34	19
		0%	8%	6%	14%	21%	33%	18%
Er3	Willingness to help	2	1	5	17	24	32	23
		2%	1%	5%	16%	23%	31%	22%
Er4	Readiness to respond to queries	3	14	9	16	22	27	13
		3%	13%	9%	15%	21%	26%	13%

Note: (1) Very poor (2) Poor (3) Slightly Poor (4) Neutral (5) Slightly Good (6) Good (7) Excellent

Table 26 exhibits the perception of the customers regarding Responsiveness. Here, the perception is also mostly good (score 6 on a Likert scale of 7) and highest for the factors prompt services (Er1) and Willingness to listen (Er2).

Table 26: Perceived Responsiveness Factors

<i>Responsiveness (Perceived)</i>								
<i>Codes</i>	<i>Questions</i>	1	2	3	4	5	6	7
<i>Er1</i>	Prompt services	5	5	17	12	8	39	18
		5%	5%	16%	12%	8%	38%	17%
<i>Er2</i>	Willingness to listen	4	10	13	12	13	35	17
		4%	10%	13%	12%	13%	34%	16%
<i>Er3</i>	Willingness to help	0	10	9	21	10	28	26
		0%	10%	9%	20%	10%	27%	25%
<i>Er4</i>	Readiness to respond to queries	8	5	18	14	24	26	9
		8%	5%	17%	13%	23%	25%	9%

Note: (1) Very poor (2) Poor (3) Slightly Poor (4) Neutral (5) Slightly Good (6) Good (7) Excellent

The gap between the average of each of the factors is described in Table 27. The difference is very high (-0.35) for the factor ‘Willingness to listen (r2)’ followed by the factor (-0.28) ‘Willingness to help (r4)’ though the mean difference is -0.21. It is noteworthy to notice that the gap is lowest (-0.04) for prompt services and readiness to respond to queries. The negative mean difference indicates the gap with respect to the responsiveness dimension.

Table 27: Responsiveness Factors Gap

<i>Responsiveness Gap (PRs-ERs)</i>				
Codes	ERs	PRs	Difference	Mean Difference (Rs_D)
r1	4.98	4.94	-0.04	-0.21
r2	5.20	4.86	-0.35	
r3	5.38	5.11	-0.28	
r4	4.66	4.49	-0.17	
r5	4.98	4.94	-0.04	

Note: ERs and PRs are the calculated taking average of the scores for each factor

5.3.3. Assurance

There were four different questions regarding assurance in the survey questionnaire based on SERVQUAL theory. Table 28 shows the expectation of the respondents, and most (39%) expect the service will be ‘Good (score 6 on the Likert Scale of 7)’ for the factor knowledge of

the concerned officer about the intended service (EA1) followed by good attitude towards the service seekers (EA2).

Table 28: Expected Assurance Factors

		<i>Assurance (Expected)</i>						
<i>Codes</i>	Factors	1	2	3	4	5	6	7
<i>EA1</i>	Knowledge of the concerned officer about the intended service	2	0	3	3	15	41	40
		2%	0%	3%	3%	14%	39%	38%
<i>EA2</i>	Good attitude toward service seekers	1	1	7	13	18	39	25
		1%	1%	7%	13%	17%	38%	24%
<i>EA3</i>	Comfortableness of sharing information	0	0	5	10	21	36	32
		0%	0%	5%	10%	20%	35%	31%
<i>EA4</i>	Employees are consistently courteous	1	2	10	11	19	26	35
		1%	2%	10%	11%	18%	25%	34%

Note: (1) Very poor (2) Poor (3) Slightly Poor (4) Neutral (5) Slightly Good (6) Good (7) Excellent

Table 29 exhibits the perception of the customers regarding Assurance. Here, the perception is also mostly good (score 6 on a Likert scale of 7) and highest for the factor good attitude towards service seekers (EA2).

Table 29: Perceived Assurance Factors

		<i>Assurance (Perceived)</i>						
<i>Codes</i>	Factors	1	2	3	4	5	6	7
<i>EA1</i>	Knowledge of the concerned officer about the intended service	1	4	5	13	24	30	27
		1%	4%	5%	13%	23%	29%	26%
<i>EA2</i>	Good attitude toward service seekers	3	2	7	20	17	40	15
		3%	2%	7%	19%	16%	38%	14%
<i>EA3</i>	Comfortableness of sharing information	0	3	16	18	19	27	21
		0%	3%	15%	17%	18%	26%	20%
<i>EA4</i>	Employees are consistently courteous	3	7	8	28	19	29	10
		3%	7%	8%	27%	18%	28%	10%

Note: (1) Very poor (2) Poor (3) Slightly Poor (4) Neutral (5) Slightly Good (6) Good (7) Excellent

The gap between the average of each of the factors is described in Table 30. The difference is highest (-0.80) for the factor ‘Employees are consistently courteous (A4)’ and lowest (-0.36) for good attitude towards service seekers (A2). The mean difference is -0.60 for

assurance. The negative mean difference indicates the gap with respect to the Assurance dimension.

Table 30: Assurance Factors Gap

Assurance Gap (PA-EA)				
Codes	EA	PA	Difference	Mean Difference (Rs_D)
A1	6.00	5.43	-0.57	-0.60
A2	5.53	5.17	-0.36	
A3	5.77	5.10	-0.67	
A4	5.53	4.73	-0.80	

Note: EA and PA are the calculated taking average of the scores for each factor

5.3.4. Empathy

There were five different questions regarding assurance in the survey questionnaire based on SERVQUAL theory. Table 31 shows the expectation of the respondents, and most (40%) expect the service will be ‘Good (score 6 on the Likert Scale of 7)’ for the factor Dealing with service seekers in caring fashion (EE2).

Table 31: Expected Empathy Factors

Empathy (Expected)								
Codes	Factors	1	2	3	4	5	6	7
EE1	The best interest of the service seekers	3	7	12	11	20	38	13
		3%	7%	12%	11%	19%	37%	13%
EE2	Dealing with service seekers in a caring fashion	0	4	10	18	15	42	15
		0%	4%	10%	17%	14%	40%	14%
EE3	Giving service seekers individual attention	2	1	12	14	22	38	15
		2%	1%	12%	13%	21%	37%	14%
EE4	Understand the needs of the customers	0	7	12	18	16	36	15
		0%	7%	12%	17%	15%	35%	14%
EE5	Convenient business hours	0	10	14	17	17	32	14
		0%	10%	13%	16%	16%	31%	13%

Note: (1) Very poor (2) Poor (3) Slightly Poor (4) Neutral (5) Slightly Good (6) Good (7) Excellent

The following Table 32 exhibits the perception of the customers regarding Empathy. Here, the perception is also mostly good (score 6 on a Likert scale of 7) and highest for the factor of convenient business hours (EE5).

Table 32: Perceived Empathy Factors

		<i>Empathy (Perceived)</i>						
<i>Codes</i>	<i>Factors</i>	1	2	3	4	5	6	7
<i>EE1</i>	The best interest of the service seekers	5	1	14	18	24	22	20
		5%	1%	13%	17%	23%	21%	19%
<i>EE2</i>	Dealing with service seekers in a caring fashion	3	9	9	22	17	23	21
		3%	9%	9%	21%	16%	22%	20%
<i>EE3</i>	Giving service seekers individual attention	4	10	11	13	20	23	23
		4%	10%	11%	13%	19%	22%	22%
<i>EE4</i>	Understand the needs of the customers	6	7	12	19	16	20	24
		6%	7%	12%	18%	15%	19%	23%
<i>EE5</i>	Convenient business hours	9	11	11	10	15	26	22
		9%	11%	11%	10%	14%	25%	21%

Note: (1) Very poor (2) Poor (3) Slightly Poor (4) Neutral (5) Slightly Good (6) Good (7) Excellent

The gap between the average of each of the factors is described in Table 33. The difference is highest (-0.35) for the factor ‘dealing with the service seekers with caring fashion (E2) and lowest (-0.03) for the factor best interest of the service seeker (E1). The mean difference is -0.21 for the Empathy dimension. The negative mean difference indicates the gap in the Empathy dimension.

Table 33: Empathy Factors Gap

Empathy Gap (PE-EE)				
Codes	EE	PE	Difference	Mean Difference (E_D)
E1	4.96	4.93	-0.03	-0.21
E2	5.21	4.87	-0.35	
E3	5.18	4.88	-0.30	
E4	5.03	4.81	-0.22	
E5	4.86	4.70	-0.15	

Note: EE and PE are the calculated taking average of the scores for each factor.

5.3.5. Tangibles

There were four different questions regarding assurance in the survey questionnaire based on SERVQUAL theory. Table 34 shows the expectation on tangibles, and most (36%)

expect the service will be ‘Very Good (score of 7 on the Likert Scale of 7)’ for professional appearance (ET1).

Table 34: Expectation regarding Tangibles Factors

<i>Expected Tangibles (ET)</i>								
<i>Codes</i>	<i>Factors</i>	1	2	3	4	5	6	7
ET1	Professional appearance	0	0	3	13	20	31	37
		0%	0%	3%	13%	19%	30%	36%
ET2	Up-to-date equipment	1	3	2	15	20	37	26
		1%	3%	2%	14%	19%	36%	25%
ET3	Physical facilities of the Police Station	3	0	5	17	16	30	33
		3%	0%	5%	16%	15%	29%	32%
ET4	Visually appealing materials related to service	1	3	5	17	16	36	26
		1%	3%	5%	16%	15%	35%	25%

Note: (1) Very poor (2) Poor (3) Slightly Poor (4) Neutral (5) Slightly Good (6) Good (7) Excellent

The following Table 35 exhibits the perception of the customers regarding Tangibles. Here, the perception is also mostly good (score 6 on a Likert scale of 7) and highest for the factor up to date equipment (PT2).

Table 35: Perception Regarding Tangibles Factors

<i>Perceived Tangibles (PT)</i>								
<i>Codes</i>	<i>Factors</i>	1	2	3	4	5	6	7
PT1	Professional appearance	2	12	7	15	16	28	24
		2%	12%	7%	14%	15%	27%	23%
PT2	Up-to-date equipment	1	12	6	17	16	37	15
		1%	12%	6%	16%	15%	36%	14%
PT3	Physical facilities of the Police Station	2	8	13	23	15	29	14
		2%	8%	13%	22%	14%	28%	13%
PT4	Visually appealing materials related to service	1	9	13	18	16	32	15
		1%	9%	13%	17%	15%	31%	14%

Note: (1) Very poor (2) Poor (3) Slightly Poor (4) Neutral (5) Slightly Good (6) Good (7) Excellent

The gap between the average of each of the factors is described in Table 36. The difference is highest (-0.80) for the factor ‘professional appearance (T1)’ and followed by up-to-date equipment (T2). The mean difference is -0.68 for the Tangibles dimension. The negative mean difference indicates the gap in the Tangible dimension.

Table 36: Tangible Factor Gaps

Tangible Gap (PT-ET)				
Codes	ET	PT	Difference	Mean Difference (T_D)
T1	5.83	5.03	-0.80	
T2	5.55	4.98	-0.57	-0.68
T3	5.55	4.77	-0.78	
T4	5.46	4.88	-0.59	

Note: ET and PT are the calculated taking average of the scores for each factor

5.3.6. Security

There were two different questions regarding assurance in the survey questionnaire, and the author considered security as a service-specific dimension. Table 37 shows the expectation of the respondents, and mostly they expect the service will be ‘Very Good (score 7 on the Likert Scale of 7)’ for the factor both factors.

Table 37: Security Factors Expectation

Expected Security (ES)								
Codes	Factors	1	2	3	4	5	6	7
ES1	Feeling secure in informing the police	6	1	6	13	11	29	38
		6%	1%	6%	13%	11%	28%	37%
ES2	Security of provided information	1	0	8	8	18	32	37
		1%	0%	8%	8%	17%	31%	36%

Note: (1) Very poor (2) Poor (3) Slightly Poor (4) Neutral (5) Slightly Good (6) Good (7) Excellent

The following Table 38 exhibits the perception of the customers regarding Security. Here, the perception is also mostly (37%) good (score 6 on a Likert scale of 7) for the factor ‘security of provided information (PS2).

Table 38: Perceived Security Factors

<i>Perceived Security (PS)</i>								
<i>Codes</i>	<i>Factors</i>	1	2	3	4	5	6	7
<i>PS1</i>	Feeling secure in informing the police	9	2	8	16	18	23	28
		9%	2%	8%	15%	17%	22%	27%
<i>PS2</i>	Security of provided information	4	0	6	18	23	38	15
		4%	0%	6%	17%	22%	37%	14%

Note: (1) Very poor (2) Poor (3) Slightly Poor (4) Neutral (5) Slightly Good (6) Good (7) Excellent

The gap between the average of each of the factors is described in Table 39. The differences are almost similar but highest for the factor security of provided information. The mean difference is -0.50 for the Security dimension. The negative mean difference indicates the gap in the Security dimension.

Table 39: Security Factors Gap

Security Gap (PS-ES)				
Codes	ES	PS	Difference	Mean Difference (S_D)
S1	5.51	5.05	-0.46	-0.50
S2	5.75	5.21	-0.54	

Note: ES and PS are the calculated taking average of the scores for each factor

5.4. Reliability and Validity

Reliability

A Cronbach's alpha (α) tests the internal consistency of the multiple-question Likert Scale Survey (Glen, 2022). The formula for measuring Cronbach's alpha (α) is-

$$\alpha = \frac{K}{K-1} \left[1 - \frac{\sum S^2 y}{S^2 x} \right]$$

Here,

K = the number of considered items to be tested

$\sum S^2 y$ = Sum of the variances of tested items

$S^2 x$ = Variance of the Total Score

It helps to understand how the items considered are closely related as a group. The value of α ranges from 0 to 1. The role of interpreting α value is given in Table 40.

Table 40: Interpretation of Cronbach's α Values

Cronbach's α	Internal Consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Source: (Islam, M. T., & Amin, 2019, pp. 28-38)

Cronbach's α tests of the whole questionnaire are performed to check the consistency of the data as the author uses Likert's scale data. Table 41 displays the results of testing for each variable's Cronbach's alpha score.

Table 41: Cronbach's α scores

Dimensions	No. Items	Expected Service	Perceived Service
Reliability	5	0.997	0.944
Responsiveness	4	0.777	0.855
Assurance	4	0.843	0.854
Empathy	5	0.811	0.953
Tangibles	4	0.903	0.841
Security	2	0.816	0.752

Note: Each of them is greater than .75, which is acceptable in social science (Islam, M. T., & Amin, 2019).

Validity

The necessary statistical test was used to evaluate the validity of the questions. First off, the Kaiser-Meyer-Olkin test for the components produced a score of 0.887, which is higher than the usual value of 0.6, and the Cronbach's alpha test generated an overall value of 0.746, which is greater than the acceptable value of 0.7.

Table 42: Data validity tests

Tests	Score	Comments
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.887	Sig. <.001
Cronbach's Alpha	0.746	

Note: Correlation with the sum of all responses to each of the items is found significant.

5.5. Correlation Analysis

5.5.1. Multicollinearity Tests

Multicollinearity test help to identify the interrelation between or among the variables. A multicollinearity test was performed to measure the Variance Inflation factor (VIF) using SPSS. The VIF of each of the dependent variables is much less than 10 (POTTERS, 2023), as presented in Table 43. So, there is no multicollinearity problem.

Table 43: Variance Inflation Factors (VIF)

<i>Variables</i>	<i>Tolerance</i>	<i>VIF</i>
<i>Reliability Difference</i>	0.906	1.104
<i>Responsiveness Difference</i>	0.414	2.415
<i>Assurance Difference</i>	0.549	1.821
<i>Empathy Difference</i>	0.448	2.23
<i>Tangible Difference</i>	0.761	1.314
<i>Security Difference</i>	0.796	1.256

Note: Highest VIF is 2.415 for Responsiveness difference (acceptable)

5.5.2. Correlation

A correlation analysis is performed before running the binomial logistic regression to observe the bivariate correlation among the dependent variable to analyze the degree of mutual correlation that may lead to multicollinearity.

Table 44: Correlation Matrix

<i>Variables</i>	<i>Reliability Difference</i>	<i>Assurance Difference</i>	<i>Tangible Difference</i>	<i>Security Difference</i>	<i>Responsiveness Difference</i>
<i>Reliability Difference</i>	1				
<i>Assurance Difference</i>	0.173	1			
<i>Tangible Difference</i>	0.182	.340**	1		
<i>Security Difference</i>	.246*	.321**	.316**	1	
<i>Responsiveness Difference</i>	0.184	.579**	0.051	.236*	1

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed).

Table 44 shows that there is a moderate relationship between responsiveness and assurance, whereas others have a weak correlation. As the VIF is also less than 5, so there is no problem with multicollinearity at all.

5.6. Factor Analysis

The factor rotations show differences in expected and perceived services, and the author will be strict with original dimensions and factors instead of reducing the factors. Moreover, all the factors show high factor loading (above 0.6), which doesn't allow to drop or merge of any components. In both tables III-1 & III-2 (Appendix III), we observe that the security dimension is rotated as a separate factor from others and expressed by two items in both cases. So, the items are interrelated to each other and completely separate from other items. Eventually, the Security dimension can be considered as a separate service-specific dimension (variable).

5.7. SERVQUAL Analysis

As discussed in the methodology section, in Gap Model, Service Quality Can be determined by applying the following equation (Seth, Deshmukh, & Vrat, 2005)

$$SQ = \sum_{j=1}^k (P_{ij} - E_{ij})$$

Here, SQ- Overall Service Quality

k- Number of attributes

P_{ij} -Perception of stimulus i with respect to the attribute j

E_{ij} -Expectation of stimulus i with respect to the attribute j

Using the above equation for each of the dimensions, the gap (Gap 5) for each dimension is calculated, and the mean difference is -0.40. Therefore, there is a service quality gap.

Table 45: Service Quality Dimensions Gap

<i>Dimension Gaps</i>	<i>Difference (Expected-Perceived)</i>	<i>Mean Difference</i>
<i>Reliability</i>	-0.18	-0.40
<i>Responsiveness</i>	-0.21	
<i>Assurance</i>	-0.60	
<i>Empathy</i>	-0.21	
<i>Tangible</i>	-0.68	
<i>Security</i>	-0.50	

Note- Differences are derived from Tables (i), (ii), (iii), (iv), (v), and (vi).

5.8. Binomial Logistic Regression Analysis

To explore the effect of SERVQUAL dimensions on the likelihood of having satisfaction with service quality, a series of binomial logistic regressions was performed. As the dependent variable of this research was re-coded with '**0 = Not satisfied and 1= Satisfied**' as presented

in **Table 21**. Eventually, When the outcome variable being predicted is dichotomous, a binomial logistic regression is utilized. The first analysis was performed by taking the demographic factors as a dependent variable to predict satisfaction with service quality. The second set of analyses was performed to see the explanatory power of predictors only, except for the demographic factor (Model 1), to understand the explanatory power of the predictors only. The final binary regression (Model 2) was performed by taking both demographic factors and predictors together.

Preliminary model (All demographic)

To understand the association between service quality and demographic factors, a preliminary binary regression analysis was performed. Demographic factors included in this survey are age, education level, profession, marital status, and previous experience of taking police service. Meng (2009, as cited in Grazdani & Merollari, 2015, pp. 155-167) claims that demographic factors affect the perception of service quality. The binary logistic regression model was statistically significant, $\chi^2(12) = 20.25, p < .05$. Table 46 exhibits the impact of demographic factors on satisfaction with service quality. It shows that demographic factors only don't impact satisfaction with the service quality of the WHDs, but the model explains 26.2% (Nagelkerke R^2) and classified 60.2% of cases.

Table 46: Binomial Logistic Regression Results (Demographic Factors)

<i>Dependent Variable</i>	<i>Satisfaction with Service Quality</i>			
	B	SE	Odds Ratio	Probability
<i>Age</i>	-0.08	0.054	0.923	48.0%
Education Level (Ref.: Primary)				
<i>Secondary</i>	-1.916	1.143	0.147	12.8%
<i>Higher Secondary</i>	-0.467	1.163	0.627	38.5%
<i>Honors or above</i>	-1.535	1.093	0.216	17.8%
Profession (Ref.: Housewife)				
<i>Service Holder</i>	1.326	0.906	3.767	79.0%
<i>Student</i>	0.52	1.026	1.683	62.7%
<i>Business/Entrepreneur</i>	-1.136	1.027	0.321	24.3%
<i>Others</i>	-1.449	1.143	0.235	19.0%
Marital Status (Ref.: Not Married)				
<i>Married</i>	0.51	0.612	1.665	62.5%
Previous experience of taking police service Ref.: No)				
<i>Yes</i>	0.093	0.473	1.097	52.3%
<i>No. of Days to get service</i>	-0.001	0.033	0.999	50.0%

Note: R² (Nagelkerke) = 0.262, **P<.005, *P<.05

5.8.1. Model 1 (SERVQUAL dimensions as predictor)

A binary logistic regression has functioned to understand the influence of only SERVQUAL dimensions on satisfaction with the service quality of WHDs. The binary logistic regression model was statistically significant, $\chi^2(6) = 29.801, p < .001$. Table 47 explains the influence of each SERVQUAL dimension on satisfaction with service quality. The model explains 33.5% (Nagelkerke R²) and classified 65.4% of cases.

Table 47 reveals that reliability (B=0.67, P<.001) is a statistically significant predictor, and with a unit increase in the reliability, the probability¹³ of increasing satisfaction with service quality is 66.1%, while other variables are constant. Moreover, security (B=0.487, P<.05) is also a statistically significant predictor, and with one unit increase in security, the probability of increasing satisfaction with service quality is 61.9% while other variables are constant.

Table 47: Binomial Logistic Regression Results (SERVQUAL Dimensions)

<i>Dependent Variables</i> <i>SERVQUAL Dimensions</i>	<i>Satisfaction with Service Quality</i>			
	B	SE	Odd Ratio	Probability
<i>Reliability</i>	0.67***	0.208	1.954	66.1%
<i>Responsiveness</i>	0.089	0.244	1.093	52.2%
<i>Assurance</i>	-0.293	0.292	0.746	42.7%
<i>Empathy</i>	0.102	0.252	1.107	52.5%
<i>Tangible</i>	0.072	0.173	1.074	51.8%
<i>Security</i>	0.487*	0.205	1.628	61.9%

Note: R² (Nagelkerke) = 0.335, ***P<.001, **P<.005, *P<.05

5.8.2. Model 2 (Final Binomial Logistic Regression)

A binary logistic regression has functioned to explore the influence of both SERVQUAL variables and demographic factors together on satisfaction with the service quality of WHDs. The binomial logistic regression model was statistically significant, $\chi^2(17) = 48.594, p < .001$. Table 48 explains the influence of each SERVQUAL dimension together with demographic factors on satisfaction with service quality. The model explains 52.9% (Nagelkerke R²) and classified 81.4% of cases.

It reveals that **reliability** (B=0.767, P<.001) is a statistically significant predictor, and with a unit increase in the reliability, the probability of increasing satisfaction with service quality is 68.3%, while other variables are considered constant. Moreover, **security** (B=0.725, P<.001) is also a statistically significant predictor, and with a unit increase in security, the probability of increasing satisfaction with service quality is 67.4%, while other variables are considered constant.

Among the demographic factors, an increase in **age** (B= -0.187, P<.05) is negatively associated with satisfaction with service quality. With the increase in age, there is a likelihood

¹³ Probability is calculated from odd ratio using the formula Probability, $p = \{ \text{odd ratio} / (1 + \text{odd ratio}) \} * 100\%$, where p is the probability (Rotella, n.d.)

of decreasing customer satisfaction, and the probability of decreasing satisfaction with every unit change in age is 45.3%, while other variables are considered constant. Besides, the profession of the service recipient also has an impact on satisfaction with the service quality of WHDs. Women engaged in **other professions** (B=-3.158, P<.05), except for housewives, service holders, and businesses, are less likely to be satisfied with the service quality. Then, the probability of being a non-satisfied customer is 2.9% that of being a woman in the housewife profession group when controlling other variables.

Table 48: Final Binomial Logistic Regression Results

<i>Dependent Variables</i>	<i>Satisfaction with Service Quality</i>			
	B	SE	Odds Ratio	Probability
<i>Reliability</i>	0.767**	0.285	2.152	68.3%
<i>Assurance</i>	-0.536	0.347	0.585	36.9%
<i>Responsiveness</i>	0.132	0.281	1.141	53.3%
<i>Empathy</i>	-0.135	0.283	0.874	46.6%
<i>Tangible</i>	0.107	0.202	1.113	52.7%
<i>Security</i>	0.725**	0.265	2.064	67.4%
<i>Age</i>	-0.187*	0.087	0.829	45.3%
<i>Education Level (Ref.: Primary)</i>				
<i>Secondary</i>	-1.582	1.448	0.206	17.1%
<i>Higher Secondary</i>	-0.641	1.486	0.527	34.5%
<i>Honors or above</i>	-1.239	1.37	0.29	22.5%
<i>Profession (Ref.: Housewife)</i>				
<i>Service Holder</i>	0.715	1.086	2.043	67.1%
<i>Student</i>	-0.656	1.169	0.519	34.2%
<i>Business/Entrepreneur</i>	-1.573	1.047	0.207	17.15%
<i>Others</i>	-3.518*	1.441	0.029	2.9%
<i>Marital Status (Ref. Not Married)</i>				
<i>Married</i>	1.181	0.808	3.258	76.5%
<i>Previous police service experience (Ref.: No)</i>				
<i>Yes</i>	0.086	0.575	1.089	52.1%
<i>No. of Days to get service</i>	0.002	0.036	1.002	50.0%

Note: R² (Nagelkerke) = 0.529, **P<.005, *P<.05

5.9. Qualitative data analysis

5.9.1. Qualitative Data Source

The main data source for qualitative data is the interview and the open-ended question during the qualitative survey. The interviewee was selected purposefully based on the three criteria from the participants of the quantitative survey.

1. Participants who had multiple times of experiences of taking police services used the response (Yes response) to question number 1 (Code M1) in the miscellaneous part of the survey questionnaire.
2. Participants who marked police highest (highly satisfied) or lowest (severely Dissatisfied) using the response to question number 3 (Code M3) in the miscellaneous part of the survey questionnaire.
3. Last but not least, respondents who provided detailed observations to the open-ended question (Code M4) in the miscellaneous part of the survey questionnaire.

Four Interviewees were selected using the above-mentioned criteria. Two of them were highly satisfied, and the rest of the two were highly dissatisfied service recipients. Moreover, all the comments to the open-ended question ‘Best/Worst observation the participant experienced at the time of receiving police service’ (Code M4) are used to identify factors related to service quality and customer satisfaction.

The interview data collected from the four interviewees and the best or worst observation of the participants to the open-ended question are used as qualitative data to find service quality factors that lead to customer satisfaction (dissatisfaction). That is, the ‘Extreme case sampling’ model (Creswell Clark, 2018) for qualitative data collection.

5.9.2. Interviewee Profile

The interviewee’s profile is shown below with their socio-economic data. Pseudo names are used to keep privacy and secrecy as per interview protocol.

Table 49: Interviewee Profile

Interviewee Codes	Category	Age	Profession	Education Level
Interviewee 1	Non-Satisfied	35	Service Holder	Graduated
Interviewee 2		21	Student	HSC
Interviewee 3	Satisfied	32	Service Holder	Graduated
Interviewee 4		27	Housewife	SSC

5.9.3. Qualitative Data Presentation and Analysis

All the comments from the response to the open-ended question ‘Which aspects you liked or disliked most about the service of WHDs?’ in the quantitative survey and the interview data are used in the qualitative part to explain the customer satisfaction and service quality factors related to WHDs service. The following tables are some highlights from those responses.

Table 50: Highlights of the Responses to the Open-ended Questions

Responses to Customers to the open-ended question
<ul style="list-style-type: none">• For being a woman, they gave me the priority to solve my problem as soon as possible. This matter I like the most.• Presence of women police and customized service.• The interesting thing was that they solved my problem without money.• Very good. Dad was a policeman, so he joined the police force. Good behavior.• Now they are providing faster services than before.• Asking for Money; Behavior needs to be improved.• Services are not available without money or political lobbying.• But victims do not feel safe according to their service; rather, they do not go to the police station because of the possibility of admitting more suffering.• Women get a chance to talk about their problems separately with women officers.• Police officers tried to match the pre-arranged incidents without fully hearing the problem and finding proper solutions.• Dedicated women police are there to listen to the problem by ensuring privacy.

The responses to the open-ended questions created new aspects of thinking about treating the service recipients in different manners depending on some influential aspects that affect service quality, ultimately, customer satisfaction. Table 51 provides some highlights of the interview data.

Table 51: Highlights on the Interview with Satisfied Customers

Interview with Satisfied Customers
<ul style="list-style-type: none">• They were prompt. They took a GD very fast and did everything that needed to be done (<i>Interviewee 3</i>).• A lady constable came forward..... spoke to me and made all the arrangements very quickly to listen to me to record the thing, which was done without wasting any time (<i>Interviewee 3</i>).• They did not provide any feedback later as expected as a common citizen. I did not get any feedback (<i>Interviewee 3</i>).• Luckily, every time, the officers helped me to write the complaint. That is why I am happy with the service at the police stations (<i>Interviewee 3</i>).• About starting the procedure, then I am satisfied. They are taking it easy and starting the matter as soon as possible (<i>Interviewee 3</i>).• He (Officer) understands the thing well; he knows the expectations of the service aspirants (<i>Interviewee 3</i>).• The reception in the PS was very warm, and the duty officer recorded the GD immediately There were many people in the queue, but as a female, the duty officer gave a preference (<i>Interviewee 4</i>).• But with the arrival of the phone call, the speed of the work increased, and he quickly provided the service." (<i>Interviewee 4</i>).• The officer became proactive when I gave him the offerthe speed of work the officer accelerated (<i>Interviewee 4</i>).• Overall, their responsiveness at the police stations was good. The female officer's response to helping me was praiseworthy (<i>Interviewee 4</i>).• Confidentiality has never been a problem for me in sharing information with the police, and whenever I shared anything, I had not felt any problem (<i>Interviewee 4</i>).

Table 51 portrays the satisfaction that comes through customer-friendly services. Customers expect quality service with confidentiality. The presence of female officers increases satisfaction and provides an encouraging environment. Satisfied customers also have

some points where they are dissatisfied, especially the relationship between the speed of work with extra facilities.

Table 52: Highlights on the Interview with Non-satisfied Customers

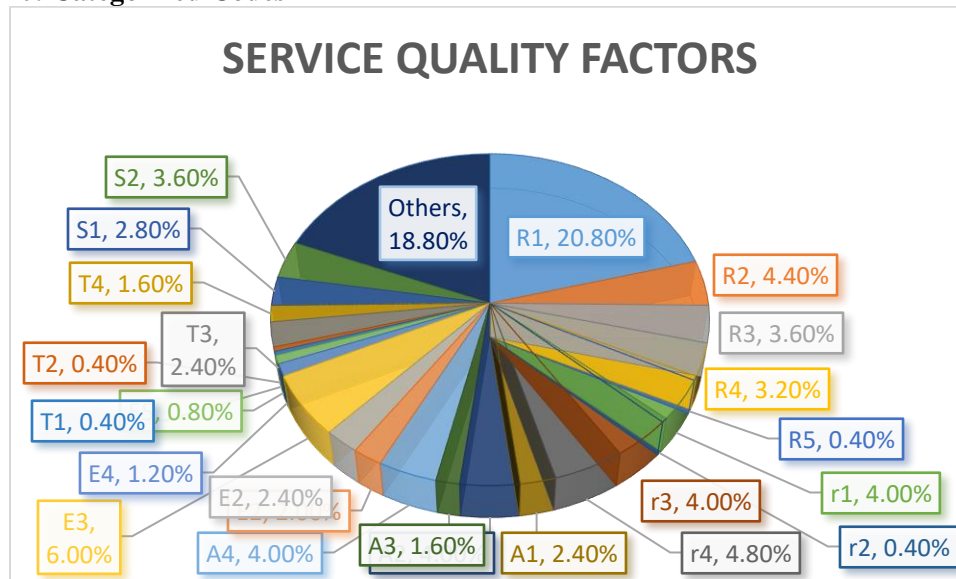
Interview with Non-satisfied Customers
<ul style="list-style-type: none">• I went to get service as a public, but I was not getting the response that I expected. When I took a recommendation from the upper level, and with the arrival of the phone call, the speed of the work increased, and he quickly provided the service (<i>Interviewee 1</i>).• Satisfied in the sense that the person delivering the service is very good at what they do and knows what to do (<i>Interviewee 1</i>).• Point of my dissatisfaction is that I have always believed why I need to look for this administrative support or recommendation for prompt service. I want all the time that as a human being without any classification, I always want the expected service (<i>Interviewee 1</i>).• First feeling at that time, I do not want to go, the first thing I do not want to go. Because as a public, we go to the police station when we do not find any solution through other means out of the police station (<i>Interviewee 1</i>).• We did not get their services as they promised.... The situation is like that I cannot keep dependency as I did not get any results (<i>Interviewee 2</i>).• We did not find a cooperative role here. Whenever I face any problem, I will have to go there again as there are no alternatives (<i>Interviewee 2</i>).• Their attitude and behavior were okay and positive. They were reluctant to provide updates. Their reaction was positive and cooperative when I was communicating with them to know any information though there were no updates (<i>Interviewee 2</i>).

Providing promised services in a timely manner without any discrimination seems to be the critical factor in the satisfaction that is illustrated in the highlighted comments in Table 52 non-satisfied customers also have some points where they felt comfortable.

A mixed (inductive and deductive) thematic analysis is performed to explain the factors related to service quality. An inductive approach will be able to explain the factors that which SERVQUAL factors are critical for customer satisfaction, and a deductive approach will facilitate identifying the factors that are significant for customer satisfaction. This hybrid thematic approach will be useful for exploring multi-layered issues (Proudfoot, 2022).

The factors obtained from the open-ended question and interviews are coded using SERVQUAL factors in mind (deductive thematic approach), and other factors are separated for inductive thematic analysis. Figure 20 shows the organized factors based on the responses of the participants using SERVQUAL theory.

Figure 20: Categorized Codes



Source: The author (Based on the codes)

Reliability was dominant in qualitative data most significantly, and it covers almost one-third (32.40%) of the total codes. Among the five factors of the reliability dimension, the interviewees mostly emphasized providing promised services (Code R1). Dependability in handling problems (Code R2) is another notable factor.

Other SERVQUAL dimensions were not of considerable importance as a dimension in qualitative data, but a few factors under different dimensions were of remarkable importance in the interview. Good attitude towards service seekers (Code A2) and courteousness of the employee (Code A4) factors regarding the Assurance dimension, readiness to respond to

queries (Code A4) factor involved with the Responsiveness dimension and giving service seekers individual attention (Code E3) factor related to Empathy were found remarkable in the interview. All those items are related to interpersonal components (Morgan & Murgatroyd, 1994).

Apart from SERVQUAL factors-related codes, several different codes were generated through interviews and responses from open-ended questions that are not covered by considered SERVQUAL factors. Those codes are shown in Figure 21.

Figure 21: Thematic Map of other factors

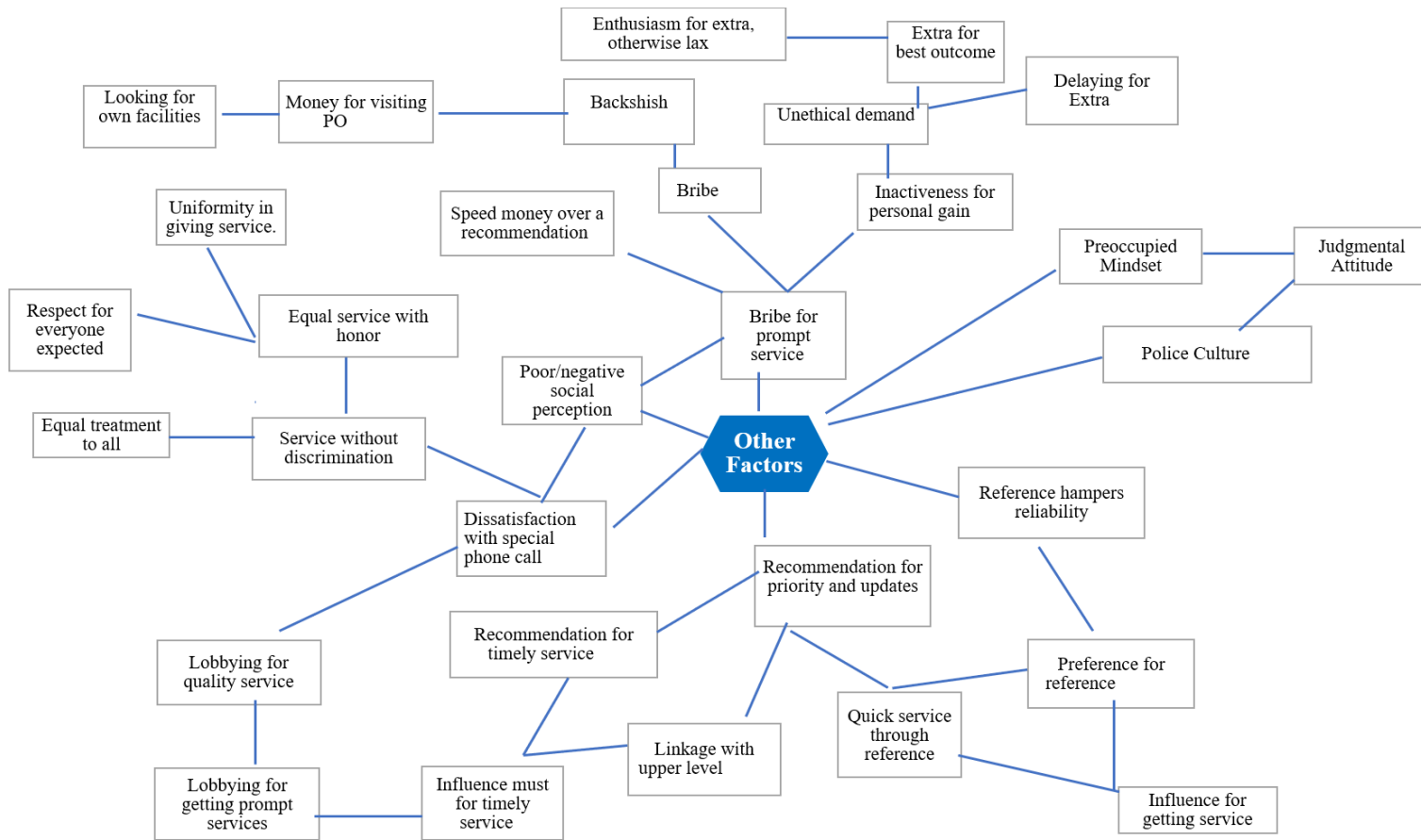
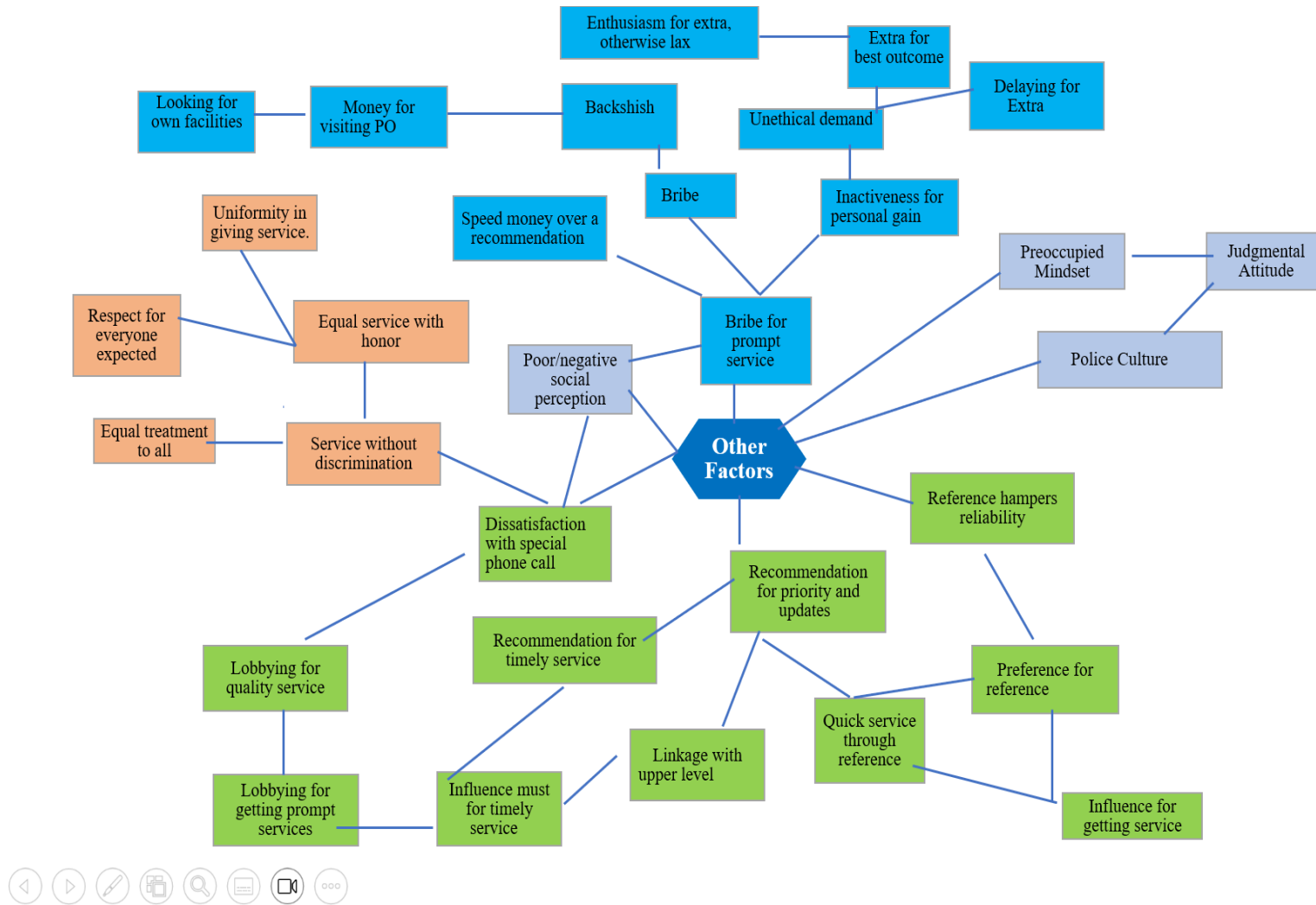


Figure 22: Color-coded Thematic Map (Primary) on other factors.



The same colors in Figure 22 are the codes interlinked with each other. These codes contribute about 18.80% of the service quality factors. The following themes (Table 53) can be created based on the above color-coded thematic map.

Table 53: Preliminary Themes

Preliminary Themes	Description
Lobbying	Any persuasion by individuals or private interest groups to influence an officer to act
Unethical advantage	Seeking, receiving, or offering any bribe or gift for influencing service taking process
Prejudice	Treating every service recipient based on respect despite other identities
Social Perception and Police Culture	Reputation, social perception, and historical role

Source: The Author

Lobbying and Unethical advantage trigger Partiality. So, all these could be termed as an ‘External influence/Fairness.’ That is, Fairness could be another service-specific, rather a region-specific dimension where external influence prevails that comprises at least three factors. Thus, the final themes could be represented in Table 54.

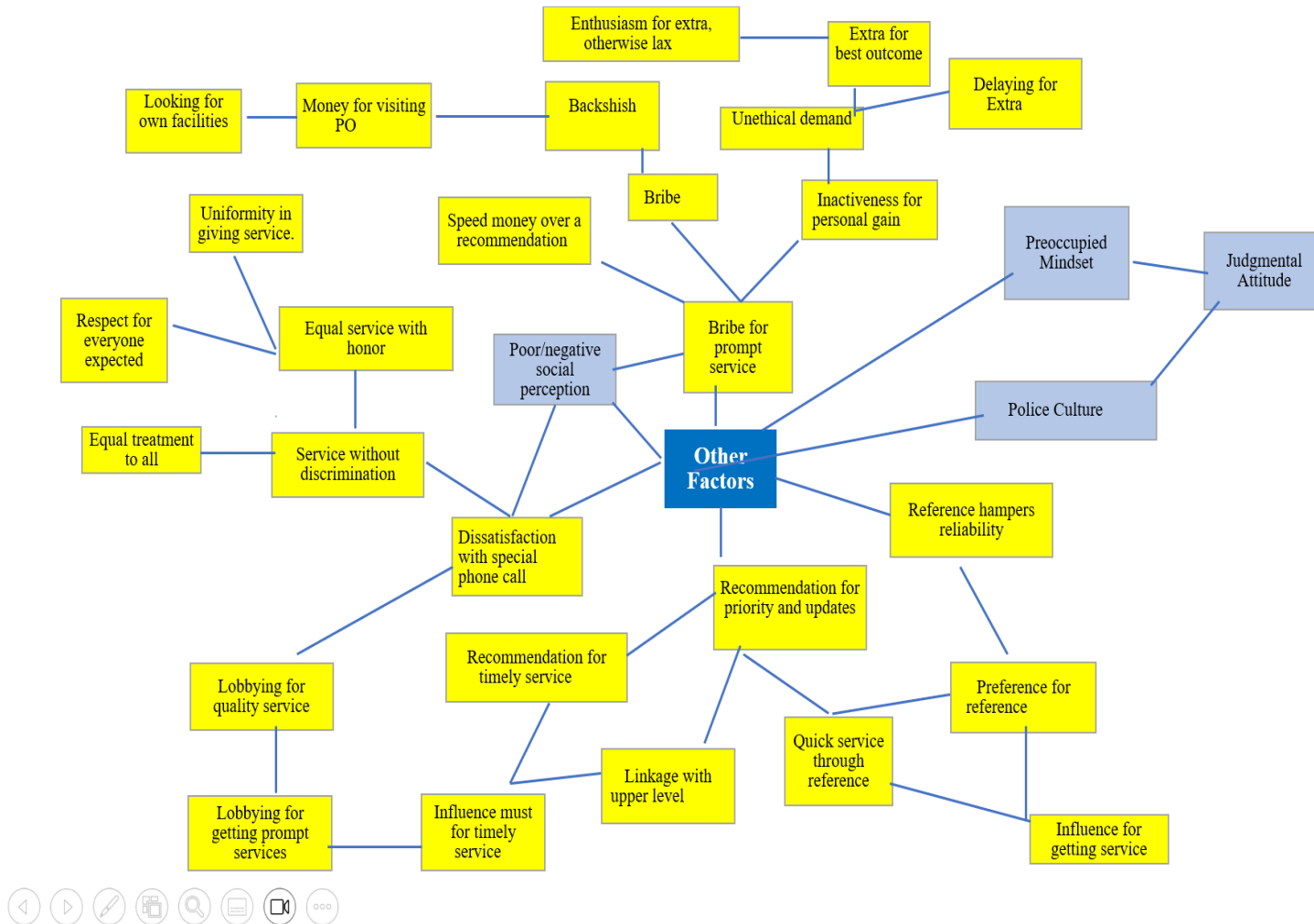
Table 54: Final Themes

Preliminary Themes	Final theme	Description
Lobbying	Fairness	The discrepancy in service delivery is due to lobbying, unethical advantage, and preferences. Academically, the ‘degree of justice’ ¹⁴ that the customer experiences in a service (Giovanis, Athanasopoulou, Tsoukatos, 2015) that hamper service quality and customer satisfaction.
Unethical Advantage		
Prejudice		
Social Perception and Police Culture	Organizational Image	Reputation, social perception, and historical identity

Source: Author

¹⁴ ‘Degree of Justice’ refers to the under or over-rewarding of the customer (Adams, 1965 as cited in Giovanis, Athanasopoulou, Tsoukatos, 2015, p: 748).

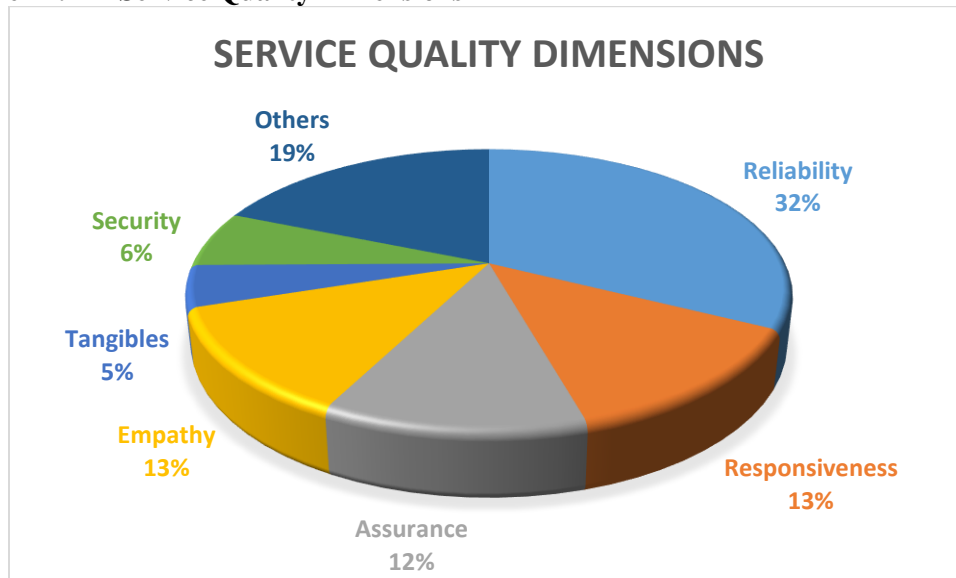
Figure 23: Final Color-coded Thematic Map



5.10. Key Findings from the Qualitative Data Analysis

All the factors are shown in Figure 24 to illustrate the contribution to the service quality based on the interview data and the response to the open-ended question in the survey questionnaire.

Figure 24: All Service Quality Dimensions



Source: The Author

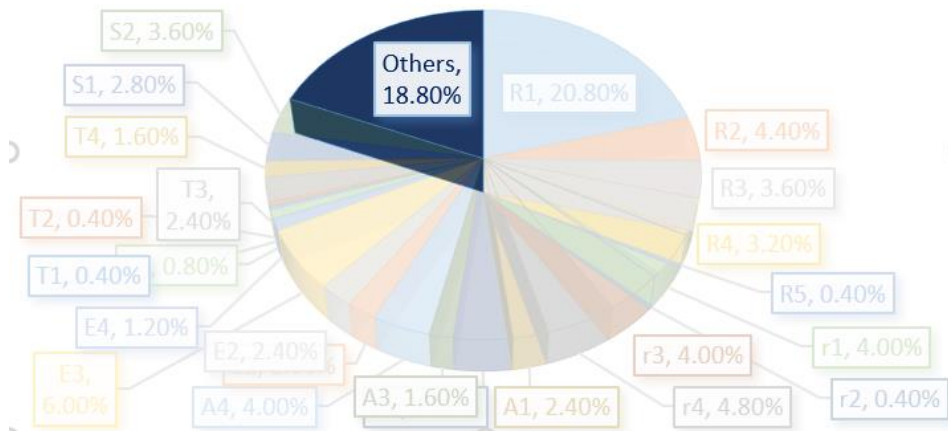
Reliability is the top contributor to service quality which covers about one-third of the qualitative data (32.40%). It is interesting to mention that other factors, other than SERVQUAL factors, are the second most critical factor of the service quality of the WHD. Among other SERVQUAL factors, Empathy and Responsiveness are found equally contributing (13%) dimension to the service quality, whereas Assurance is also contributing almost equally (12%). Tangible is the lowest contributing (5%) dimension in this aspect, followed by Security (6%). Though the contribution of the security dimension is minimal, all the interviewees and the participants of the survey asserted positive feedback on this dimension which is mentionable.

Among all the factors, providing promised services (R1) is the single most critical factor (20.80%) to achieving reliability of the service seekers. The individual contribution of all the other factors is much smaller than the factor providing promised services. The factor providing individual attention to the service seekers (E3) is the second causative factor (6%). Dependability in handling problems (R2, 4.40%) and readiness to respond to queries (r4, 4.80%) are also almost equally contributing factors to service quality.

About 18.80% of the codes generated from the responses from interviewees and open-ended questions regarding satisfaction in the survey are different from the considered SERVQUAL factors, as shown in Figure 25.

Figure 25: Other Service Quality factors

SERVICE QUALITY FACTORS



Source: The author

The color-coded thematic map in the figure reveals the essence of evolving themes, as shown in Table 54. Four themes are developed, namely lobbying, unethical advantage, impartiality, and organizational image. New factors are mostly (40.4%) related to lobbying, and all interviewees stressed maintaining a network with the higher officials enables timely quality service. One of the service recipients expressed it the following way.

“..... When I took a recommendation from the upper-level, and it came, it was delivered quickly and smoothly..... but with the arrival of the phone call, the speed of the work increased, and he quickly provided the service.” (Interviewee 1, Page 1, Line 23)

Another new theme is unethical advantages for getting quality service on time. About (38.3%) of responses are related to unethical advantages, and they mentioned that it actually depends on the service-providing officers. One of the interviewees expressed as follows:

“ considering my best interest is subject to some unethical conditions.”

(Interviewee 4, Page 4, Line 5)

Partiality is another theme that is, in fact, happening as an effect of lobbying and unethical advantage. So both lobbying and unethical advantage together with partiality can be

regarded as an '**External influence or Fairness.**' **Lack of fairness due to** External influence covers 89.4% of other factors.

The organizational image (10.6%) created over the years through hearing or knowing about police is another important aspect that was echoed in the voice of almost all the interviewees. An interviewee expressed her perception following way:

"It has become a social perception through hearing from surroundings repeatedly that Police Stations are like this. It has been set in our minds."

(Interviewee 2, Page 1, Line 35)

Thus, the impression built in mind through social perception regarding police as a public organization (Macro level) is also substantial factor regarding perceived service quality and customer satisfaction.

Chapter 6: Discussion

Summary

This chapter integrates both quantitative and qualitative data analyses that bridge the initial quantitative results with the findings from the qualitative part, known as the sequential integration approach (Morse & Niehaus, 2009, as cited in Creswell & Clark, 2018). Reliability is the most influential service dimension, especially in providing the promised services. Security and service fairness could be regarded as the service-specific dimension. All the service recipients found the service of WHDs secured. Service fairness is emerged from the theory of justice, and it could be regarded as not only service specific dimension, rather a region-specific dimension in corruption-prone areas of the globe.

6.1. Integration of Findings

The discussion in an explanatory sequential research design requires a joint display of quantitative and qualitative findings as the data analysis and integration occur at more than one point of the study (Creswell & Clark, 2018, p. 237). Table 55 represents the connected integration at the different points of the mixed method study.

Table 55: Joint Display of Quantitative and Qualitative Data (Integration)

SL.	Quantitative Part	Qualitative Part	Integration
1.	Previous experience of taking police Service (Code M1), Number of times taken the service (Code M2), and Overall Service Quality Scores (Code M3)	Interviewee Selection	Purposeful Sampling
2.	Open Ended Questions in the survey Questionnaire (Code M4)	Responses to question (Code M4) used interview questions formulation	Responses to question M4 were used as a source of qualitative data.
3.	Reliability and Security were found as statistically significant variables in customer satisfaction.	Interviewees emphasized reliability factors (32%), and all the interviewees provided similar views about security.	New codes were identified that evolved a new theme (other factors)
4.	Security as a service-specific variable	Extensive questions on security in the interview	All Participants showed sharp correspondence regarding security.

Source: The Author

6.2. Satisfaction with the Service Quality

Service quality is regarded as the antecedent of customer satisfaction based on empirical research (Chen et al., 2014, Kasper et al., 1999). As a specialized service desk, WHDs generated vast expectations to deal with gender-based issues (Balbir et al., 2020). So, it is quite natural to expect quality service that leads to satisfaction. The author set the questionnaire in the quantitative survey in such a way that after answering all the questions, the respondents were asked to evaluate the service quality (Code M4) on the Likert scale. The answer to the first research question, “To what extent are the customers of the WHDs satisfied with the service quality?” is found in that question (Code M4). The customers are not satisfied with the service quality of WHDs, which is further verified by Table 45, which aligns with the argument of Nabi (2011) and Islam & Ali (2008) on Bangladesh police. Maslows’ argument of the ‘emergence of new need’ to customers as a wanting being (Maslow, 1954) could be true here as new specialized services like WHDs were introduced for the convenience of women help seekers, but it is not well-tailored for the ‘fitness of purpose’ (Garvin et al., 1993). Fitness of purpose is not attained here due to short-term thinking and ‘lack of purpose of the managers’ (Deming, Out of the Crisis, 1986), which are found in the qualitative data. Mentioning one of the statements of the interviewee-

“ I went for General Diary (GD), and for that purpose, I got good service. But after that, I didn't get any results. We communicated with them several times, but they couldn't provide any updates. So we stopped taking updates.”

(Interviewee 2, Page 1, Line 11)

The qualitative part helps us to grasp the dynamics of the non-satisfaction. Police service is different from other public services for at least one reason. That is, the customers are the vulnerable citizen of society (Donnelly et al., 2006). So, police officers in the PSs need to handle a victim by giving emotional support and providing expected services. Lodging a complaint or general diary is the entry point in the process, but the service could be considered complete when the issues described in the complaint or GD are addressed. The non-satisfied respondents expressed their grievances repeatedly as they didn’t get further updates on their complaints or GD. In contrast, satisfied customers are able to get the updates till the end of the service as they use administrative or political, or professional networks, which can be termed as ‘External influence/Fairness.’ This disparity takes place due to the lack of consciousness of the officer towards fairness, especially interactional fairness, which is critical for balanced

service delivery (Morgan & Murgatroyd, 1994). The suggestion of one of the interviewees is mentionable here.

“So good behavior, feedback, and respect for everyone are required to provide good service. More importance should be given to good behavior.” (Interviewee 3, Page 5, Line 1)

This good behavior is sympathetic to address the initial uncomfortableness of a victim, termed as ‘value addedness’ for qualitative change of service quality (Müller & Funnel, 1992).

6.3. Influential Factors to Expected Service and Perceived Service

Expected Service Factors

Among the expected service factors, the service recipients, majority of them concerned about the following factors:

- i. Dealing with service seekers in a caring fashion (40%) factor under the Empathy dimension (Code EE2).
- ii. Knowledge about the intended service (39%) factor under Assurance Dimension (Code EA1).
- iii. Good Attitude Towards Service Seekers (38%) factor under Assurance Dimension (Code EA2), and Prompt services (38%) factor under the Responsiveness dimension (Code Er1).

All the interviewees agreed on the fact that all officers have good knowledge about the intended services, which is a professional component (Morgan & Murgatroyd, 1994). Dealing with service seekers in a caring fashion and having a good attitude towards service seekers are interpersonal components (Morgan & Murgatroyd, 1994). These interpersonal components were echoed in the voice of interviewees as well. Besides, providing prompt services depends on the process, and service recipients tend to use external influence for it. Therefore, interpersonal components, dealing with service seekers in a caring fashion, and having a Good Attitude Towards Service Seekers, are the most important factors, and prompt service is also expected considerably.

Perceived Service Factors

Among the perceived service factors the service recipients, the majority of them concerned about the following factors:

- i. Good Attitude Towards Service Seekers (38%) factor under Assurance Dimension (Code PA2).
- ii. Prompt services (38%) factor under the Responsiveness dimension (Code Pr1).

- iii. Security of provided information (37%) factor under Security Dimension (Code PS2).

The first one, among the three main perceived quality factors, is an interpersonal skill (Morgan & Murgatroyd, 1994), which was emphasized by most of the interviewees, and the rest of the two factors belong to the process component and professional components respectively. Interviewees opined that good attitude towards service seekers and prompt services with great importance for customer satisfaction. Accordingly, a good attitude towards service seekers and prompt services are the most perceived factors.

6.4. Service Quality Factors and Satisfaction

The author used the SERVQUAL model as a guiding tool to evaluate the service quality of the WHDs, where the commonly used RATER dimensions are evaluated separately, with the security dimension as a service-specific dimension. As customer satisfaction is the antecedent of service quality (Chen et al., 2014; Kasper et al., 1999), the influence of service quality factors is eventually influential to customer satisfaction. To answer the second research question, “What are the service quality factors that are influential for satisfaction?”, it is convenient to discuss those factors into two segments: SERVQUAL factors and other factors.

6.4.1. Relation of SERVQUAL Factors with Customer Satisfaction.

The author used an explanatory sequential design for this study. So, the intent of this design is to determine how qualitative codes and themes provide additional insight into SERVQUAL variables used in the quantitative part instead of comparing two sets of data (Creswell & Clark, 2018).

i. Reliability and Customer Satisfaction

The service recipients of the WHDs emphasized Reliability as the most significant dimension among SERVQUAL dimensions in both the survey and interview. In fact, reliability is found as the most crucial dimension among others in previous research on the service quality of the public sector (Bourn, 2016; Kate & Janet, 2009; Mike et al., 2006). Literally, Reliability is regarded as the first service quality dimension with explanatory power over other variables (Lam, 2002). Five items were in the reliability dimension, and both kinds of data showed convergence in detecting the influential factors under the reliability dimension. The officers are not providing services as promised, which is evident from the gap between expected and perceived services, the significance level in logistic regression, and the interview data. All the

interviewees, both satisfied and non-satisfied, identified providing promised services as the critical factor towards customer satisfaction. This argument supports the study of Rhee & Rha (2009) on public service attributes as the service recipients of WHDs is the end customer, and eventually, they are concerned about outcome quality (the ultimate result).

Satisfied customers use their external influences to get the services, and the connectivity (lobbying) is conducive to increasing the perceived service quality (Rahman & Hossain, 2017). Though it seemed the reliability of WHDs was increased through external influence to satisfied customers, it reduced the overall reliability through unfairness in treating customers. All interviewed customers also agreed with it and the following is how one of the customers expressed her grievance regarding this issue.

“To talk about dissatisfaction, why do I have to take administrative support? Why didn't I get quick service as a normal citizen?”

(Interviewee 1, Page 1, line 34)

ii. Responsiveness and Customer Satisfaction

The gap in responsiveness is moderate and has no statistical significance, which is quite the opposite of the study of Janstrup et al. (2017) on Denmark Police. But the interviewees repeatedly emphasized ‘not getting updates’ about the General Diary (GD) or complaints they lodged as a hindrance to satisfaction. One of the common points of all the interviewees was that an officer would communicate with you when they were lodging their complaints at police stations. But that communication was always from the service recipients’ side, which hampers willingness to help and, willingness to listen, overall responsiveness. The grievance was clear from the following statement:

“But no one communicated with me. I visited PS a second time to know the name of the officer who was supposed to take care of the problem..... His responses over the phone weren't customer friendly. It seemed you did complain, then so what!”

(Interviewee 4, Page 1, Line 16 & 26)

The highly affirmative points about responsiveness are that whenever any queries were asked of the concerned officer at the police station, they responded properly, and their willingness to listen was appreciated by all customers.

iii. Empathy and Customer Satisfaction

All the recipients found the relationship between the women help desk officer quite caring, and the gap is acceptable. No interviewees expressed any unpleasant observations about those

officers, which is quite the reverse of the study done by Islam & Ali (2008) on a unit of Bangladesh Police and Chen et al. (2014) on Taiwanese Police. It might be because of the women officers' engagement in providing services to the women service seekers, and it is supportive of increasing reporting rate of incidents to police (UN Women, 2021). The service seekers also felt comfortable sharing problems with women officers.

iv. Assurance and Customer Satisfaction

All the participants of the survey and interview opined that WHDs officers possess proper knowledge about the service, but few interviewees expressed their observation about the lack of consistent courteousness, which is not supposed to be as a public organization (Biswas & Rahman, 2018, p. 92). The observation from the interviewee is also reflected in the gap analysis of the Assurance dimension, and it was the highest (-0.80) among all factors. They observed that it doesn't happen while lodging GD or complaints but when taking updates later from the concerned officer.

v. Tangibles and Customer Satisfaction

The tangible dimension is found to have the highest gap from the gap analysis in Table 45 though the difference is not statistically significant, which differs from the findings of Ilhaamie (2010) on Malaysian Public Services. Tangibles are one of the essential dimensions for public services, which is found with greater gaps in different public organizations (Sarrico et al., 2013, p. 285). In the case of WHDs, the setup and idea are new. Subsequently, the physical facilities might be fresh. Most of the interviewees, in fact, all demand an online tracking system for their complaints to follow the updates from time to time. Most of them were satisfied with the waiting room setup, but their observation of the washrooms is virtually alike. One of the interviewees expressed her view on washrooms and cleanliness the following way.

“Washroom's cleanliness wasn't good. Normal hygiene wasn't maintained even, so it wasn't usable as a woman.”

(Interviewee 2, Page 1, Line 32)

vi. Security and Customer Satisfaction

Security is one of the critical dimensions for customer satisfaction due to the job nature of the police, especially WHDs, as sometimes it deals with the sensitive information of the Women service seekers. The author considered the security dimension as a service-specific dimension due to the nature of WHDs services besides usual SERVQUAL dimensions (RATAR Model)

(Parasuraman, Zeithaml, & Berry, A conceptual model of service quality and its implications for future research, 1985). It was found significant from both quantitative and qualitative analysis, which reflects the precision of the author's primary assumption. The possibility of the existence of service-specific dimensions (Schneider & White, 2004) is also evident from the study of Janstrup et al. (2017). Sometimes, they are concerned about the provided information as the complaint is handled by a male police officer though the complaint is registered by a female officer. From the previous empirical research, it is evident that Security is an important service quality determinant for e-services or online services (Santos, 2003, p. 242). Moreover, Bangladesh Police introduced online GD services in 2022 (The Daily Star, 2022) and online complaints services for cybercrimes against women (Bangladesh Police, 2020). So, the security dimension is going to be a key dimension for the service quality of WHDs, broadly for police services. All interviewees are highly satisfied with the privacy and confidentiality offered by the WHDs, but the victim blaming and judgmental comments towards victims, in a few cases, hamper the overall security ensured by these specialized service desks. The following optimistic comments from a customer could be encouraging for the concerned officers.

*"I never felt insecure in providing my information. As to get the services,
I had to provide information."*

(Interviewee 1, Page 4, Line 5)

6.4.2. Other Factors and Customer Satisfaction.

It is evident from the interview and qualitative response to the open-ended question. The percentage of other factors is about one-fifth (18.80%) of the total factors explored throughout the study. The thematic analysis explains that most of those factors are related to external factors (political lobbying, administrative lobbying, unethical deal) termed as 'External Influence/Fairness' which is working constructively (Rahman & Hossain, 2017) and adversely (Md. Mesbahun Nabi, 2011) simultaneously to the service quality, but found adverse impact on service quality in this study. 'External Influence/Fairness' is the most significant theme (covers 89.4% of other factors) found in this research which is one of the six Matsofroski's principles towards achieving customer satisfaction and community engagement London Metropolitan Police for customer-oriented policing (Kate & Janet, 2009). All the interviewees expressed their sincere grievance for the existence of such a culture, and reflected in the following comment.

“In the government organization, I, as a service receiver, will get the service from the responsible officer as an organizational commitment. To talk about dissatisfaction, why do I have to take administrative support? Why I am not getting quick service as a normal citizen. Everyone will not have senior officers to provide such administrative support; they are at the same level.”

(Interviewee 1, Page 1, Line 31-35)

The rise of the organizational commitment to provide quality service on time is very pertinent here as every organization has a list of services with a mentioned time of delivery and value (if needed), known as the ‘Citizen Charter’ introduced in 2008 for improved service delivery and accountability (Kundo, 2018, p. 226) The lack of standard service providing practices and reluctance to follow respective citizen charters routine work (Rahman et al., 2021, p. 1) might be the reason of dominance of external influence despite the existence of citizen charter for police services (Bangladesh Police, n.d.).

Satisfied customers used their external influences to get the services, and the connectivity (lobbying) is conducive to increasing the perceived service quality (Rahman & Hossain, 2017), but they are also aggrieved with those kinds of practices, at least the interviewees of this study. On the contrary, non-satisfied customers considered the reason for not getting the expected service to be due to their inability to create external influence. Hence, lack of fairness due to external influence is affecting the service quality of WHDs adversely though few customers seem satisfied with the nonce.

Institutional image is always a critical factor for better customer satisfaction (Bourn, 2016). The image of public offices isn’t good enough in Bangladesh, and Bangladesh police is not different from it. Moreover, the lack of fairness is impeding the institutional image of the Bangladesh Police badly (Md. Mesbahun Nabi, 2011) and eventually affecting customer satisfaction. From the interview, it is evident that when some service recipients experience good practices (satisfied customers), they get it by luck or the unique attitude of the particular officer, not perceived as an organizational commitment. This image crisis also impacts the loyalty towards the organization, echoed in response to the interview question, ‘As a woman, how do you feel when you think that you need to go to the police station to get service?’

“First feeling at that time I don't want to go, the first thing I don't want to go. Because as a general public, we go to the police station when we can't find any solution through other means (our guardian, relatives, I myself) out of the police station.”

(Interviewee 1, Page 2, Line 8)

Chapter 7: Conclusion

Summary

To conclude, this study carries substantial implications at both the policy level and field level. Policymakers can adopt more strategic initiatives to improve service quality by conducting customer satisfaction surveys on a regular basis. At the field level, this study could create a path to adopt key performance indicators for regular evaluation of the services like WHDs service. Future researchers can verify the applicability of security and service fairness dimensions in evaluating the quality of police services (POLQUAL).

7.1. Introduction

As a recapitulation, the objective of the study is to measure customer satisfaction from perceived service quality and to dig up the effective service quality dimensions for service quality with the assumption that **service quality is the antecedent of customer satisfaction**. The author designed an explanatory sequential mixed-method research design to achieve the intended objectives. A questionnaire survey was developed and conducted based on SERVQUAL theory (Parasuraman, Zeithaml, Berry, 1988), which includes an open-ended question to get to know the best or worst experience of the service recipients. Reliability, Assurance, Tangibles, Empathy, and Responsiveness (RATER model) are the usual SERVQUAL dimensions used in this research, and security was considered the service-specific dimension in this study. Thus the author used the RATERS (Reliability, Assurance, Tangibles, Empathy, Responsiveness and Security) model instead of the usual RATER model for the research and carried out interviews to explain how RATERS model dimensions work and to reconnoiter to identify if there are more service-specific quality dimensions for WHDs. Logistic regression analysis was performed using the quantitative data to know the significant service quality factors. The response to the open-ended question and the result from the quantitative analysis is employed to form the interview questions. In contrast, the interviewee is selected purposefully based on specific criteria. Thematic analysis was performed to analyze the qualitative data.

7.2. Summary of Findings

In response to the question on the satisfaction level of overall service quality of WHDs, 58% of respondents were not satisfied, whereas 42% found the service satisfactory. The level of satisfaction has not increased considerably compared to the previous research by Shafiqul et al. conducted on satisfaction with overall service quality, where 60% of service recipients labeled the service quality as bad in 2020. The introduction of specialized services only does not guarantee service quality improvement unless the sins and diseases (Deming, 1986; Drucker, 1980; Milakovich, 1991) are not addressed sustainably. The negligible amount of rise in satisfaction might be only due to the presence of women police officers while dealing the cases with Women. The sense of security, a congenial environment of sharing, and the commitment expressed through their appearance might be the causes of this minor improvement.

Among the dimensions reliability of SERVQUAL dimensions and the authors considered service specific dimension, security, are found significant from the study. Moreover, a new service-specific dimension of WHDs services is evolved through the qualitative analysis, named 'Fairness,' which includes at least three factors: administrative connection, political lobbying, and unethical deal or transaction. Moreover, from the gap analysis, the expected service and perceived service in Table 45 show the maximum gap in the tangibles dimension (-0.68) and the minimum gap (-0.18) in the reliability dimension, whereas the average gap is -0.40. Nevertheless, the statistical analysis and interview data suggest the significance of factors related to reliability and security for satisfaction from the perceived service quality.

Dealing with service seekers in a caring fashion, having Knowledge about the intended service, having a Good Attitude Towards Service Seekers, and providing Prompt services are found to be the most expected factors among expected service quality factors. Besides, Good Attitude Towards Service Seekers, Prompt service, and Security of the provided information is the most perceived factors among perceived service quality factors. Qualitative data explains that interpersonal skill, especially a good attitude toward service seekers, is the ultimate factor that creates the difference between expected and perceived service quality.

Hence, Security and Fairness are influential service-specific dimensions for Women Help Desks services. Moreover, the corporate image is another subsequent service-specific dimension contributing to customer satisfaction.

7.3. Policy Recommendation

The VOC is critical for long-term sustainability and achieving the trust of the consumer of the service. Listening to VOC and translating it into action is essential for a proper service design. A structured system of VOC could be incorporated into the system, which may contribute to Customer satisfaction (Shillito M. , 1994) through suitable service design for WHDs. Customer service guidelines could be introduced, which need to be revised periodically based on the VOC, such as the NSW Police of Australia (NSW Police Customer Service Guideline, 2011). It will guide the serving officers in the field to deal with different types of customers of Police Stations, especially WHDs customers.

Providing customer feedback is the most demanding aspect of the discussion with the customers of WHDs. This badly needed to introduce a tracking system of lodged complaints and provide them the up-to-date progress on any complaint. Customers, especially victims, expect it from the police as a public organization. Even in response to a complaint, police may not have any way to advance without evidence, and their feedback on the inability to go forward with a reasonable cause will make the customer, especially victims, feel that at least they have made an effort.

“Most victims want more than just an event number... Ideally, they want to hear back from the police that someone was arrested, or the property found. However, they also want “closure” and want to know if the police consider a case suspended or closed. Improved customer service encourages victims to seek assistance from the police.”

Source: (Susan Bell Research,2011, as cited in NSW Police Customer Service Guideline, 2011)

It is supposed to have a citizen charter in every police station, but visibility and ensuring compliance are essential. Presently, APA reflects on the implantation of citizen charter, but it is pretty overall. So, a proper way of implementing the citizen charter with an absolute compliance strategy could improve service quality, therefore, customer satisfaction. Moreover, victims' rights, especially women victims, are not introduced yet, which is vital for WHDs services.

Fairness in dealing with customers and rational behavior despite race, color, and social status are the two burning needs that need to be addressed immediately to achieve confidence from the stakeholders. An effective grievance redress system with execution time could support this aspect. Therefore, the monitoring officers should pay utmost attention to redressing grievances. Moreover, the mechanism of executing GRS needs to be user-friendly. Digitalization of GRS and online access with proper privacy could elevate the system's efficacy.

One of the targets of the "Strategic Plan of Bangladesh Police" (Bangladesh Police, 2018, p.22) on service delivery management is to conduct a yearly survey to assess the public perception of satisfaction with service delivery. However, the plan is yet to be implemented. It is high time to formulate a National Police Satisfaction Survey like other countries to evaluate the service delivery system of police. It will create the scope to identify and compare the service delivery dimensions for continuous service quality improvement, one of the attributes of TQM.

7.4. Practical Implications

The findings of this study carry important implications for both academicians and practitioners, especially in police quality (POLQUAL) evaluation. The identification of two service-specific quality dimensions, security, and fairness might be common attributes to the police service. However, service fairness could be applicable to other public organizations as well as political lobbying, administrative influence, and corruption are prominently existing in Bangladesh (Hassan, 2015).

Duty officers are the first point of contact at the police station. So, they will have to have a clear understanding of their role in creating police perception. Their empathetic behavior and interpersonal skill will play a significant role in navigating the perception of the customer on the service of WHDs. Therefore, training in emotional intelligence could be supportive in increasing customer satisfaction. The importance of compassionate words is evident from the following statement of a victim.

"I was the one being robbed; you are in my home; you can be polite; a rude remark is ten times worse when you are traumatized."

Source: (NSW Police Customer Service Guideline, 2011, p. 16)

The Monitoring system of local supervisory officers can use the significant factors of this study to evaluate the service quality and customer satisfaction of the WHDs, which is performed currently from intuition without using any statistical facts. Otherwise, introducing specialized service for better service quality may turn into ‘an attempt to solve the problem only by throwing people at the problem,’ which is considered a deadly sin that impedes service quality (Drucker, 1980). Moreover, a central evaluation method could be adopted for WHDs. Based on this empirical research will be able to identify the critical point indicators for measuring customer satisfaction.

An immediate but effective practical implication could be treating each customer with dignity, without prejudice which is hampering the service quality and social perception of the police as an organization badly. The role of local managers (Officers in Charge and supervisors) is critical for effective intervention as the active role of top management is strongly recommended for quality movement and organizational transformation (Deming, Quality, Productivity and Competitive Position, 1982). The introduction of ‘Demings 14 points’ for the public sector in training about quality management could be helpful in organizational transformation for better customer satisfaction (Milakovich, 1991).

7.5. Limitations

Limitations of social research are inescapable for many reasons. This paper is also not free from limitations, and the main limitations are listed below:

Firstly, the number of questions in each survey set was so long, which may generate annoyance among respondents that could be overcome by dividing the expectation and perception into two different sets and administering it to different service recipients in the future.

Secondly, the author tried to reach all the participants of a particular time frame from selected police stations. However, the unavailability of contact details such as phone numbers or email addresses limited the participation of those service recipients who do not have access to mobile phones. A real-time survey could strategically address the limitation, which was beyond the scope for practical reasons.

Thirdly, Literature argues that having subjective knowledge may impede the objective perspectives of the study and analysis as well (Aguilar, 1981).

Finally, data were collected from a particular area (Chittagong Metropolitan Police), and the number of respondents is also considerably low. This may cast some doubt on its generalization, especially on service-specific dimensions. However, a new quantitative analysis based on the explanations of the evolving theme (Fairness dimension) is suggested to verify the practical use of that variable (Ivankova,2014, as cited in Creswell & Clark, 2018).

7.6. Scope of Future Research

In this research, the author employed the SERVQUAL model as a theoretical framework to measure the service quality of the WHDs in metropolitan police. Future researchers can verify the pertinency of the service quality dimensions, especially service-specific dimensions using other theoretical frameworks. The fairness dimension evolved from the thematic analysis based on a trivial set of qualitative data, which could be confirmed through quantitative analysis in a capacious sample arrangement. Moreover, the research could be conducted to identify the ‘deadly sins and diseases’ (Drucker, 1980), the impediments to better service quality, and to prescribe more specific recommendations to improve service quality.

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Appendix

Appendix I (Survey Questionnaire)

<i>Questions</i>	<i>Response Options</i>
Part I (Demographic)	
1.	Name
2.	Age*
3.	Education Level*
4.	Monthly income
5.	Occupation
6.	Marital status*
Part II-Expected Service (প্রত্যাশা)*	
Reliability	Expectation of Providing services as promised
	Expectation of Dependability in handling problems
	Expectation of an error-free complaint or GD
	Expectation of providing services as promised time

- Optional
- Numeric (Open-ended)
1. Elementary
 2. SSC
 3. HSC
 4. Graduation or above
1. Below 10,000 BDT
 2. Between 10,000 BDT to 20,000 BDT
 3. Between 20,000 BDT to 30,000 BDT
 4. Between 30,000 BDT to 40,000 BDT
 5. Above 40,000 BDT
1. Housewife
 2. Service Holder
 3. Student
 4. Entrepreneur
 5. Others
1. Unmarried
 2. Married

- Likert Scale of 7 (✓)
- Very Poor (1)
 - Poor (2)

	Expectation of performing services right the first time	○ Slightly Poor (3)
Responsiveness	Expectation of prompt services	○ Neutral (4)
	Expectation of willingness to listen	○ Slightly Good (5)
	Expectation of willingness to help	○ Good (6)
	Expectation of readiness to respond to queries	○ Excellent (7)
Assurance	Expectation of knowledge of the concerned officer about the intended service	
	Expectation of good attitude toward service seekers	
	Expectation of comfortableness of sharing information	
	Expectation of employees are consistently courteous	
Empathy	Expectation of the best interest of the service seekers	
	Expectation of dealing with service seekers in a caring fashion	
	Expectation of giving service seekers individual attention	
	Expectation of understand the needs of the customers	
	Expectation of convenient business hours	
Tangibles	Expectation of professional appearance/smartness of the officer	
	Expectation of up-to-date equipment	
	Expectation of physical facilities of the Police Station	
	Expectation of visually appealing materials related to service	
Security	Expectation of feeling secure in informing the police	
	Expectation of security of provided information	
Perceived Service (সেবা পাওয়ার পর উপলব্ধি)*		
Reliability	Perception of Providing services as promised	Likert Scale of 7 (✓) ○ Very Poor (1) ○ Poor (2) ○ Slightly Poor (3) ○ Neutral (4) ○ Slightly Good (5) ○ Good (6) ○ Excellent (7)
	Perception of Dependability in handling problems	
	Perception of an error-free complaint or GD	
	Perception of providing services as promised time	
	Perception of performing services right the first time	
Responsiveness	Perception of prompt services	
	Perception of willingness to listen	
	Perception of willingness to help	
	Perception of readiness to respond to queries	

<i>Assurance</i>	Perception of knowledge of the concerned officer about the intended service	
	Perception of good attitude toward service seekers	
	Perception of comfortableness of sharing information	
	Perception of employees are consistently courteous	
<i>Empathy</i>	Perception of the best interest of the service seekers	
	Perception of dealing with service seekers in a caring fashion	
	Perception of giving service seekers individual attention	
	Perception of understand the needs of the customers	
	Perception of convenient business hours	
<i>Tangibles</i>	Perception of professional appearance/smartness of the officer	
	Perception of up-to-date equipment	
	Perception of physical facilities of the Police Station	
	Perception of visually appealing materials related to service	
<i>Security</i>	Perception of feeling secure in informing the police	
	Perception of security of provided information	
<i>Part IV (Miscellaneous)</i>		
<i>1.</i>	Prior experience of getting police service*	Yes/No
<i>2.</i>	How many days does it take to get service?	Open-ended to put the number of days
<i>3.</i>	Overall quality of the perceived service*	Dependent Variable (Likert Scale of 7)
<i>4.</i>	Best/worst observation you experienced at the time of taking the desired service	Open-ended

Note: * marked questions are for must answer questions.

Appendix II (Interview Guide)

Interview Guide

Participants: Extreme (Most Dissatisfied/Satisfied) Customers (Among Service Recipients selected from the quantitative responses)

Date & Time: Convenient time & Date

Location: Convenient location ; Time duration: Around 30 minutes

Objective Briefing: I am Trying to find the gap in expectation and perception (example) about the service of WHDs in Police Stations. We want your help or input to understand the gap practically through the discussion. If you have any questions, then you may ask. Your identity will not be published and comments about the service of WHDs. I want to record the interview for my academic use. (Me: I am a student from Meiji University, Tokyo, Japan...).

Questions

Q1- Would you share your experience when you visited the Police Station for help/support/ services?

SQ - What are the things that made you satisfied?

SQ - What are the things that made you dissatisfied?

Q1.1 How do you feel when you think that you need to go to Police Station for any support as a woman?

Q2. How were the physical facilities (such as the waiting area and wash zones) of the Police Station?

SQ. Where did you type the complaints?

Q3. How would you evaluate the attitude of the officer toward solving the problem?

SQ-What about the timeliness of delivering your service?

SQ- What about registering the record -Error-free Complain?

SQ-What about the Provide services (is it as promised)?

SQ How did you find dependability in handling problems?

SQ How was their attitude in Performing services right the first time?

Q4. What do you think about the responsiveness of the officer?

SQ- How was the officer's reaction when you were asking for any information?

SQ- How will you evaluate the officer's willingness to help?

Q5. What do you think about the knowledge of the officer on the subject that you are looking for help with?

Q6. How was the attitude of the officer to consider your best interest?

SQ- How would you evaluate the effort of the officer to understand the customer's needs?

SQ- What do you think about the attention of the concerned officer to listen to your complaint?

Q7. How were you feeling about confidentiality when sharing your information with the officer?

SQ- Feeling of Safeness after a complaint or GD?

SQ- As a Woman, how did you perceive security during and after services?

Q8. How would you evaluate the external influence like political or administrative lobbying or bribe to get quality service?

Q9. Which part should the service providers focus on to provide quality service/ for better customer satisfaction? (Your Opinion)

*** Do you want to share anything more?

Appendix III (Factor Analysis)

**Factor Analysis
Expected Service Factors**

The correlations of the factor rotation suggested by the Varimax factor rotation method are shown in Table III-1.

Table III-1: Factor Rotation (Expected Service)

Rotated Component Matrix					
	Component				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
EA4	0.843				
ET3	0.8				
EA3	0.768				
EA2	0.758				
ET4	0.739				
ET1	0.737				
ET2	0.577				
EA1	0.562				
ER2		0.908			
ER5		0.865			
ER4		0.831			
ER1		0.729			
ER3		0.701			
Er2			0.803		
Er4			0.798		
EE1			0.759		

Er1	0.658		
EE3		0.793	
EE2		0.705	
EE4		0.625	
EE5		0.601	
Er3		0.589	
ES1			0.654
ES2			0.617

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 7 iterations.

Perceived Quality Factors

The correlations of the factor rotation suggested by the Varimax factor rotation method are shown in Table III-2.

Table III-2: Factor Rotation (Perceived Service)

Rotated Component Matrix				
	Component			
	Factor 1	Factor 2	Factor 3	Factor 4
PR4	.909			
PR2	.905			
PR5	.904			
PR1	.898			
PE3	.883			
PE1	.878			
PE5	.877			
PE4	.871			
PE2	.821			
PR3	.763			
PA2		.783		
PA3		.779		
Pr3		.773		
Pr1		.765		
Pr2		.723		
PA4		.717		
PA1		.698		

Pr4	.654		
PT2		.817	
PT4		.796	
PT1		.765	
PT3		.651	
PS1			.870
PS2			.830

Note: Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 7 iteration.

G.S. Format

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2023

Title of Thesis:

**Examining the Cognitive Factors Affecting Earthquake
Preparedness among Filipino Households in Metro Manila:
The “Big One” Earthquake Scenario**

Governance Program,
The Graduate School of Governance Studies

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Completion in: September 2023

ABSTRACT

PURPOSE – This study aimed to investigate the factors influencing household preparedness for a major earthquake. Specifically, the study sought to address the central research question, *"What are the cognitive factors affecting the levels of preparedness among households in response to the anticipated "Big One" earthquake in Metro Manila?"*

METHODOLOGY – A quantitative research design was employed, primarily using a survey questionnaire to 200 households living on top of an earthquake fault in Barangay Bagong Silangan, Quezon City in the Philippines. The questionnaire included questions on the levels of preparedness, threat appraisal, coping appraisal, and information sources based on protection motivation theory. Ordinal logistic regression was used to analyze the data.

FINDINGS – The findings indicated that perceived risk severity, risk probability, information accessibility, and homeownership significantly influenced the household's preparedness level. The results also showed that coping appraisal did not significantly affect earthquake preparedness, particularly regarding a person's response efficacy and self-efficacy.

LIMITATIONS - The study's limitations include a lack of sociocultural variables on earthquake preparedness, a small sample size, and the absence of qualitative methods to explore further the underlying reasons behind individuals' perceived preparedness levels.

ORIGINALITY/VALUE – This study explores a unique perspective on earthquake preparedness by focusing on psychological factors, which have not been extensively studied in the literature. By filling this gap, this study sheds new light on understanding how an individual's threat appraisal, coping appraisal, and sources of information shape earthquake preparedness, especially among households living directly on top of a fault line. The study's findings can help enhance disaster risk communication policies to increase public preparedness and reduce earthquake losses and impacts.

KEYWORDS: Risk Perception, Earthquake Preparedness, Protection Motivation Theory

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LIST OF ACRONYMS

CRED	Centre for Research and Epidemiology of Disasters
CTR	Cultural Theory of Risk
EEPM	Extended Parallel Process Model
EMI	Earthquake and Megacities Initiative
DILG	Department of the Interior and Local Government
DRR	Disaster Risk Reduction
IHFV	Institute for International Law of Peace and Armed Conflict
IRGC	International Risk Governance Center
ISO	International Organization for Standardization
JICA	Japan International Cooperation Agency
JICE	Japan International Cooperation Center
MMDA	Metropolitan Manila Development Authority
QCRRMO	Quezon City Disaster and Risk Reduction and Management Office
NBOO	National Barangay Operations Office
OLS	Ordinary Least Squares
OR	Odds Ratio
PHIVOLCS	Philippine Institute of Volcanology and Seismology
PMT	Protection Motivation Theory
SARF	Social Amplification of Risk Framework
SPSS	Statistical Package for the Social Sciences
UNDRR	United Nations Office for Disaster Risk Reduction
VIF	Variance Inflation Factor

CHAPTER ONE: INTRODUCTION

1.1 Background

1.1.1 Overview of Global Natural Disaster's Occurrence and Impact

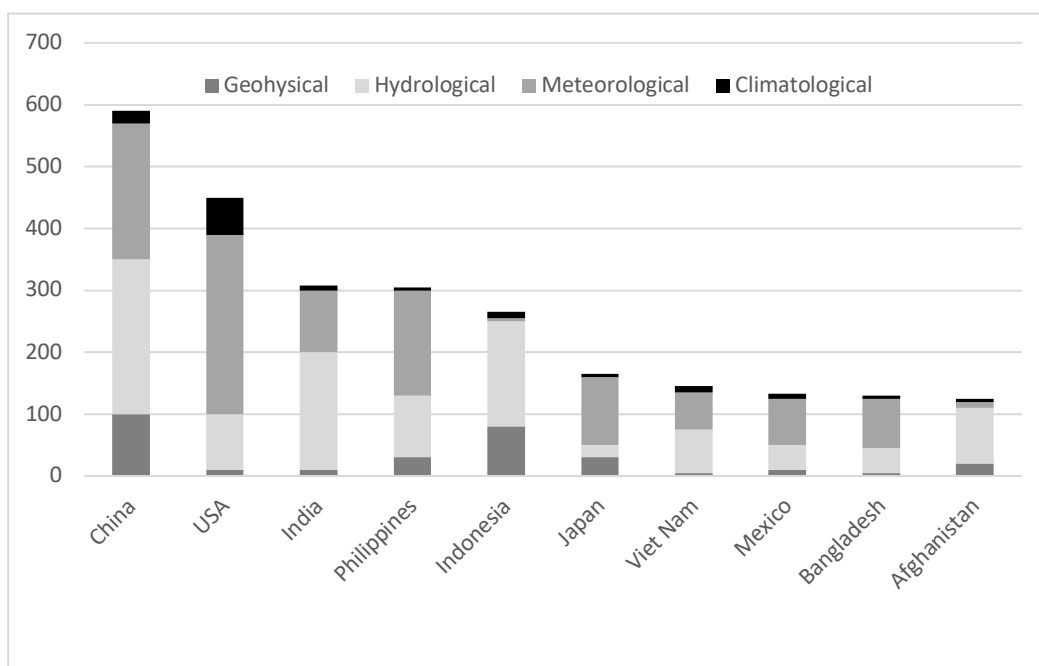
Most academic literature defines a natural disaster as a naturally occurring phenomenon that causes severe harm to individuals and overwhelms local capacities. (Bello et al., 2021, pp.11-12). These events can be broadly classified into four general sub-groups, namely: geophysical, hydrological, meteorological, and climatological (CRED, 2009, pp.3-7). The first type is geophysical, which is caused by geological processes. This generally includes earthquakes and volcanic activity. The second is the meteorological hazard caused by sudden changes in Earth's atmospheric condition. Hazards that belong to this category are cyclones, blizzards, and extreme temperatures. The third classification is what they call a hydrological hazard, which is commonly associated with the occurrence and movement of water. Floods, tsunamis, and landslides represent this hazard. Lastly, climatological hazards are events mainly caused by climate change, such as wildfires, drought, and glacial lake outbursts. According to Glade & Alexander (2013, p. 79), individuals can experience the impacts caused by these hazards either directly or indirectly.

The number of natural disasters and their impact has dramatically increased in recent years, causing a major problem for many countries. A recent disaster report was published by the United Nations, stating that there were already 7,348 natural disasters that occurred globally between 2000-2019. Data estimated that around 1.2 million lives were lost, and almost four billion individuals were greatly affected. The economic damages resulted in a \$3 trillion loss (UNDRR, 2019, p.9-15).

Figure 1 depicts the top ten countries regarding disaster occurrence from 2000 to 2019. It cites about 600 disaster events that occurred in China, including geophysical, hydrological, and meteorological events. The United States ranks second on the list having 467 catastrophic incidents, with the most meteorological and climatological events. In addition, it can be noted that eight of the top 10 countries are in Asia, with varying occurrences of disaster types. For example, Indonesia mainly experienced geophysical and

hydrological. In contrast, the Philippines, Japan, and Vietnam experienced more hydrological and meteorological events. (UNDRR, 2019, p10)

Figure 1: Top 10 Countries by Occurrence of Disaster Sub-groups



Note. The figure shows the top 10 countries with the highest number of reported disasters from 2000-2019. Disaster sub-groups were classified into Geophysical, Hydrological, Meteorological, and Climatological. From “Human Cost of Disasters”, by the UN Office for Disaster Risk Reduction (UNDRR). Copyright 2019 by UNDRR.

The report also indicated that in 2019, natural disasters disrupted the global economy with \$121.856 billion in economic damage. Storms caused the most economic damage, with an estimated loss of \$57.914 billion (47.53%). It was followed by floods with \$35.972 billion (29.52%) economic losses, wildfires (\$25.931 billion/ 21.8%), and earthquakes (\$1.704 billion / 1.4%). In addition, the report showed that the number of people who died due to natural disasters in 2019 reached 11,694 worldwide. Floods were the highest contributor (43.41%), followed by extreme temperature occurrences (24.87%) and storms (21.54%). (UNDRR, 2019, pp.24-25). Although floods have been referred to as the most common natural disaster, the number of fatalities from these occurrences was minimal, with earthquakes being the deadliest (Ritchie & Roser, 2014).

Table 1 shows the top ten deadliest disasters in the world, which occurred from 2000 to 2009. Based on the data, the earthquake remains the deadliest disaster, having a death toll of 661,513. While natural disasters are getting more severe and frequent, their frequency and magnitude are expected to pose an enormous challenge for many developing countries. (Dayton-Johnson, 2006, p.21). Considering the global impact of natural disasters, the following section elaborates on the vulnerability of the Philippines to such events.

Table 1: Top Ten Deadliest Disasters Worldwide

Disaster Type	Location	Year	Death Toll
Earthquake and Tsunami	Indian Ocean	2004	226,640
Earthquake	Haiti	2010	225,570
Storm	Myanmar	2008	138,366
Earthquake	China	2008	87,476
Earthquake	Pakistan	2005	73,338
Heatwave	Europe	2003	72,210
Heatwave	Russia	2010	55,746
Earthquake	Iran	2003	26,716
Earthquake	India	2001	20,005
Drought	Somalia	2010	20,000

Note. The table shows the top 10 deadliest disasters recorded from 2000-2019 in terms of death toll. The report does not yet include the recent major earthquake that took place in February 2023 in Turkey and Syria and resulted in an approximate death toll of 47,000 people. From “Human Cost of Disasters”, by the UN Office for Disaster Risk Reduction (UNDRR). Copyright 2019 by UNDRR.

1.1.2 The Philippine Context

The Philippines is the world's fifth largest island country. It is located in Southeast Asia, with a population of 113 million people. Its geographical location makes it highly susceptible to natural disasters (UNDRR, 2019, p.6). This is due to its placement along the typhoon belt (a region in the western Pacific Ocean where most of the storms originate) and the Pacific Ring of Fire (which marks the boundaries of several tectonic plates).

Recently, the Philippines topped the list of 193 countries with the highest natural disaster risk (IFHV et al., 2022, p.7). The report analyzed each country's exposure, sensitivity, susceptibility, and coping capacities to disaster risks. Table 2 lists the top 10 countries with the highest disaster risk.

Table 2. Top 10 Countries with Highest Disaster Risk, 2022

Rank	Country	Region	Population	World Risk Index
1	Philippines	Southeast Asia	113 million	46.82
2	India	South Asia	1.426 billion	42.31
3	Indonesia	Southeast Asia	273 million	41.46
4	Colombia	South America	51.5 million	38.37
5	Mexico	North America	126.7 million	37.55
6	Myanmar	Southeast Asia	53.8 million	35.49
7	Mozambique	South Africa	32 million	34.37
8	China	East Asia	1.422 billion	28.70
9	Bangladesh	South Asia	169.4 million	27.90
10	Pakistan	South Asia	231.4 million	26.75

Note. The table shows the top 10 riskiest countries worldwide. The World Risk Index (released in September 2022) is calculated based on various indicators, including the country's exposure, vulnerability, susceptibility, lack of coping capacities, and lack of adaptive capacities towards disaster risks. Adopted from "World Risk Report 2022", by the Institute for International Law of Peace and Armed Conflict (IFHV). Copyright 2022 by IFHV.

Over the last 40 years, the Philippines faced different types of natural disasters. Storms represent the most common natural disaster, accounting for 55%. Flood events come second at 25%, followed by landslides at 5% and volcanic eruptions at 4%. Overall, these natural disasters have affected 186 million people, with an estimated 40,000 fatalities and \$23.5 billion in economic losses (CFE-DM, 2021, pp. 26–32).

The occurrence of earthquakes represents a significant geophysical hazard that affects the Philippines. This country experiences both tectonic (produced by sudden movement along faults and plate boundaries) and volcanic (induced by rising lava or magma beneath active volcanoes), with tectonic being more destructive (Eleazar, 2010). In a global context, it was reported that earthquakes often occur in China, Indonesia, Pakistan, Iran, the United States, Japan, and the Philippines (Agarwal, 2020, p.21).

The Philippine Region has around 80 faults and seven trenches. From 1970-2004, the Philippine Institute of Volcanology and Seismology (PHIVOLCS) recorded 26,033 earthquakes with 744 mild events occurring per year; 12 of these were destructive with an average magnitude of 6.7 on the Richter scale. The 1976 Moro Gulf Earthquake in southern Mindanao is by far the worst in the Philippines. It had a magnitude of 7.9, caused 8,000 death tolls, and left around 40,000 people homeless.

According to Armas et al. (2017), recent events globally have demonstrated how societies are increasingly becoming more vulnerable to earthquake destruction. In the Philippines, several factors have exacerbated the vulnerability of Filipinos to earthquakes, including the expansion of informal urban settlements, poor infrastructures, and insufficient enforcement of building codes (UNDRR, 2019, pp.11-13). Additionally, the lack of awareness about earthquake risk, as well as economic challenges, have also contributed to people's vulnerability. Given these circumstances, it is imperative for the Philippines to have a well-prepared response to a major disaster, emphasizing the crucial role of prioritizing disaster risk reduction and management in the country. That being said, the subsequent section focuses on narrowing down the discussion to the problem statement of this research.

1.2 Problem Statement

Experts predicted that a worst-case earthquake scenario known as "the Big One" will strike Metro Manila within this lifetime. This potential earthquake is expected to significantly impact the Philippines since not only is Metro Manila densely populated but also home to the nation's major political and economic activities.

It has been reported that the West Valley Fault, a 100-kilometer fault system transecting major cities in Metro Manila, undergoes movement every 200-400 years, with the most recent activity taking place on August 20, 1658 (DOST, 2017, para.3). Given that 365 years have passed, there is a strong likelihood that another movement may happen in this generation. In 2004, PHIVOLCS, the Metropolitan Manila Development Authority (MMDA), and the Japan International Cooperation Agency (JICA) conducted a comprehensive study on Earthquake Impact Reduction. They predicted that a 7.2-magnitude earthquake from the West Valley Fault would provide a destructive impact in Metro Manila and nearby provinces. According to their study, this massive "Big One" earthquake is projected to cause the collapse of 340,000 structures, leading to an estimated 34,000 deaths and 114,000 injuries (JICA, 2004, p.4). While Metro Manila's population has increased since 2004, it is more likely to double the impact of this earthquake.

During a plenary presentation at the 17th Science Council of Asia Conference, Secretary Renato U. Solidum from the Philippine Department of Science and Technology (DOST) expressed that *"there will be a foreseeable chance that the whole country will undergo a state of economic paralysis [due to the "Big One" earthquake] as most government agencies and businesses are housed in buildings and infrastructures that overfilled the Metro Manila. These would mean a momentary hiatus in processes and transactions because of the most important economic arms are located in the Metro Manila."* (Carteciano, 2017, para 11)

Although natural disasters cannot be completely prevented from occurring, it is possible to reduce the adverse impacts of such events by taking preemptive measures to manage risks and minimize vulnerabilities. However, the flawed outlook of disaster risk, which involves elements of optimism, underestimation, and invincibility, remains a persistent issue in disaster risk reduction and management (UNDRR, 2022, pp.17-19).

Additionally, a common problem related to disaster response is the absence of the public's perspective in vulnerability assessment. Many governments tend to think on behalf of the victims, not realizing that disaster-prone communities might interpret their circumstances differently (Hejijmans, 2001, pp. 2-5). Despite various efforts to explain the public's preparedness behavior, understanding the factors associated with preparedness remains elusive (Bodas et al., 2022, p.2), especially in the context of earthquake preparedness in the Philippines (Bagariano, 2017, p.55).

Public risk perception is one crucial factor affecting preparedness behavior (Weber et al., 2020) and individual resilience (Bodas et al., 2015). It can contribute to successful risk communication and the designing of effective mitigation policies (Rahman et al., 2022). However, based on the growing number of disaster-related studies, the relationship between risk perceptions and responses has been frequently labeled weak (Haynes, 2008, p.259). Several factors may contribute to this, such as people's limited knowledge about disaster risks, limited resources to take preventive action, competing priorities that prioritize income and security over preparing for less frequent disasters, and overwhelming fear that hinders their ability to reduce disaster risk, among other reasons. (Suo, 2015, pp.64-65). Furthermore, despite numerous attempts to construct sophisticated models to explain preparedness behavior, the impact of risk perceptions on individuals' actions has been neglected and underestimated in disaster research and policies (Bodas et al., 2022, p.2).

Despite significant differences in how people perceive risk, this study aims to investigate how public risk perception impacts households' preparedness for a potential 7.2 magnitude earthquake in Metro Manila. This study is important because public perceptions and attitudes toward disaster risk are critical inputs to the government's decision-making process, disaster risk communication strategies, and community preparedness. Given this context, the following sections discuss the objectives, research questions, methodology, and significance of this study.

1.3 Research Objectives

The primary objective of this study is to help improve disaster risk communication strategies by providing emergency managers and decision-makers with information about the public perception of earthquake risks.

The specific objectives of this research are:

- To improve the understanding of the general public's perceptions of the "Big One" earthquake prediction in Metro Manila;
- To investigate the cognitive factors influencing household preparedness towards "the Big One" earthquake; and
- To develop recommendations for improving household preparedness in the face of potential earthquake.

1.4 Research Questions

The study addresses the central question: "What are the cognitive factors affecting the levels of preparedness among households in response to the anticipated "Big One" earthquake in Metro Manila?"

In order to address this, the following sub-research questions were examined:

1. To what extent does threat appraisal predict the level of preparedness towards the "Big One" earthquake?
2. To what extent does coping appraisal predict the level of preparedness towards the "Big One" earthquake?
3. What is the effect of public access to information on preparedness towards the "Big One" earthquake?

1.5 Research Methodology

This study employed a cross-sectional survey design to investigate the cognitive factors affecting the level of preparedness toward the "Big One" earthquake prediction. The sample population consisted of 200 households living on top of an earthquake fault in Barangay Bagong Silangan, Quezon City.

Data was collected using a survey questionnaire administered to the participants through in-person household survey between 26 August to 03 September 2022. The questionnaire included questions on the level of preparedness and measures of threat appraisal, coping appraisal, and sources of information based on protection motivation theory (PMT).

The study utilized IBM SPSS software version 26 for data analysis and employed descriptive statistics to summarize the participants' profile, sources of information, risk perception, and preparedness levels. Moreover, the study used inferential statistics to investigate the association between PMT variables and earthquake preparedness levels. Specifically, an ordinal logistic regression analysis was employed to assess the relative impact of individuals' access to information, threat appraisal, and coping appraisal on earthquake preparedness.

1.6 Significance of the Study

The impact of risk perception on an individual's behavior has been extensively researched in recent years, emphasizing various natural disaster contexts (Rahman et al., 2022; Weber et al., 2020; Bodas et al., 2015). However, a review of the existing literature suggests that there is still a lack of evidence supporting how risk perception affects household preparedness (Jansson, 2022, p.2; Eiser et al., 2012, p.6). Many researchers tend to concentrate on identifying society's social, economic, and political vulnerabilities, which often neglects the role of individuals' beliefs and perspectives in influencing their actions (Bankoff, 2004, p.110). Thus, this study endeavors to fill this gap in the current literature by investigating the influence of public risk perception on household preparedness, particularly in response to the anticipated "Big One" earthquake in the Philippines.

The study has significant value as it sheds light on the way people perceive a catastrophic and unfamiliar disaster like the "Big One" earthquake and how this perception impacts their actions towards preparedness. Acknowledging the importance of public perception of risk not only impacts how the affected populations are viewed, but it also affects the way in which disasters should be managed (Bankoff, 2003, p.9). The findings of this study can help aid policymakers and disaster risk reduction (DRR) practitioners in designing effective communication strategies and integrating the public perspective of risk into their DRR policies designed to minimize the effects of the "Big One" and other catastrophic disasters. Furthermore, it is hoped that this study will help encourage the government, private sector, and non-government organizations to focus its efforts and resources on building and sustaining a positive risk culture.

1.7 Thesis Outline

This thesis is organized into five chapters. This chapter presents the general overview of the study, including the context, problem statement, purpose, research questions, and relevance. The second chapter examines the existing literature about the effects of risk perception on preparedness behaviors and highlights the research gap of the study. The third chapter focuses on the research methodology, theoretical framework and hypotheses, study area, survey instruments, and data analysis employed to accomplish the study. The results of data gathering, and analysis are discussed in chapter four. Finally, chapter five provides the conclusion with reference to the research objectives set out above and offers discussion and suggestions for future research.

CHAPTER TWO: LITERATURE REVIEW

CHAPTER OVERVIEW:

- This chapter highlights the importance of disaster preparedness in disaster management and summarizes the present knowledge of risk perceptions and the various factors that shape risk experience. Further, it aims to integrate existing theoretical frameworks on risk perceptions and present gaps and significant findings in social science research about its impact on preparedness behavior.
- It focuses on the problem of low household preparedness in disaster management and the ongoing debate regarding the role of risk perceptions in disaster preparedness. The lack of clarity about the effects of risk perceptions on preparedness behavior is a significant challenge for disaster managers, experts, and policymakers to fully comprehend disaster risk and implement practical solutions to reduce it. The review presents two schools of thought: the psychometric paradigm and the socio-cultural approach. The former looks beyond the socio-cultural context and focuses on psychologically constructed and shared aspects. At the same time, the latter examines socio-cultural elements that serve as the basis for individuals' construction of risk. The protection motivation theory is discussed as a popular theory that explains individual risk-reducing behaviors. Both individual and environmental factors can encourage or discourage protective action, and the effects of such factors are mediated by individual cognitive processes. However, the existing studies on this topic are scarce, and they have not yielded any consistent findings regarding the determinants of household preparedness in the context of a catastrophic earthquake.
- This chapter emphasizes the critical need for more study to better understand the complex interplay between risk perception and preparedness behavior, which is critical for improving disaster management and reducing the harmful impact of natural disasters on people's lives, health, and property.

2.1 Disaster Preparedness

Disaster preparedness remains a central topic among many scholars and practitioners, especially in the field of disaster risk reduction and management (Titko & Ristvej, 2020, pp.2-3). The most widely used definition of “disaster preparedness” was proposed by the United Nations. Their understanding of disaster preparedness highlights the importance of obtaining knowledge, skills, and resources -often referred to as local capacity- and the value of collective efforts of different stakeholders, including government institutions, communities, and individuals, in dealing with disasters (UNDRR, 2015, p.3).

Disaster preparedness includes actions intended to improve life safety in the event of a disasters and contains measures intended to enhance the capacities of the society and individuals to limit disaster impact and to engage in post-disaster early recovery operations. For example, disaster preparedness activities may include the formulation of disaster plans, the stockpiling of resources necessary for an effective response, and the development of skills and competencies to ensure the efficient execution of disaster-related tasks (Akbar et al., 2020, pp.2-3).

There are three units of analysis when viewing disaster preparedness. These are (a) personal preparedness, (b) organizational preparedness, and (c) social preparedness. (Graberg, 2013, p.5). The term personal preparedness refers to individual’s or household’s readiness to manage natural disasters, emergencies, or economic crises. The organizational preparedness, on the other hand, refers to the response of any organizations, such as government and non-government institutions. While society preparedness refers to the nation’s capacity to deal with natural disasters and ensure the safety of its citizen.

Household preparedness is a critical component of any individual or community effort to reduce disaster impact (Najafi et. al., 2022, p.76). It stresses the importance of household responsibilities and capacity to reduce disaster risks and damage, which includes the creation of family preparedness plan, the assembly of survival kit, completion of house structural repairs, knowledge of evacuation procedures, and familiarity of response agencies (Kirschenbaum et.al, 2004, p.100). However, one major problem in disaster management is that household preparedness often has a low priority in people’s agenda. As a result, many households frequently postpone preparedness actions until the threat of disaster is perceived to be high. In the event of a natural disaster, such low preparedness behavior can increase the number of injuries, deaths, and property and infrastructure

damage (Onuma et al., 2017, pp.17-18). Additionally, the way risk is presented may influence people's risk perception and behavior to natural disasters (Intaratchaiyakit & Teachavorasinskun, 2018, p.559). For instance, if messaging of risk is framed to be unclear and hard to understand, then it could lead to worse household disaster preparedness. Given the significant role of public risk perception in disaster preparedness (Bodas et al., 2022, p.2), the next section attempts to examine the concept of risk perception and various approaches to understanding the factors that influence risk perception.

2.2 Risk Perception

2.2.1 The Concept of Risk and Risk Perception

Risk is a crucial notion in many scientific domains. However, scholars have not reached a consensus on how risk should be defined and perceived. For example, some authors defined risk as an assessment of the likelihood and magnitude of adverse events (ISO, 2018, p.1). Some equated risk with expected loss (Crowe and Horn, 1967, p.460). Some identified risk as a combination of consequences and uncertainties (Holton, 2004, p.22), and others described risk as uncertain consequences of events that people value (Ratcliffe, 1963, p.271). Although variety of risk definitions exist, it can be noted that majority of risk definitions consists of two elements. The first one is the likelihood of experiencing the risk, and the other one is the severity of risk, especially risk to the life and properties that people value (Otway et al., 1987, p.141).

The concept of risk perception has been used to describe how people react to various risks, which are affected by both emotional and cognitive factors (Oltedal et al, 2004, pp.11-12). For instance, Slovic (1997, p.23) defined risk perception as a cognitive process that guides people's actions in the presence of potentially dangerous circumstances. On the other hand, Fischhoff and colleagues (1978, pp.128-129) characterized risk perceptions by integrating other elements influenced by past events and current beliefs, which are ingrained in societal norms, value systems, and cultural context. To better understand risk perception, Clarke & Beck (1994) utilized a two-tiered classification scheme based on subjective and objective perception. They noted that subjective perception is primarily influenced by experience, culture, emotions, and feelings, whereas objective perception derives from the interpretation of reality provided by scientific methods used to identify and quantify risk.

A new way for comprehending how individuals perceive risk has emerged recently. It entails analyzing four context levels, including (1) cultural background, (2) social-political environment, (3) cognitive-affective aspects, and (4) generic heuristics (Renn & Rohrman, 2000, pp.221-222).

As shown in Table 3, the first level consists of political, social, and economic context; cultural institutions; personal identity and sense of meaning; and world views. These elements are used by individuals and groups to form risk-related judgments. The second level is the social and political environment within which individuals and groups operate. It includes organizational limitations, economic and political structures, social values and trust, personal values and interests, socioeconomic standing, and media influence. The third level includes reference-knowledge, stigmata, personal beliefs, individual abilities, and emotional attachments that directly or indirectly influence perception. The fourth level consists of collective heuristics and individual common sense, or how people behave in large-scale collective actions. Each level interconnects individual, social, and cultural variables, which determines overall perception of risk.

Table 3: Four Context Levels of Risk Perception

No.	Context Level	Factors
1	Cultural Background	Cultural Institutions; Political, societal, and economic culture; Personal identity, worldviews
2	Socio-Political Institutions	Organizational constraints; Economic and political structure; Social values and trust, personal interests; media influence
3	Cognitive-Affective Factors	Reference knowledge; Stigmata; Personal beliefs; Emotional affections
4	Heuristics of Information Processing	Collective heuristics; Individual common sense

Note. This table was prepared by the author based on the Four Context Levels of Risk Perception developed by Renn & Rohrman. From “Cross Cultural Risk Perception: State and Challenges”, by O. Renn & B. Rohrman, 2020. Copyright 2020 by Springer-Verlag.

The notion of *expert-lay divide* remains one of the major issues in studying risk perceptions. This problem frequently emerges when there are contrasting viewpoints between experts and the general public. For instance, experts refer primarily to an objective and numerical evaluation of risk, whereas laypersons are more influenced by their emotions and other factors (Merkelsen, 2011, p.87). In other words, the way a non-expert perceives risk is more encompassing than that of an expert, who possesses specialized knowledge and may overlook something significant to the wider population. Leiss (2004, pp.399-400) supported this concept in his study of two risk languages by claiming that expert language is based on scientific, technical, and statistical information, whereas the public language is based on social and intuitive understanding.

Interestingly, a framework for understanding the similarities and differences in risk perception between laypeople and professionals was proposed by Sjoberg (1999, p.5). He noted that risk could be categorized into three domains. The first domain includes commonly known risks, such as deaths from common diseases and natural disasters. The second is the technological risk, such as nuclear waste disposal. And the last one refers to the lifestyle and work environment risk, including smoking and alcohol consumption. Further, according to him, non-experts may experience a higher risk perception for technological issues than experts. At the same time, experts and laypeople may share a similar average perception of common and well-known risks. However, he further noted that risk perception between experts and non-experts might differ for unknown and dreaded risks. Despite these patterns of risk perception, Neil et al. (1994, p.5) expressed that there might be other factors to consider apart from one's expertise to explain the differences between expert and public risk perception.

Given the above discussion, understanding not only how experts perceive risk but also how the general public perceives and reacts to risk is essential in assessing people's behavior toward particular risk. The following section discusses the significant school of thought used in examining public risk perception.

2.2.2 Approaches to the Study of Public Risk Perception

Two major schools of thought are used in the study of how humans perceive and evaluate risks. The first is the psychometric paradigm, deeply rooted in psychology and decision sciences. The second one is the socio-cultural perspective, influenced by sociology and anthropology. This section outlines the assumptions of each perspective and its influence on the understanding of public risk perception.

A review of the literature revealed that studies of risk perception gained popularity in the 1960s. The opposition of the public towards certain technological risk, specifically the use of nuclear power despite the expert's assurances of its safety and low-cost energy source, became a major concern for many governments and industries. Such problem became an interest for many scholars to study public perception of risk and its role in policy decisions. For example, Starr (1969) attempted to study the disparity of risk perceptions between experts and laypeople. He argues that public's perception of risk is somewhat complex to the extent that involves more than a simple estimation of mortality and morbidity. The influence of Starr's work on risk management raises an intriguing question among scholars on how people perceive and accept risks. Early scholars came to view risk perception as an impediment to rational decision making, as people tended to underestimate risk (Sjoberg, 1996, p.2). Starr's work further led to the development of the "*Psychometric Paradigm of Risk Perception*", a psychological approach based on heuristics and cognitive biases in the information processing and decision making of individuals. In other words, this approach highlights that people's perception of risk is not only based on the objective characteristics of risk, but also by their own beliefs, emotions, and cognitive processes.

Researchers of the psychometric paradigm believe that risk is inherently subjective, and that the notion of fear of risk is determined by individual cognitive processes, such as the perception of threats or feelings of uncontrollability. Scholars who used this approach argued that the individuals' subjective interpretation of risks is influenced by two factors: dread (perceived catastrophic potential) and unknown risk (degree to which the hazard is unknown or delayed in causing harmful effects) (Slovic, 1987, pp. 235-236). In simpler terms, psychometric scholars suggest that how someone perceives risk is influenced by how fearful they are of the hazard and how much they know about it. Following early psychometric studies, Fischhoff and colleagues (1978, pp.22-23) added that laypeople and experts use different definitions of "riskiness" when assessing risks. They argued that experts tend to evaluate risks quantitatively by assessing the likelihood and consequences

of the event. On the other hand, the general public considers qualitative risk characteristics such as the level of fear it generates, the sense of control individuals has over the situation, and whether the risk is voluntary or involuntary, in addition to dread and knowledge.

While the Psychometric paradigm makes ground-breaking contributions to the comprehension of risk perceptions, it is also subject to criticism. Several early studies, for instance, argued against the notion that qualitative risk characteristics are the result of individual constructs (Duclos et al., 1987; Rayner, 1984). These studies argued that characteristics such as dread, knowledge, and fear are inherent in the characteristics of the hazards themselves and are not part of individual's cognitive processes, but rather more related to social, cultural, and institutional processes. Furthermore, some research suggested that studies within the psychometric paradigm failed to distinguish between responder categories other than experts and laypeople, raising concerns regarding the significance of using another unit of analysis apart from the laypeople and expert categories. (Marris et al., 1997, p.273). In addition, several psychometric scholars also looked at the association between risk perceptions and sociodemographic factors such as gender, age, occupation, nationality, and place of residence. However, critics pointed out that the connections shown in these studies were comparatively insufficient and provided little insight into why different sorts of people (for example, women and the elderly) perceive risks differently.

Considering the limitations of previous studies, numerous proponents of the psychometric paradigm began to incorporate other external predictors of risk perception. Scholars have found that factors such as trust in authority, media influence, and information quality can impact an individual's perception of risk. For example, Visscher's & Siegrist (2008, p.160) suggested that a lack of trust in authority can diminish an individual's perception of risk due to the associated uncertainty, thereby contributing to differences in how individuals perceive risk. Miles and Morse (2007, p.365) suggested that media plays a crucial role in shaping risk perception. Wahlberg and Sjoberg (2000, pp.44-45) found that characteristics of information quality, such as accuracy, readability, and quantity, can also affect risk perception. Dahlstrom et al. (2012, p.160) found that individuals perceive a greater level of risk when presented with sensationalized information.

In contrast to the psychological approach, which emphasizes individual risk perception, the *socio-cultural approach* defines social groups, not individuals, as the basis of risk perception and judgments. MacLean, Douglas and Wildavsky (1983), social

anthropologists and early pioneers of the socio-cultural approach, initiated the discussion regarding the influence of values and cultural contexts on risk perception. They argued that individual perceptions are determined by cultural biases (shared worldviews), and not by individual cognitive processes. To measure cultural views and its impact on risk perception, they developed the Cultural Theory of Risk and described four prototypical cultural types that influence risk perception, namely: Fatalism, Hierarchic, Individualism, and Egalitarianism. For each of the cultural types, they offered the following assumptions about modes of risk perception.

1. Individuals do not worry about risk if they believe they can do nothing about it.
(*Fatalism*)
2. Individuals accept risk if decisions about risk are justified by authorities.
(*Hierarchic*)
3. Individuals view risk as an opportunity and only fear risks that could limit their freedom (*Individualism*)
4. Individuals oppose risk that will inflict irreversible danger to many people and future generation (*Egalitarianism*)

According to proponents of this theory, individuals belong to one of four cultural groups distinguished by their socio-cultural relationship patterns. These patterns result in notably distinct ways of comprehending and interpreting the world based on individual's cultural biases. While several cultural theorists contend that culture best explains patterns of risk perception across individuals (Charvet, 2001), a number of scholars argue that it remains unclear why cultural differences in risk perception arise for some risks but not for others (Kahan, 2012). Additionally, critics of cultural theory argued that it oversimplifies culture by assuming that it is homogenous and neglects the fact that individuals have a meta-awareness of their "thought style" (Boholm, 1996, pp.78-79). This means that individuals have capabilities to critically analyze their perspective and alter their way of thinking based on their level of cultural consciousness. Furthermore, critics of cultural theory asserted that it failed to consider specific social or political units of analysis, such as a country, political party, or interest group, that can cause further cultural variances in any such units of analysis (van der Linden, 2015, pp.3-4).

The theory of risk amplification, on the other hand, is an alternative framework that describes the social processes underlying how people perceive risk. According to Kaspersen et al (1988, pp.181-182), risk results from the process by which individuals and

groups acquire or create risk interpretations. This process stems from various communication channels or the “*social stations of amplification*”. Such communication channels may be social (media), personal (attention filter), or institutional (social and political actions). According to the theory, four information mechanisms within communication channels can influence individual’s social experience of risk. These factors include (a) the volume of information (b) clarity of information, (c) dramatization of information, and (d) the meanings and symbolism of information. Taken together, these elements can cause the amplification of the risk within society.

Although the theory of risk amplification was regarded as one of the sociological foundations for analyzing the effects of communication channels on risk perceptions and behavioral responses, the said framework has been subjected to major criticisms. For instance, Wirz and colleagues (2018) argue that one of the theory's major flaws is that it lacks a hypothesis to test the risk content, which has created a dilemma for many scholars who wish to improve the framework regardless of media-content related findings. In addition, they stated that the theory lacks anthropological knowledge, which is necessary for comprehending individual behavior. Furthermore, Petts (2004) argued that the risk amplification theory has a bias in treating amplification process as a negative factor.

To summarize, this literature review suggests that it is possible to quantify perceived risk and that there are considerable variations in how individuals and social groups perceive risk. The Psychometric paradigm and socio-cultural approach have tried to explain these variations in different ways. The psychometric paradigm looks beyond socio-cultural context and pays attention to those aspects that are psychologically constructed and shared across different culture and social groupings, whereas the socio-cultural approach examines socio-cultural elements that serve as the basis for individuals' construction of risk. Further, considering that both perspectives have their own limitations as presented above, it can be implied that that there is no single approach that can adequately explain the elements affecting risk perception. The next section explores literature concerning the relationship between risk perception and disaster preparedness.

2.3 Link Between Risk Perception and Disaster Preparedness

The relationship between risk perception and disaster preparedness behavior remains unclear in the literature (Wachiger et al., 2012). On the one hand, some studies argued that individuals with high-risk perceptions are more likely to undertake

preparedness measures. For example, Rosatami-Moez et al (2012) examined the earthquake preparedness and its predictors among households in Hamadan, Iran. They found out that risk perception with emphasis on individual's perceived benefits and self-efficacy positively affects the household's preparedness for earthquake. Similarly, Ao and colleagues (2011) investigated the effects of risk perception on the preparedness of individuals who were severely affected by the 2008 Wenchuan earthquake in China. Their findings revealed that people's risk perception and knowledge affected public actions towards earthquake preparedness. A more recent study was conducted by Kiani et al (2022) in Rawalakot, Pakistan. They investigated the relationship between risk perception and household earthquake preparedness and found that risk perception and its various dimensions such as fear, and trust positively influence earthquake preparedness.

Other researchers, however, disputed the strength of the association between risk perception and preparedness behavior as individuals with high-risk perceptions frequently do not take action to reduce their risk. For instance, some scholars argue that the role of fear in risk perception overwhelms people and may potentially lead to fatalism wherein individuals do not worry about risk if they believe they can do nothing about it (Bubeck et al., 2018, p.1491). Some also claimed that individuals may engage in denial to protect themselves from the unpleasantness of fear; hence, they refuse to accept such reality, which frequently results in unpreparedness (Schimdt, 2004, pp.4-5). Further, some also argue that there are tendencies for individuals to demonstrate "*normalization bias*" or the illusion of invulnerability, resulting in unpreparedness for disaster. They imply that people tend to believe they are less likely to be harmed than others by risks, or they may underestimate the consequences of certain threat, even if they anticipate a negative outcome (Paton, 2008, pp.15-16).

In sum, there is still an ongoing debate as to how risk perceptions affect disaster preparedness behavior. The lack of clarity about the effects of risk perceptions on preparedness behavior is problematic because it places challenges for disaster managers, experts, and policy makers to fully comprehend disaster risk and implement practical solutions to reduce it (Hasan et. al, 2013, p.56). Considering this, it can also be observed that much research has concentrated on studying risk perceptions and their influence on preparedness behavior in the context of actual and post-disaster events, with a tendency to neglect how risk perceptions influence anticipatory events (Chester, 2005). Therefore, this review of literature suggests that there is a need for more research to investigate public risk

perceptions and preparedness behavior, especially in the context of anticipatory events such as major earthquake prediction.

2.4 Protection Motivation Theory

Following the psycho-social approach to understanding risk perception, the protection motivation theory (PMT) became one of the most popular theories to explain individual's risk-reducing behaviors. It was developed by Ronald Rogers, an American psychologist, in 1975 to understand fear appeals and how individuals respond to them. It was expanded by Rogers in 1983 into a more general theory of persuasive communication. According to this theory, both individual and environmental factors can encourage or discourage protective action, and the effects of such factors are mediated by individual cognitive processes. (Clubb & Hinkle, 2015, pp. 2-5). Figure 2 schematically depicts the elements of PMT.

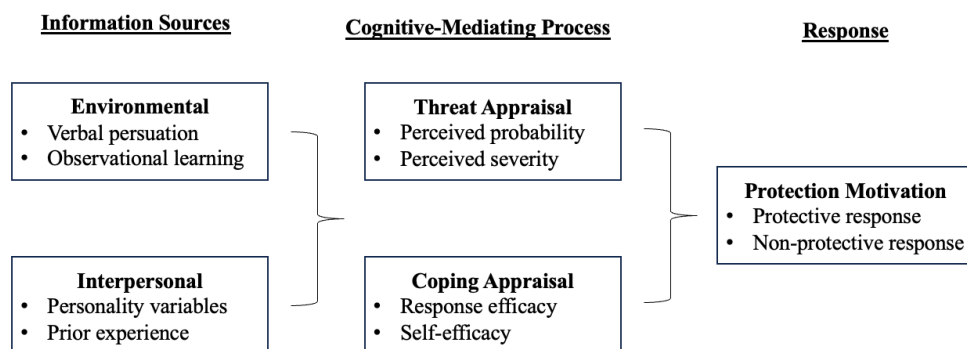
The first component of the model is composed of environmental and interpersonal information sources. The environmental sources involve verbal persuasion and learning through observation. This suggests that individuals are more likely to accept information as true if they have observed it occurring to others, such as family members, neighbors, and peers. On the other hand, the interpersonal source includes personality variables, such as prior experience with similar threats. According to the theory, both environmental and interpersonal sources inform individuals about potential threats and suggest protective actions and reasons why individuals should or should not engage in any protective response. Further, the theory suggests that these factors trigger two main cognitive processes of protection motivation, namely: threat appraisal and coping appraisal.

Threat appraisal, often referred to as risk perception, is the process by which an individual perceives threat in terms of probability and severity (harm potential) to assets that the individual values (Tanner et al., 1991, pp. 37-38). Specifically, this process involves two major components: *perceived severity* and *perceived probability*. The perceived severity refers to individual's reaction on the degree to which the potential threat poses a risk of harm. On the other hand, perceived vulnerability describes a person's approximation of how harmful the consequences of the threat to person's valued assets, such as threat to life and properties. In short, threat appraisal is associated with individual's emotional response and creates fear arousal in view of threat's severity and probability.

On the other hand, the coping appraisal refers to the process of individuals' evaluation of protective responses to a given threat (Johnson & Warkentin, 2010, p. 551). This process involves evaluating an individual's perception of whether a given protective response will be able to prevent a given threat (*perceived response efficacy*) and the assessment of one's ability to successfully perform the adaptive response (*perceived self-efficacy*). This process indicates that the presence of a protective response is insufficient to elicit positive behavior. One must have confidence in their ability to implement such a protective response. In relation to this, a person with a strong sense of self-efficacy could easily overcome any challenges (e.g., inconvenience, cost), whereas a person with a weak sense of self-efficacy could be overwhelmed by the same challenges (Bandura, 1977, pp.200-203).

Lastly, Protection motivation refers to individual's decision or intention to act in response to perceived threat (Ansari et al., 2022, p.3). Based on the model, protection motivation can trigger protective or nonprotective responses. The *protective responses* are those that seek to prevent monetary or physical damage if an event occurs. On the contrary, *non-protective responses* lead to the denial of the threat, wishful thinking, and fatalism.

Figure 2: Roger's Protection Motivation Theory (1973)



Note. This figure was adopted by the author based on Roger's Protection Motivation Theory. From "A Protection Motivation Theory of Fear Appeals and Attitude", by R. Rogers, 1973. Copyright 1973 by The Journal of Psychology.

2.5 Relationship between PMT Variables and Protection Motivation

Several meta-analyses have been conducted to investigate the trend of PMT variable applications on individual's protection motivation. For instance, Floyd and colleagues (2000) published the first meta-analysis of the literature concerning protection motivation theory. They analyzed 65 pertinent studies that represented more than 20 health concerns. Their study concluded that increases in threat severity, threat vulnerability, response efficacy, and self-efficacy encourage adaptive intentions or behaviors. Conversely, their study revealed that a reduction in adaptive response costs enhances adaptive intentions or behaviors. Similarly, Milne et al. (2000) conducted a meta-analytic review of PMT to explore its overall utility and determine which of its factors would be most effective for promoting protection motivation in health-education contexts. They discovered that the threat- and coping-appraisal components of the PMT were beneficial in predicting health-related intents. Further, they found out that coping-appraisal variables had stronger predictive validity than threat-appraisal variables. Sommestad and colleagues (2015) have performed the most recent meta-analysis of PMT. They studied the correlations between PMT variables in the context of information security. Using structural equation modeling, they assessed 92 relevant studies. Response efficacy and self-efficacy were discovered to have the greatest average influence on security behavior.

In view of the above discussion, the recent meta-analytic reviews of literature suggest the following common relationship patterns between PMT variables and protection motivation:

- Threat Appraisal - If a person feels that he or she is more vulnerable to a threat and/or that the severity of the consequence is severe, then this will result in a higher level of protection motivation.
- Coping Appraisal - Increases in response efficacy and self-efficacy will increase protection motivation, while increases in response costs will decrease protection motivation.

2.6 Applicability of PMT Construct in Natural Disaster Context

The theory of protection motivation has been commonly applied in health contexts, such as predicting behavior towards cancer prevention (Rahei, 2015), tobacco use (Xu et al., 2016), and alcohol consumption (Cismaru, 2008). Although the theory has proven to be a strong predictor in these contexts, its effectiveness has led to its expansion into the

area of natural hazards. This shift was motivated by the adoption of more comprehensive risk management strategies and the persistent occurrence of substantial losses caused by natural disasters in numerous nations. (Floyd et al., 2000).

For example, Tasantab et al (2022) applied the theory of protection motivation to investigate the factors of flood risk adaptations of informal settlements residents in Accra, Ghana. The researchers found out that flood risk vulnerability, severity perceptions, and self-efficacy have a statistically significant relationship with adaptation intentions. A similar study conducted by Mertens et al (2017) also examined the effects of PMT variables on response intentions to landslide hazard in Uganda. A sample of 401 households were surveyed about their willingness to plant trees and their perceptions of landslide hazards. Using regression analysis, the study revealed that vulnerability, severity, and self-efficacy influence the residents' intention to plant trees (protective response). The study showed that individuals who felt threatened by landslides and portrayed low self-efficacy resorted to non-protective responses. In addition, a recent study in Italy by Weyrich et al (2019) assessed public perception of flood risk and their motivation to undertake risk reduction behavior. The study employed regression analysis to test the relationships among PMT variables and household's protective behavior. The study's findings demonstrated that coping appraisal had a greater impact than threat appraisal. Specifically, their findings suggest that the higher self-efficacy and response-efficacy beliefs, the more likely individual will engage in risk-reduction behaviors.

Although there have been several attempts to apply PMT in the context of natural disasters, there have been limited research conducted to investigate the application of PMT on earthquake risk. Among the few existing studies, there were no common results regarding determinants of protection motivation for earthquake. For example, Tang and Feng (2018) found out that self-efficacy and response efficacy were the ones affecting protection motivation and earthquake preparedness. In contrast, Ong and colleagues (2021) discovered that perceived severity predicts individual's intent to prepare for earthquake disaster. In this regard, the lack of understanding about the application of PMT in earthquake context necessitate for more research work to be performed in order to understand the various dimensions of protection motivation of people living with earthquake risk (Ansari et al., 2022).

2.7 Research Gaps

Engaging in household preparedness activities is crucial to societal efforts to mitigate the impact of a natural disaster. However, despite extensive efforts to develop intricate models to explain preparedness behavior, the factors affecting preparedness still need to be clarified. One notable gap in the literature is that there is still an ongoing debate about how risk perceptions affect disaster preparedness behavior. The lack of clarity about the effects of risk perceptions on preparedness behavior places challenges for disaster managers, experts, and policymakers to fully comprehend disaster risk and implement practical solutions to reduce it.

Additionally, it can be noted that most research on risk perception has been carried out in a post-disaster context, implying that they were conducted after the disaster happened. This approach overlooks the relevance of examining the pre-event setting, as risk perception may vary based on a specific context. Furthermore, there has been limited investigation into the effectiveness of the PMT model in mitigating earthquake risk. Existing research on this topic is limited, and it has provided no consistent findings about household preparedness factors in a major earthquake.

As a result, the literature review suggests that more study is needed to understand better the complex relationship between risk perception and preparedness behavior. Such research may contribute to developing better disaster management and policymaking approaches. In line with this, the present study attempts to fill a gap in the existing literature by expanding the PMT model to analyze the cognitive factors that influence household preparedness for a major earthquake, specifically in the context of the anticipated "Big One" earthquake in the Philippines. This research is critical for broadening existing understanding regarding the public's perception of risk. It can aid in developing more effective disaster management policies and plans to lessen the societal impact of natural catastrophes.

CHAPTER THREE: METHODOLOGY

CHAPTER OVERVIEW:

- This chapter provides a comprehensive overview of the study's design and methodology, highlighting the rigor and objectivity employed to answer the research question of *"What are the cognitive factors affecting the levels of preparedness among households in response to the anticipated "Big One" earthquake in Metro Manila?"*
- It outlines the approach taken to analyze the factors affecting household preparedness for a major earthquake in Metro Manila. A quantitative approach was employed to test previously formulated theories and understand relationships between variables of interest and the dependent variable within a large population. Specifically, a cross-sectional survey was used to investigate the risk perceptions and behaviors of 200 households in Barangay Bagong Silangan about the "Big One" earthquake.
- The protection motivation theory (PMT) was utilized to explore factors affecting earthquake preparedness, with five hypotheses developed using this theory. The survey was developed based on previous risk perception studies and tested the relationship between study variables. Prior to data collection, several experts were consulted, pilot tests were conducted, enumerators were hired, and courtesy calls were made. Data analysis was performed using IBM SPSS software, with ordinal logistic regression used to predict factors affecting preparedness. Assumptions of ordinal logistic regression were considered to ensure the model's validity.

3.1 Research Design

As previously discussed, the Earthquake Impact Reduction Study for Metro Manila (MMEIRS) conducted by the Philippine Institute of Volcanology and Seismology (PHIVOLCS) and other relevant agencies predicted that Metro Manila would be subject to a strong-magnitude earthquake, dubbed the "Big One," causing an estimated 34,000 deaths and 170,000 structures collapsed. In addition, the literature review reveals that disaster preparedness among households continues to be a formidable challenge, as it is frequently low on people's agendas. Such a problem has been consistently reported in UNDRR's Global Assessment Report on Disaster Risk Reduction. Furthermore, due to the lack of clarity about the effects of public risk perceptions on preparedness behavior, one notable gap highlighted in the literature is the dilemma it caused for policymakers and practitioners to fully comprehend the nature of disaster risk and develop practical solutions to reduce it. Moreover, only a few works in the literature about public perception of earthquake risk have been carried out before a disaster occurs. Most studies were undertaken either at the onset or after the disaster. Since risk perception can change over time due to various factors, it is, therefore, essential to pay special attention to this issue.

In this context, this study seeks to analyze the factors affecting household preparedness towards a major earthquake. The main research question of this study is **"What are the cognitive factors affecting the levels of preparedness among households in response to the anticipated "Big One" earthquake in Metro Manila?"**

To address the central question, three sub-questions have been proposed:

- 1 To what extent does threat appraisal predict the level of preparedness towards the "Big One" earthquake?
- 2 To what extent does coping appraisal predict the level of preparedness toward the "Big One" earthquake?
- 3 What is the effect of public access to information on preparedness towards the "Big One" earthquake?

Given this context, this study adopted a quantitative approach to address the above research questions. The rationale for using this approach is that it allows the author to test and validate previously formulated theories regarding how certain phenomena occur (Creswell, 2022, p.429). This approach is particularly beneficial for investigating and comprehending the link between variables of interest and the dependent variable within a large population. Furthermore, the data reliability and findings obtained from this approach could offer valuable insights to assist policymakers and practitioners in decision-making. (Breunig & Ahlquist, 2014, p.113).

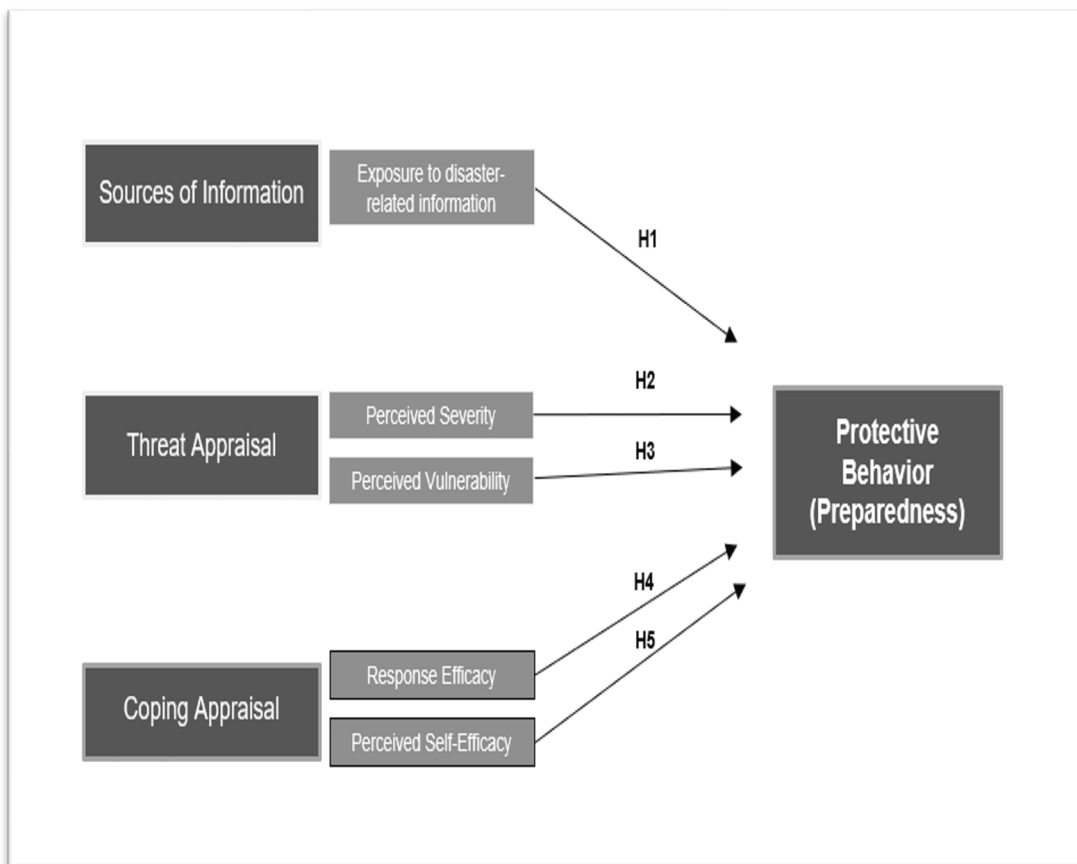
This study employed a cross-sectional survey for several reasons. Firstly, the use of cross-sectional survey allows for the investigation of a specific population at a particular time, which is vital in this study because it enables the author to look into cognitive factors that affect the level of preparedness among households in a major subduction zone. Secondly, this method suits the objective of the study as it provides an opportunity for the study to investigate the population's attitudes, behaviors, and beliefs concerning a particular event rigorously and objectively (Creswell, 2022, p.429). Lastly, this study benefits from a survey, mainly saving time and resources to gather data from a broad sample of individuals. (Choy, 2014, p.101).

3.2 Theoretical Framework and Hypothesis Development

A *theoretical framework* is a structure that summarizes crucial concepts derived from an existing theory (or multiple theories) in the literature that has already been tested and validated by others (Kivunja, 2018, p.46). One of the many advantages of having a clearly identified theoretical framework for research is the ability to use this framework to support and build the methodological plan, including providing a foundation for data analysis and interpretation of the meaning contained in the research data. (Grant & Osanloo, 2014, pp.13-14). In a quantitative study, one begins by proposing a theory, collects data to test it, and then considers whether the investigation outcomes confirm or refute the theory. The theory, therefore, serves as a framework for the entire investigation, a model for organizing the hypotheses for data gathering (Creswell, 2002, p.499).

In this study, the protection motivation theory as discussed in detail in Chapter 2 was utilized to explore the factors affecting the level of preparedness of people living in earthquake-prone areas. This theory was developed to understand how individuals react and cope in stressful situations. It places emphasis on the intrinsic (threat and coping appraisal) and extrinsic elements (sources of information) that can contribute to positive protective behavior (Rogers, 1975). Figure 3 illustrates the theoretical framework of this study.

Figure 3. Theoretical Framework



Note. This framework was adopted in accordance with Roger's protection motivation theory.

Sources of Information

Firstly, the framework posits that access to sources of information will affect an individual's preparedness for earthquake risk. Previous studies (Jin, 2021; Creticos et al., 2008) suggested that providing continuous information and knowledge to at-risk populations will increase household preparedness and reduce the likelihood of injury, death and, costs associated with property and infrastructure damage when an actual disaster occurs. Therefore, this study proposed the following hypothesis:

H1: Exposure to disaster-related information positively influences earthquake preparedness.

Threat Appraisal

Secondly, the framework also suggests that threat appraisal influences earthquake preparedness. It comprises of two subcomponents: perceived severity (a person's estimate of how harmful the threat is) and perceived probability (a person's expectation of exposure to the threat). Previous studies (Ong, 2021; Mertens et al., 2017) found that higher threat appraisal based on perceived severity and probability will result in a higher protective response / preparedness level. Therefore, this study poses the following hypotheses:

H2: Perceived severity of the threat positively influences earthquake preparedness.

H3: The perceived probability of the threat positively influences earthquake preparedness.

Coping Appraisal

Lastly, the framework proposes that coping appraisal is another critical factor influencing earthquake preparedness. It involves two subcomponents: response efficacy (perceived effectiveness of the recommended risk preventative behaviors) and self-efficacy (a person's perception of their capability to perform the behaviors). Several studies (Dupey, 2019; Crossler, 2010; Floyd et al., 2000; Milne et al., 2000) predicted that the higher the perceived response efficacy and self-efficacy, the more likely one will decide to perform adaptive behaviors. Therefore, this study suggests the following hypotheses:

H4: Response efficacy positively influences earthquake preparedness.

H5: Self-efficacy positively influences earthquake preparedness.

3.4 Participants and Sampling

The study population consisted of Barangay Bagong Silangan residents aged 18 years or above whose residential structure lies within the 5-meter easement from the fault line. Sample exclusion criteria included (i) non-permanent residents of the Barangay; and (ii) those unable to be interviewed due to COVID-19 restrictions. An assumption was made that families near the fault line know the “Big One” earthquake prediction. For the sampling method, the non-probability sampling technique, particularly convenience sampling using a survey questionnaire, was utilized in this study. Yamanete’s (1973) method was used to determine the sample size. Below is the mathematical illustration of the method.

$$n = N / 1 + N(e)^2$$

Where:

n signifies the sample size

N signifies the population under study (*679 households*)

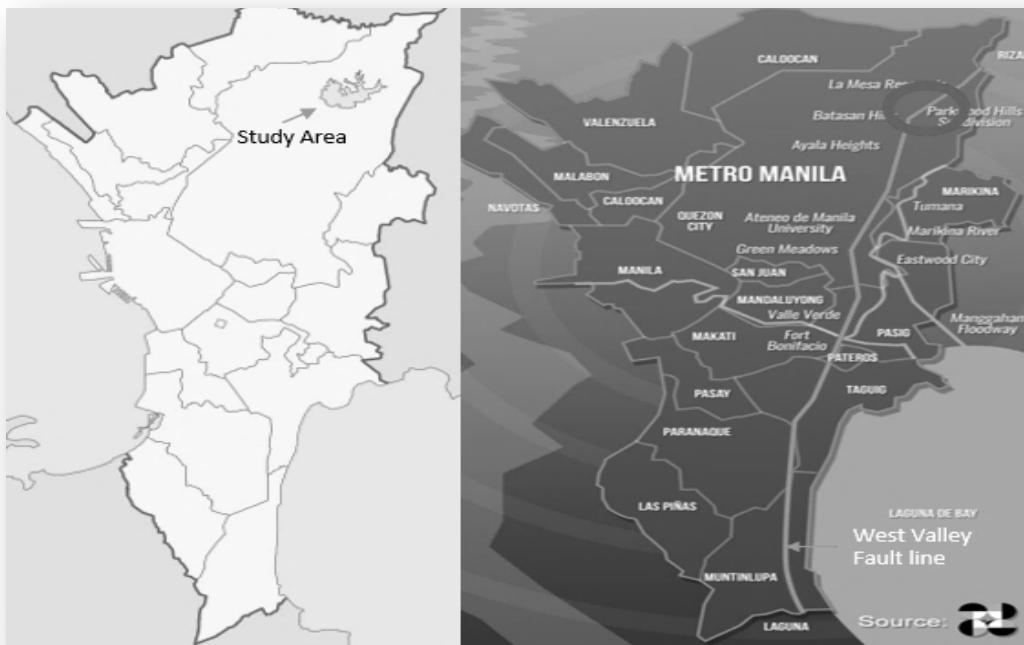
e signifies the margin error

The sample size of 254 using the above formula was calculated, with a 5% margin of error and 95% confidence interval. However, the study included only 200 households in the sample size due to time and resource constraints in gathering data.

3.3 Study Area

Bagong Silangan is one of the barangays in Quezon City. It is bounded on the North by La Mesa, to the east by San Mateo and Marikina River, the southeast and southwest by Barangay Batasan Hills, and to the west and northwest by Barangay Payatas. Its total land area is about 538.847 hectares, with a population of 145,000 people. High and low sections geographically separate this area. Parallel to the Marikina River, the Marikina Valley Fault System marks the boundary between these two regions. The elevated western portion of the Barangay is the edge of the Guadalupe plateau, where most of Quezon City is located. In contrast, the lower eastern portion of the Barangay is located on the west bank of Marikina River. The location of the area within Metro Manila is depicted in Figure 4.

Figure 4. Map of the Study Area



Note. The left image shows the map of Metro Manila showing Barangay Bagong Silangan, which is located in Quezon City. The right image shows the West Valley Fault (a line on the right connecting Rizal to Laguna and traverses seven cities in Metro Manila, including Quezon City, Pasig, Makati, Marikina, Taguig, Muntinlupa, and Paranaque). Photo Courtesy: Philippine Department of Science and Technology (DOST)

The justification for selecting this study area is that it can be considered an extreme and important case for the “Big One” earthquake. The extreme cases approach focuses on the most uncommon variation in the phenomenon that is being studied, rather than examining something typical or average about the population (Jahnukainen, 2010, pp.2-3). Additionally, extreme cases can be chosen based on the maximum variation measured by different factors. In this case, Barangay Bagong Silangan was selected because it is located directly on the Marikina fault line, making it high-risk area for earthquake. In addition, the area has numerous residential, commercial, and institutional buildings positioned directly along the fault line. Furthermore, among the 142 barangays in Quezon City, this barangay is projected to suffer the most severe earthquake-related impacts, according to the Earthquake Megacities Initiative (2022, p.7).

3.5 Instrument of Data Collection

A survey was used as the primary data collection instrument for this research. It was developed to reflect the objectives and questions of the study and to test the relationship between study variables. It was based on previous risk perception studies focused on information sources, threat appraisal, coping appraisal, and earthquake preparedness. The questionnaire was first developed in English and then translated into Filipino. It contained 16 questions, which can be accomplished within 10 minutes.

The questionnaire was divided into the following four categories:

1. Socio-Demographic Information - The first part of the questionnaire contained general questions about the participants' socio-demographic profile. The profile considers the participant's sexual orientation, age, level of educational attainment, income, and homeownership status.
2. Sources of Information - The second part covered the information sources towards the "Big One" earthquake. The survey asked participants about their sources of information about the "Big One" earthquake and their preferred channels for receiving information. The survey also inquired about the type of information participants desired regarding the "Big One" earthquake.
3. Earthquake Preparedness - The third part included questions about the participants' earthquake preparedness actions. It consisted of two main questions measuring participants' perceived level of household preparedness and the steps they have taken to prepare themselves for the "Big One" based on PHIVOLCS recommended actions for household earthquake preparedness.
4. Threat and Coping Appraisal – The last part of the survey contained questions pertaining to participants' threat and coping appraisal as well as exposure to information about the "Big One" earthquake. These concepts included questions designed in a Likert Scale (1-4) about perceived severity of threat, perceived probability of threat, response efficacy, self-efficacy, and exposure to disaster-related information.

3.6 Data Collection Procedures

This section details the processes employed in gathering data, from expert consultations, pilot tests, and hiring enumerators to household surveys.

3.6.1. Consultation with Experts

Expert review is a method of getting experts' opinions in designing and validating questionnaire. This method is useful to evaluate the theoretical and practical aspects of the draft survey questionnaire (ISTAT, 2017, p.29). In this study, consultations with two experts, (i) the science research specialist from the Philippine Institute of Volcanology and Seismology and (ii) the DRRM Officer of the Quezon City Disaster Risk Reduction and Management Office (QCDRRMO), were conducted on 16 and 20, August 2022. The purpose of the consultation was to gain a better understanding of the "Big One" earthquake prediction, determine context-specific issues about the topic, gather further information about the population under study, and check the relevance and representativeness of each survey item. Inputs and recommendations from the consultation was integrated to enhance the face and content validity of the draft survey questionnaire.

Additionally, the consultations enabled the researcher to obtain recent relevant government reports such as "Earthquake Sources and Hazards in Greater Metro Manila" and "Quezon City Disaster Risk and Reduction Management Plan 2017-2021", which became valuable references for the researcher to determine the most suitable case of the study and to deeply analyze the current situation of Metro Manila in terms of major earthquake risks.

3.6.2 Pilot Test

The primary purpose of pilot testing is to increase the questionnaire's reliability, validity, and usability (Malmqvist et. al., 2019, pp.2-3). Following the consultations with experts, a small pilot test was conducted to a small group of respondents on 21 August 2022. Four respondents who are both staff and residents of Barangay Bagong Silangan participated in the pilot test. The purpose of the pilot test was to check the understandability, readability, and the time required to answer the questionnaire. Based on the respondents' feedback, some wordings (*Filipino* translations) were modified, the order of questions was

changed, and instances of confusion were addressed to improve the final survey. The time required to complete the entire questionnaire ranges between 8 and 10 minutes.

3.6.3. Hiring of Enumerators

Given the limited time to gather data, the author hired three enumerators, consisting of one female and two males, to assist with the household survey. The local chief executive of Barangay Bagong Silangan recommended these enumerators due to their previous experience in administering household surveys and their familiarity of the study area. The said enumerators are also members of the Barangay Health Emergency and Response Team and are trusted members of the community. Furthermore, the enumerators have no conflict of interest in this study.

Before the household survey, an orientation with the enumerators were conducted on 23 August 2022 to explain the purpose of the study. A copy of the questionnaire was sent to the enumerators in advance so they could familiarize themselves with the terminologies, questions, and information requested. Questions and concerns of the enumerators about the questionnaire were addressed during the orientation.

3.6.4 Data Gathering

Prior to the data collection, a request form for overseas travel was sought from Meiji University and Japan International Cooperation Center (JICE) on 8 April 2022 to conduct data gathering in the Philippines during the summer break of the academic year 2022. During the break, the author met with the Director of the National Barangay Operations Office of the Department of the Interior and Local Government, as well as the Local Chief Executive of Barangay Bagong Silangan, to explain the study's purpose. Once the endorsement from the Punong Barangay was secured, the survey team conducted the household survey between August 26 and September 3, 2022.

In accordance with the research ethics guidelines, all household surveys were voluntary. The survey team verified that all participants were aware that their participation was optional, and none were prevented from withdrawing from the interviews. Additionally, the confidentiality of each response was assured.

3.7 Data Analysis

3.7.1 Variable Coding

The main outcome variable in this study is the perceived level of preparedness. The explanatory variables, on the other hand, are those factors based on protection motivation theory, which are perceived severity, perceived probability, response efficacy, self-efficacy, and exposure to disaster-related information. Additionally, the study also considered several control variables, including sex (male or female), age (adult or young), education (graduate or non-graduate), and home ownership status (owner or renter). Table 4 details the information about the said variables, including definition, operationalization, level of measurement, and supporting references.

Table 4. Model Variables

Variable	Definition	Operationalization	Variable Coding	Supporting Reference
<i>Outcome Variable</i>				
Perceived level of preparedness	The degree to which an individual feels prepared for an earthquake	<i>To what extent do you estimate that you and your family are prepared for the “Big One” earthquake?</i>	<i>(4 = High; 3 = Moderate, 2 = Low, 1 = Very Low)</i>	(Kirschenbaum, 2017)
<i>Explanatory Variables</i>				
Perceived Severity	A person’s estimate of how harmful the threat is	<i>How likely do you think it is that you would be seriously affected by the “Big One” earthquake?</i>	<i>(4=High Likely; 3=Likely; 2=Unlikely; 1=Very Unlikely)</i>	(Mertens et al., 2017)
Perceived Probability	A person’s expectation of being exposed to the threat	<i>What is the possibility that the “Big One” earthquake will impact you?</i>	<i>Sane as above</i>	(Dupey, 2019) (Crossler, 2010) (Floyd et al., 2000) (Milne et al., 2000)
Response Efficacy	An individual’s confidence that a recommended behavior will	<i>To what extent do you believe that the recommended actions by the</i>	<i>Same as above</i>	(Dupey, 2019) (Crossler, 2010) (Floyd et al., 2000)

Variable	Definition	Operationalization	Variable Coding	Supporting Reference
	prevent or mitigate the threatening event.	<i>government will reduce your risk from the "Big One" earthquake?</i>		(Milne et al., 2000)
Self-Efficacy	An individual's confidence in his / her ability to perform the recommended behavior to prevent or mitigate the threatening event.	<i>To what extent do you believe that you could undertake the recommended actions by the government?</i>	<i>Same as above</i>	(Dupey, 2019) (Crossler, 2010) (Floyd et al., 2000) (Milne et al., 2000)
Exposure to Disaster-Related Information	Individual's estimated exposure to disaster-related information.	<i>To what extent do you believe you have been exposed to information about the "Big One" earthquake?</i>	<i>Same as above</i>	(Jin, 2021) (Creticos et al., 2008)
<i>Socio-Demographic Variables</i>				
Sex		<i>What is your sexual orientation?</i>	Nominal (1 =Male; 0 = Female)	(Rostami-Moez et al., 2020)
Age		<i>What is your age?</i>	Nominal (1 =Senior; 0 = non-senior)	(Rostami-Moez et al., 2020)
Education		<i>What is your highest level of educational attainment?</i>	Nominal (1 =College graduate; 0 = non-college graduate)	(Rostami-Moez et al., 2020)
Income		<i>What is your estimated monthly income?</i>	1 =High-income earner; 0 = low-income earner)	(Rostami-Moez et al., 2020)
Home Ownership		<i>Do you own or rent your home?</i>	(1 =Renter; 0 = Homeowner)	(Rostami-Moez et al., 2020)

Note. The explanatory variables were dichotomized into two categories. The "low level" represents the scores of 1 to 3, while the "high level" represents the score of 4 to reflect the level of severity, probability, response efficacy, self-efficacy, and information exposure. A score of 4 and was coded as 1, at the same time scores from 1 to 3 were coded as 0.

3.7. 2 Statistical Analysis

Statistical analysis was performed using the IBM SPSS software version 26. Missing data were handled through exclusion from the analyses. Of the total 200 sample population, only 190 participants who had complete answers for all the variables were analyzed. Confidentiality was maintained while cleaning and storing the data for analysis.

The data gathered was subjected to descriptive and inferential analysis. Firstly, descriptive analysis, using measures of central tendency (means and median) as well as percentiles was performed to obtain a clear understanding of the population. In particular, the descriptive analysis was used to determine the participants' demographic information, sources of information about the "Big One" earthquake (actual and preferred) and the household earthquake preparedness behavior. Secondly, ordinal logistic regression was performed to predict the factors affecting the level of preparedness towards the "Big One" earthquake. The ordinal logistic regression was selected since the dependent variable is measured by a sequential scale. The Ordinal Logistic Regression model can be expressed as follows:

$$\text{logit}(P(Y \leq j)) = \beta_0j + \beta_1(\text{INFO}) + \beta_2(\text{SEV}) + \beta_3(\text{PROB}) + \beta_4(\text{SE}) + \beta_5(\text{RE})$$

Where:

Y signifies level of preparedness;

INFO signifies the exposure to disaster-related information;

SEV signifies perceived severity of threat;

PROB signifies the perceived probability of threat;

SE signifies the self-efficacy; and

RE signifies response efficacy.

Furthermore, four specific assumptions were evaluated to ensure that Ordinal Logistic Regression is a valid model for the study. First, the author ensured that the dependent variable (level of preparedness) was ranked in a specific order. Second, the author also ensured that at least one of the independent variables was either continuous, categorical, or ordinal. Finally, the problem of multicollinearity among the independent variables and the proportional odds assumption were validated. The author employed methods such as VIF (Variance Inflation Factor) and the test of Parallel Lines to examine assumptions 3 and 4.

CHAPTER FOUR: RESULTS AND DISCUSSION

CHAPTER OVERVIEW:

- This chapter presents the descriptive analysis of the survey data, including the socio-demographic profile of the participants, information sources, risk perception, and preparedness actions toward the “Big One” earthquake. It also shows the result of the ordinal logistic regression to predict the factors affecting the household’s disaster preparedness level. This study ensured that the dataset is suitable for the model by checking and confirming the proportional odds assumption and the absence of multicollinearity.
- There were 190 participants in this study. Of these, 57.9% were females, and 42.1% were males. Most participants were between the ages of 41 and 59, and the majority had secondary education. Most of the participants were renters from families with low incomes.
- An analysis of the survey showed that almost 50% of the participants were highly prepared for the "Big One," while over one fourth were somewhat prepared. On the other hand, only a very small percentage of participants assessed their level of preparedness as low or very low.
- Using ordinal regression analysis, several factors based on protection motivation theory were found to be statistically significant in predicting the levels of preparedness. Specifically, the odds ratio of this analysis indicated that: (1) Those who have a high perceived severity of earthquake risk was nearly 7 times more likely to be prepared than those with low perceived severity score; (2) Those who have a high perceived probability of earthquake risk had a 2.24 times higher chance of being prepared than those with low perceived probability score; (3) Those who have a high access to disaster-related information were 2.56 times more likely to be prepared than those with limited access; and (4) that renters compared to homeowners experience a reduction of 50% in the odds of being prepared for the “Big One” earthquake. Lastly, a detailed discussion of these findings and their implications is presented at the end of this chapter.

4.1 Descriptive Statistics

4.1.1 Participant Profile: Socio-demographic Characteristics

Table 5 presents the socio-demographic profile of participants, including sex, age, income, educational level, and homeownership status. The total sample population was 190. Of these numbers, there was a slightly larger percentage of women (57.9%) than men (42.1%). At the same time, the participants whose ages ranged between 41 to 59 years old (37.9%) comprised the largest share in age distribution. It was then followed by 18-30 years old (28.4%), above 60 years old (20%), and 31-40 years old (13.7%). The table also shows that more than half the participants reported having an average monthly income ranging from P9,520 to P21,194 (53.7%). The smallest income group (2.1%), on the other hand, was those receiving above P76,000 monthly income. Additionally, the table indicates that 46.3%, or a majority of the participants, have graduated from the secondary level. 36.3% graduated from college. A small percentage (1.6%) mentioned receiving higher than tertiary education. And only 3.2% reported receiving no formal education at all. Lastly, the distribution of homeownership status suggests there were more renters (61.1%) than homeowners (38.9%).

Table 5. Socio-demographic Profile

Category	Socio-demographic	N	%
	TOTAL	190	100
Sex			
	Female	110	57.9
	Male	80	42.1
Age Group			
	18-30 years old	54	28.4
	31-40 years old	26	13.7
	41-59 years old	72	37.9
	60 years old and above	38	20.0
Income			
	Low Income	102	53.7
	Lower Middle	54	28.4
	Middle	30	15.8
	Upper Middle	4	2.1

Category	Socio-demographic	N	%
Educational Level			
	No Formal Education	6	3.2
	Primary Level	24	12.6
	Secondary Level	88	46.3
	Tertiary Level	69	36.3
	Higher than Tertiary	3	1.6
Home Ownership			
	Homeowners	74	38.9
	Renters	116	61.1

Note:

N = No. of Participants

Educational Level: Primary (6 yrs.); Secondary (10yrs.); Tertiary (14-15 yrs.); Higher (15 yrs. +)

Income Group: Low (Between ₱9,520 to ₱21,194); Lower Middle (Between ₱21,194 to ₱43,828);

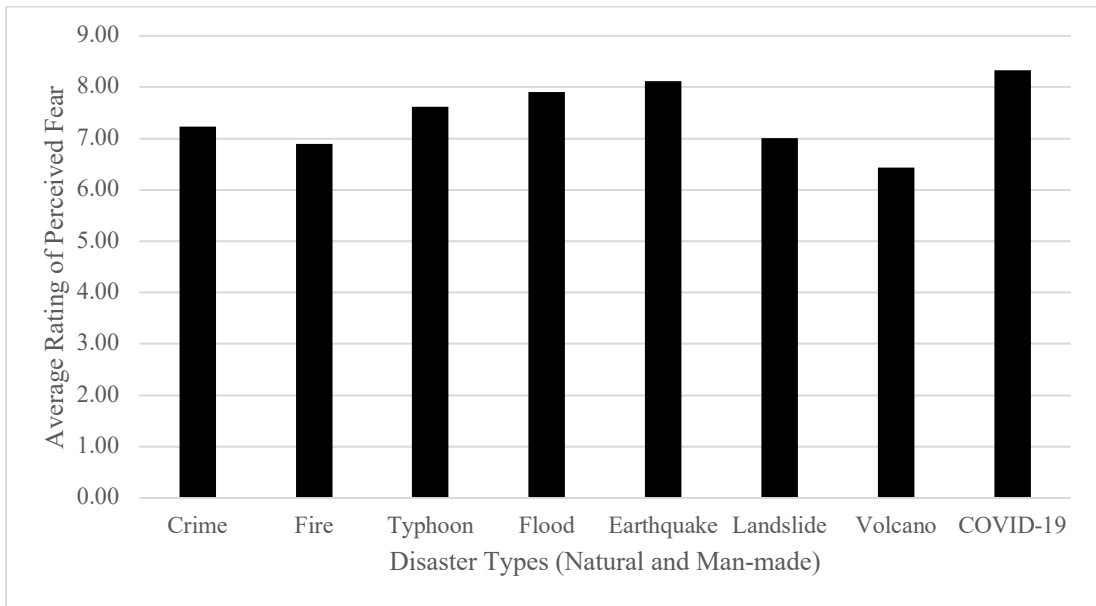
Middle (Between ₱43,828 to ₱76,669); Upper Middle (Above ₱76,669)

₱ = Philippine Peso (1USD =₱56, as of June 2023)

4.1.2 Perceived Fear of Different Disaster Types

Participants were asked to rate their perceived fear in view of different types of disasters (natural and man-made). The disaster types included crime, fire, typhoon, flood, earthquake, landslide, volcanic risk, and Covid-19. The question uses a scale of 1-10, with 10 being the highest and one being the lowest. As shown in Figure 5, participants expressed greater fear of the COVID-19 threat (M=8.33). It was then followed by earthquakes (M=8.12) and floods (M=7.91). The least feared, however, were fire (6.44) and volcanic risk (M = 6.22).

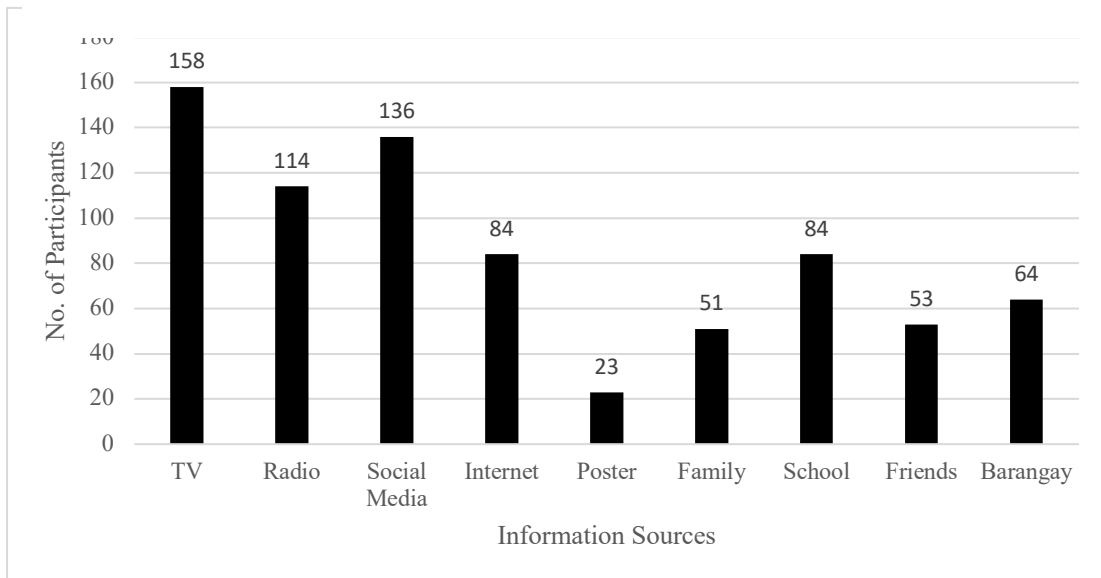
Figure 5. Perceived Fear of Different Disaster Types



4.1.3 Sources of Information

Figure 6 depicts the public information sources regarding the "Big One" earthquake. Based on the survey results, the topmost utilized information sources were television (83.2%), social media (71.6%), and radio (60%), whereas print media and personal relationships were the least utilized. As shown in Figure 7, participants expressed a preference for receiving information through television (75.8%), SMS (53.2%), and public meetings (50.5%) when asked about their preferred communication information sources. Furthermore, Figure 8 indicates that participants were interested in acquiring more knowledge about general emergency preparedness (75.3%), evacuation protocols and procedures (68.9%), and family preparedness and planning (55.8%).

Figure 7: Public Sources of Information about the "Big One" Earthquake



Note. Barangay is the lowest political administrative unit of the Philippine government and serves as the primary planning and implementing arm of government policies, plans, programs, projects.

Figure 6: Preferred Information about the "Big One" Earthquake

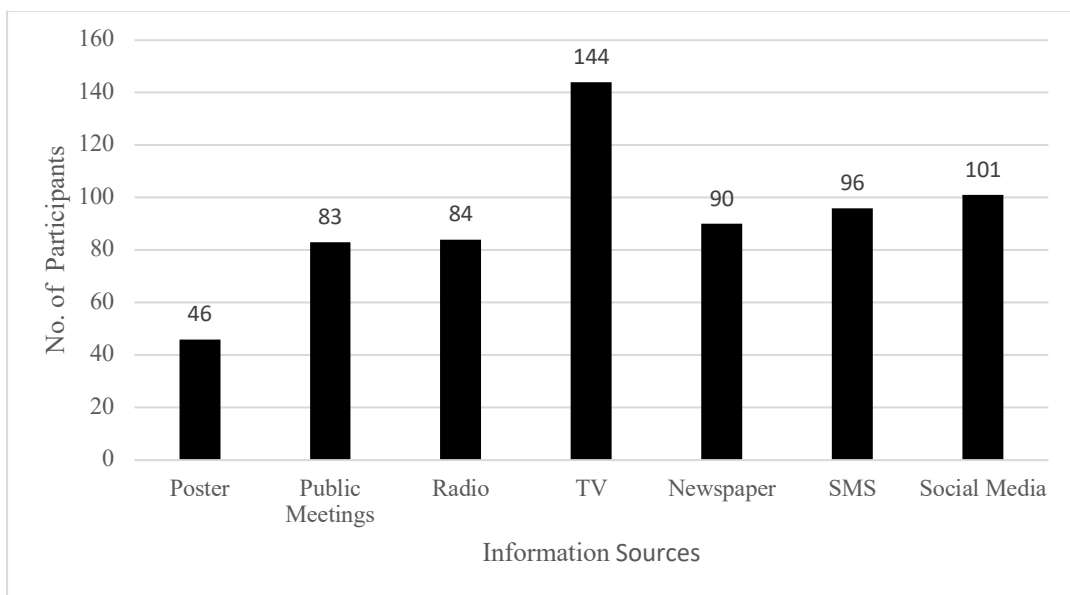
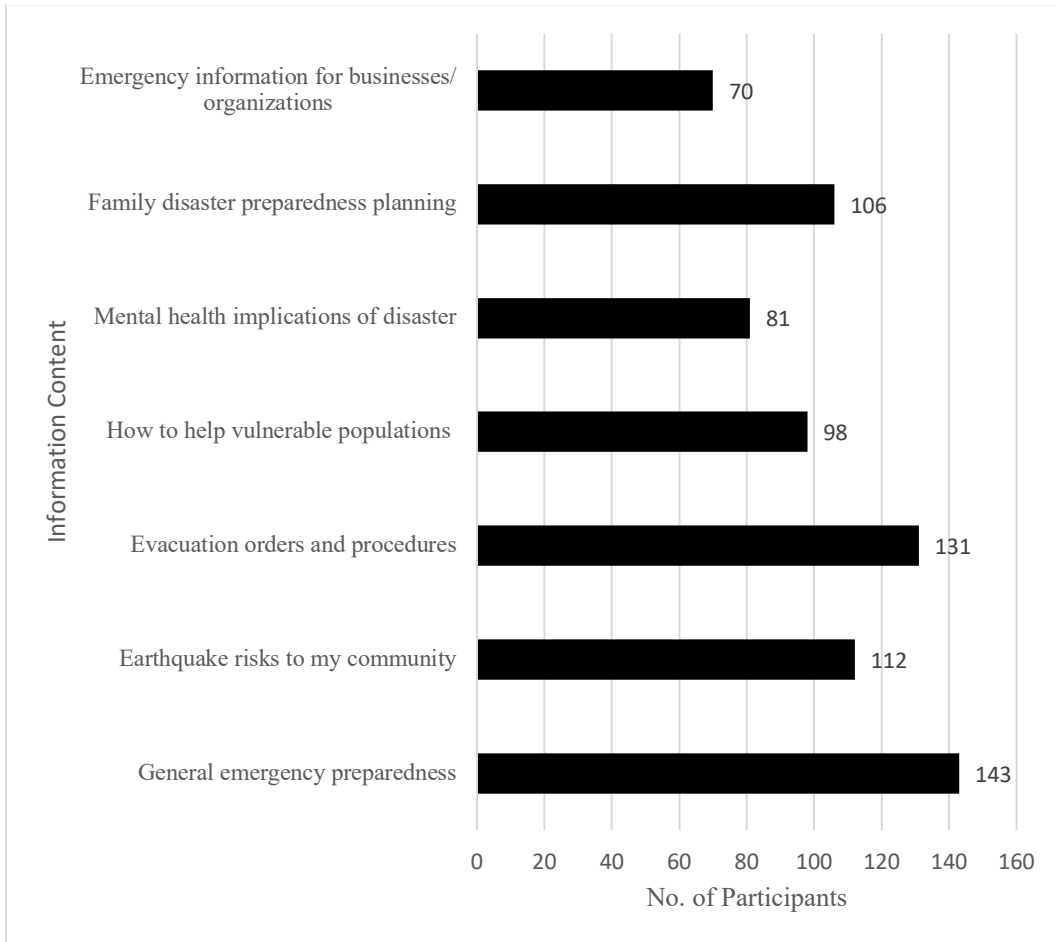


Figure 8: Preferred Information Content about the "Big One" Earthquake



4.1.4 Household Preparedness

The survey also inquired about the participant's perceived level of preparedness for the "Big One" earthquake. Figure 9 shows that 44.7%, or nearly half of the participants, were very prepared for the "Big One" earthquake. Participants who expressed that they felt somewhat prepared comprised 37.9% or more than one-fourth of the total sample size. In contrast, only 13.7% believed that they were unprepared. Likewise, an even fewer proportion of the participants (4.2%) believed that they were very unprepared.

Figure 9. Perceived Levels of Preparedness

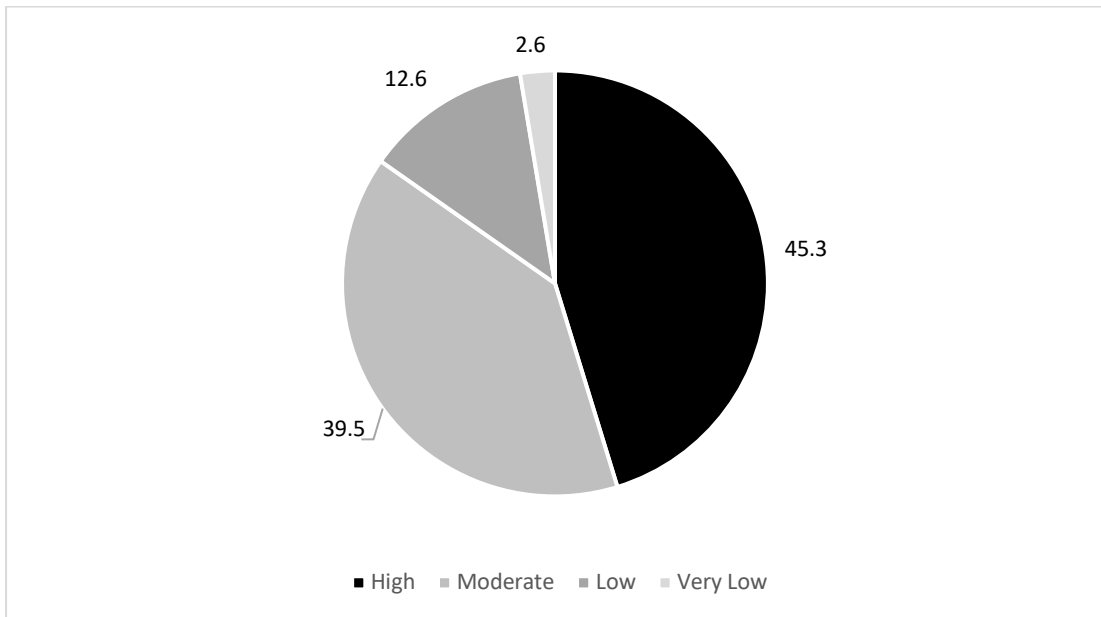
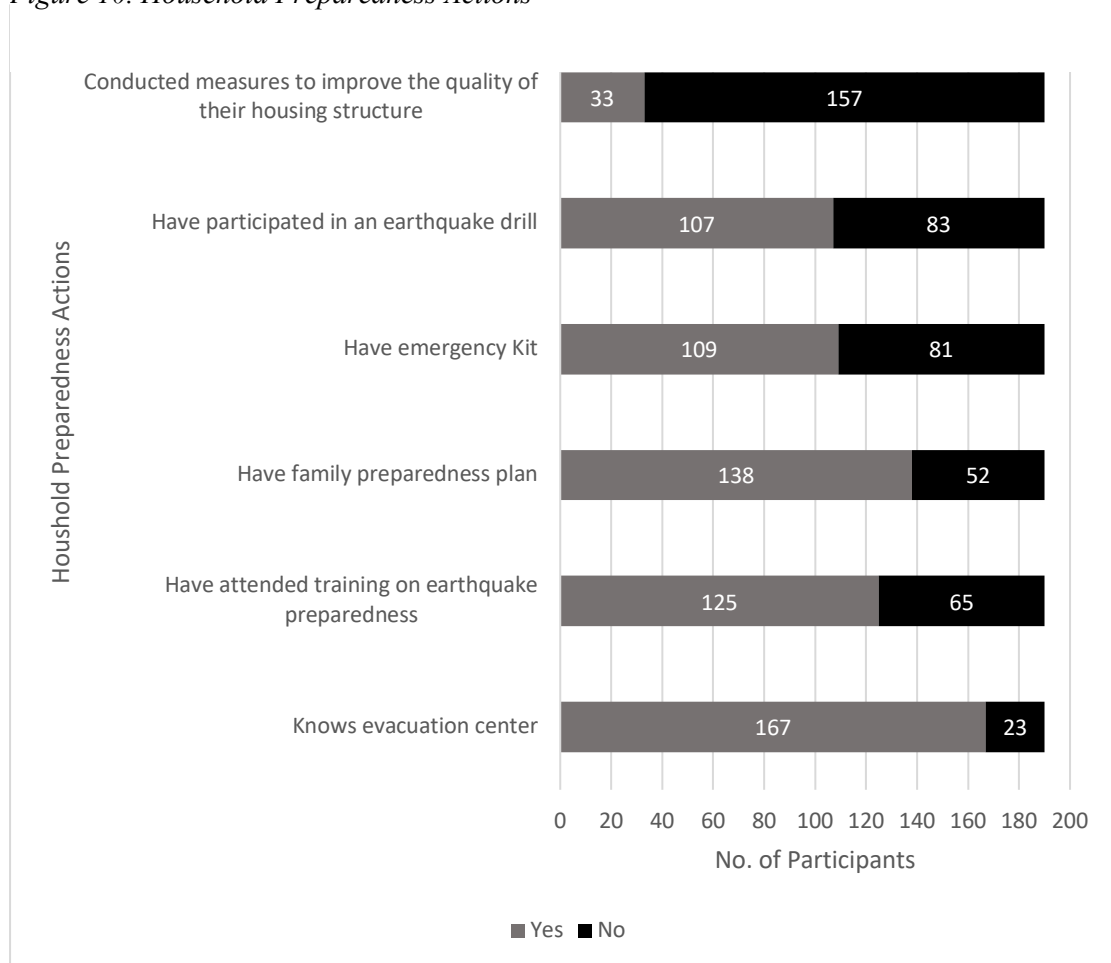


Figure 10 outlines the proportion of participants who claimed they had taken precautions against the “Big One” earthquake. The data suggests that 167 participants, or 87.9% of the total sample, could identify the evacuation center in their community. Similarly, a large portion comprises 72.6% (N=138), reported having a family preparedness plan. Regarding training, 65.8% (N=125), or slightly more than half of the participants, expressed having undertaken earthquake preparedness training. Similarly, more than half of the participants (57.4%, N=109) had prepared an emergency kit at home. Likewise, 56.3%, or 107 participants, mentioned participating in an earthquake safety drill in their communities. In contrast, only 17.4% (N=33), or a small fraction of participants, considered earthquake-proofing their houses in response to the "Big One" earthquake.

Figure 10. Household Preparedness Actions



4.1.5 Explanatory variables of earthquake preparedness level based on PMT.

The protection motivation theory outlines five factors contributing to a person's preparedness level. The first factor is the perceived severity of the threat ("Severity"). The second is the individual's expectation of being exposed to the threat ("Probability"). The third is the individual's confidence in a recommended behavior's ability to prevent or mitigate the threat ("Response Efficacy"). The fourth is confidence in the person's ability to perform the recommended behavior to prevent or mitigate the threat ("Self-Efficacy"). And the last one is the individual's exposure to disaster-related information ("Exposure to Disaster-Related Information").

Table 6 displays the mean scores for the main variables of interest, with a score of 4 being “Highly Likely” and 1 being “Highly Unlikely”. Most participants generally said they had a high threat and coping appraisal towards the "Big One" earthquake. The majority of the participants also reported they had been exposed to disaster-related information. The highest mean score among the five variables was the perceived probability of an earthquake (Mean = 3.42). It was followed by self-efficacy (Mean = 3.34), and exposure to information about disasters (Mean = 3.22).

Table 6. Mean Scores Among Explanatory Variables

Variables	N	Mean
Threat Appraisal		
▪ Severity	190	3.20
▪ Probability	190	3.42
Coping Appraisal		
▪ Self-Efficacy	190	3.34
▪ Response Efficacy	190	3.27
Sources of Information		
▪ Exposure to Disaster Related Information	190	3.22

Note. 4= Highly Likely, 3= Likely, 2= Unlikely, 1= Very Unlikely

4.2 Inferential Statistics

Ordinal logistic regression was used to investigate whether perceived severity, perceived probability, response efficacy, self-efficacy, and exposure to disaster-related information predict the level of preparedness (“high,” “moderate,” “low,” “very low”) towards the “Big One” earthquake. Prior to conducting the ordinal logistic regression, the study ensured that the data is compatible with the model by verifying the proportional odds assumption and absence of multicollinearity.

4.2.1 Diagnostics of Multicollinearity

Treating multicollinearity issues among variables of interest is important in ordinal logistic regression. When the independent variables are multicollinear with each other, this can cause difficulties in determining which variable contributes to the explanation of the dependent variable. To avoid this, the study used the variance inflation factor (VIF) to detect multicollinearity. This metric assesses how much a coefficient's variance is inflated due to its linear dependence on other variables. The metric indicates that a VIF of 1 means that variables are uncorrelated. The variables are moderately correlated if it is between 1-5. And if the VIF ranges between 5-10, it indicates a strong correlation among variables. Table 7 shows that the highest VIF score in this study is 2.15; thus, there is no issue with multicollinearity.

Table 7. Multi-Collinearity Test

	Variables	VIF
1	Level of Preparedness (Constant)	
2	Severity	2.117
3	Probability	1.615
4	Response Efficacy	2.145
5	Self-Efficacy	1.883
6	Exposure to Disaster-Related Information	1.995

4.2.2 Proportional Odds Assumption

Another assumption in ordinal logistic regression is that the effects of any explanatory variables are consistent or proportionate across multiple thresholds. This assumption is widely known as the proportional odds assumption (parallel line test). When the test of parallel lines yields a non-significant result, it is reasonable to conclude that the assumption is valid. Table 8 shows a non-significant result ($p > 0.05$), thereby rejecting the null hypothesis that the location parameters (slope coefficients) are the same across response categories. Hence, proportionality assumption was not violated.

Table 8. Test of Parallel Lines

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	294.187			
General	276.953 ^b	17.234 ^c	18	0.507

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.
Link function: Logit.

4.2.3 Ordinal Logistic Regression Model

Table 9 shows the model fitting information, which contains the -2 Log Likelihood for an Intercept-only model and the Full Model consisting of the full set of predictors. It also includes the likelihood ratio chi-square test to determine whether the Final Model fits significantly better than the Intercept alone model. In this study, it shows that the Final Model fits the data significantly better than the null model [$\chi^2(9) = 104.248, p < .05$].

Table 9. Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	398.435			
Final	294.187	104.248	9	0.000

Link function: Logit.

Table 10 shows the "Goodness of Fit" test. It covers the Deviance and Pearson chi-square, which are used to determine whether the model fits the data. As a rule, the model fits the data well if the result shows an insignificant result ($p > .005$). In view of this, it can be noted that the model for this study is a good fit because both the Pearson chi-square [$\chi^2(510) = 490.101, p = .729$] and the deviance [$\chi^2(510) = 284.483, p = .100$] were not statistically significant.

Table 10. Goodness of Fit

	Chi-Square	df	Sig.
Pearson	490.101	510	0.729
Deviance	284.483	510	1.000
Link function: Logit.			

The R squared obtained in Ordinary Least Squares regression (OLS) does not exist in ordinal regression. However, several pseudo-R squared have been developed to evaluate the goodness of fit of logistic models. The most used are Cox & Snell, Nagelkerke, and McFadden. Despite being widely used, these measures have their limitations and must be interpreted with caution. In this study, Nagelkerke was used to determine how well the model explains the data variances. As shown in Table 11, the existing explanatory variables accounted for 47.8% (Nagelkerke = .478) of the variation among response variables, with the remaining 52.2% attributable to unobserved factors and error terms. This was expected because several components, such as cultural background and socio-political factors, were not covered on this test and can influence the level of preparedness, as described in the literature review.

Table 11. Pseudo R Square

Cox and Snell	0.422
Nagelkerke	0.478
McFadden	0.255
Link function: Logit.	

4.2.4 Result of Ordinal Logistic Regression

The parameter estimates, including the significance tests and odds ratio (OR) for each of the model's independent variables, are displayed in Table 12. The result of the ordinal logistic regression can be interpreted as follows:

- 1 The perceived severity of earthquake risk was strongly related to preparedness level ($p < .01$). The estimated odds ratio of being prepared for an earthquake was nearly 7 times larger (OR = 6.79, 95% CI, 2.71 -17.02) for those who have a high perceived severity than those with low perceived severity score.
- 2 The perceived probability of earthquake risk was significantly related to preparedness level ($p < .05$). The estimated odds ratio of being prepared for an earthquake was 2.24 times higher (OR = 2.24, 95% CI, 1.05 - 4.82) for those who have a high perceived probability than those with low perceived probability score.
- 3 Exposure to disaster-related information has a favorable effect on the level of preparedness ($p < .05$). The odds ratio (OR = 2.56, 95% CI, 1.04 -6.30) suggested that participants who have a high access to disaster-related information were 2.56 times more likely to be prepared than those with limited access.
- 4 Homeownership (OR = 0.495, 95% CI, 0.247 – 0.995) was found to have a significant effect on earthquake preparedness. The odds ratio for homeownership suggested that renters experience a reduction of 50% in the odds of being prepared for the “Big One” earthquake.
- 5 No significant correlation was found between coping appraisal variables (response efficacy and self-efficacy) and levels of preparedness. Lastly, the result revealed that other socio-economic variables, including sex, age, education, and income, have no statistically significant correlation with preparedness levels ($p > .05$).

Table 12. Parameter Estimates

Variables	B	Std. Error	df	p Value	Odds Ratio	95% Wald Confidence Interval for Exp(B)	
						Lower	Upper
Threat Appraisal							
Severity	1.916	0.4686	1	0.000***	6.792	2.711	17.016
Probability	0.809	0.3898	1	0.038**	2.246	1.046	4.822
Coping Appraisal							
Response Efficacy	0.629	0.4727	1	0.183	1.876	0.743	4.737
Self-Efficacy	-0.086	0.4341	1	0.843	0.918	0.392	2.149
Information Sources							
Exposure to Disaster-Related Information	0.940	0.4600	1	0.041**	2.559	1.039	6.304
Socio-demographic							
Sex (Male)	-0.621	0.5263	1	0.238	0.537	0.192	1.508
Educ (College Graduate)	-0.502	0.3505	1	0.152	0.605	0.305	1.203
Income (High Income)	0.028	0.3774	1	0.942	1.028	0.491	2.154
Age (Senior)	0.287	0.4811	1	0.551	1.332	0.519	3.421
Homeownership (Renters)	-0.703	0.356	1	0.048**	0.495	0.247	0.995

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

4.3 Discussion

The central research question of this study is **“What are the cognitive factors affecting the level of preparedness among households in response to the anticipated “Big One” earthquake” in Metro Manila?”** As stated in the preceding chapters, three sub-questions were presented. This section discusses the study's findings in relation to these three sub-questions.

Sub-RQ 1: What is the effect of access to disaster-related information on the level of preparedness towards the “Big One” earthquake?

Hypothesis	Result
Hypothesis 1: Access to disaster-related information positively affects the level of preparedness towards earthquake risk.	Supported

This study found that access to information positively affects the level of preparedness towards earthquake risk, thereby supporting hypothesis 1. In other words, individuals with greater access to disaster-related information were viewed as being more prepared for the "Big One" earthquake. This finding supports the work of other studies (Jin, 2021; Creticos et al. 2008), which claimed that an increase in the usage of information sources affects disaster preparedness.

Access to information is an important factor affecting earthquake preparedness. It is customary that people can make well-informed decisions and take prompt actions to protect themselves from earthquake risks if they have good access to accurate and up-to-date information. For example, access to an early warning system can provide an essential warning before intense shaking hits, preparing individuals and organizations to conduct necessary activities, such as shutting down the power supply at home and seeking/providing shelter for evacuation. In addition, access to information from news media, disaster agencies, and emergency organizations can assist individuals in planning and preparing for earthquakes, including assembling an emergency kit, developing an emergency plan, learning how to turn off utilities properly, and securing heavy furniture and appliances.

To increase preparedness levels, it is important to prioritize information awareness activities and expand information channels, since information has a positive impact on

preparedness. Based on the protection motivation theory, information channels are classified as either mediated or interpersonal (Clubb, 2015). Common mediated sources include newspapers, radio, television, and magazines, whereas common interpersonal channels include friends, neighbors, and experts in particular fields. This study found that participants rely substantially on mediated channels like television and radio, whereas interpersonal sources were utilized the least. Although mass media, such as television and newspaper, has been seen as a critical tool in conveying information to the public (Miles & Morse, 2007; Wahlberg and Sjoberg, 2000), a recent study argues that individuals place greater confidence in the information obtained through personal channels of communication, including families and peers, than mass media. This is because information received from personal networks provides a higher level of trustworthiness and credibility (Sim et al., 2018). To develop a full picture of how information sources affect preparedness behavior, additional studies will be needed to investigate how different types of information channels affect disaster preparedness behaviors towards the “Big One” earthquake.

In addition, prior studies showed that information from reliable sources, such as families, government agencies, and scientific groups, was found to be helpful in assisting individuals in comprehending the risks they face and the steps they can take to mitigate earthquake risk (Wahlberg and Sjoberg, 2000). Conversely, misinformation from untrustworthy sources can lead to uncertainty and mistrust, reducing preparedness levels and resulting in panic and hazardous, unneeded behaviors (Visscher’s & Siegrist, 2008). This observation has important implications for policymakers and practitioners when analyzing risk communication strategies for unknown disasters, such as the "Big One" earthquake. That being said, it might also be possible in future studies to evaluate the potential influence of inaccurate or misleading information on preparedness behavior towards the “Big One” earthquake.

While the result may seem evident at first glance, it remains a key finding that highlights the subtle yet significant role of having access to information sources on perceived levels of preparedness. This finding, while preliminary, raises the importance of knowing that different audiences get information through varied communication channels. However, the effectiveness of communicating messages may still depends on a variety of factors, including the individual’s preferences and the information’s reliability and accessibility. To improve the possibility that the public will hear and see communications

linked to the "Big One," it may be beneficial to select a mix of appropriate and accessible information channels.

Sub-RQ 2: To what extent does threat appraisal predict the level of preparedness towards the “Big One” earthquake?

Hypotheses	Results
Hypothesis 2: Perceived severity of earthquake risk positively affects the level of preparedness.	Supported
Hypothesis 3: Perceived probability of earthquake risk positively affects the level of preparedness.	Supported

This study found that threat appraisal variables, specifically the individual's perception of the severity and probability of earthquake risk, significantly influence the level of preparedness for the "Big One" earthquake, supporting hypotheses 2 and 3. This conclusion reflects the findings of several authors (Ong et al. 2021; Floyd et al. 2020; Milne 2000) that both perceived severity and probability have a significant effect on preparedness level.

It is important to point out that the perception of risk differ among individuals depending on their backgrounds and, at the same time, the nature of the hazards they face. As the early scholars suggest, the feeling of fear predicts the people's perception and behavior towards certain risk. (Slovic 1991). For instance, the extended parallel process model (EPPM) highlights that perception of threat varies according to the degree of risk, with dreaded risks causing the strongest perceptions of threat and common risks giving the weakest perceptions of threat. In the context of the “Big One” earthquake, such an event can be regarded as a dread risk due to its potentially catastrophic impact, thereby prompting a strong perception of threat among individuals.

Based on the psychometric paradigm, there are several possible explanations for why people have a high threat appraisal for dread risk, such as the “Big One” earthquake. One possible explanation for this is that people are more afraid of new and more catastrophic risks (Bodemer & Gaissmer, 2015; Slovic, 1987). To put it another way, people show higher sensitivity to rare events that can kill many people at once instead of continuous risks that can kill many people over a long period of time. This notion explains

why participants in this study perceived COVID-19 and the “Big One” earthquake as more terrifying than other risks, such as typhoons, landslides, volcanic eruptions, fire, and crime (as shown in the descriptive statistics, Figure 5). Another possible explanation for heightened risk perception is that dread risks are noted to be viewed as less controllable (Fischhoff et al., 1978). For example, people worry more about dying in an airplane crash than a car crash, even though the latter is far more likely to cause them harm. For the same reason, this might also explain why participants in this study were more concerned about the “Big One” earthquake, even though the odds of experiencing other common risks may be statistically higher than the “Big One”. In short, it implies that people have a high threat appraisal toward a particular risk when they feel the risk is catastrophic, new, and less controllable.

As further discussed in the literature review, public perception of risk also differs from experts’ assessment of risk. Experts assess risk analytically, whereas the general population has a far broader and more emotional perspective of risk (Merkelsen, 2011; Leiss, 2004). Following some theories on risk communication, previous studies have shown that the role of fear has a significant effect on individual’s threat appraisal and response. In risk communication, fear appeals are described as messages that generate dread by emphasizing the severity and probability of risk to induce compliance with recommended courses of action. According to Witte (1995), heightened fear arousal, which happens when the perceived threat is high, creates reactive responses that govern the individual's fear. In contrast, if the threat is deemed irrelevant or trivial, people tend to ignore it and do nothing to protect themselves against it. Although it may be tempting to conclude that enhancing the fear component in risk communication messages may be advantageous in inducing positive preparedness responses, it is also crucial to recognize that fear can also have detrimental effects if it is not handled correctly. As mentioned in the literature review, excessive amounts of fear may overwhelm people, make them feel that they cannot do anything about it, and let them disengage from comprehending the risk. These observations raise intriguing questions regarding the nature and extent of fear one must communicate in order to encourage positive behavior. In the context of the “Big One” earthquake, it is therefore suggested that further investigation is necessary to understand how fear affects threat appraisal and response.

Sub-RQ 3: To what extent does coping appraisal predict the levels of preparedness towards the “Big One” earthquake?

Hypotheses	Results
Hypothesis 4: Response efficacy positively affects the levels of preparedness towards earthquake risk.	Not Supported
Hypothesis 5: Self-efficacy positively affects the levels of preparedness towards earthquake risk.	Not Supported

The study’s most surprising finding to emerge was that no significant correlation was found between coping appraisal variables (response efficacy and self-efficacy) and preparedness levels, which means that hypotheses 4 and 5 are not supported. These findings are contrary to previous studies (Dupey, 2019; Crossler, 2010; Floyd et al., 2000; Milne et al., 2000), which found that increases in an individual’s response efficacy and self-efficacy encourage adaptive intentions or behaviors.

There are various possible explanations for this seemingly contradicting result. One possible reason is that risk perception is also influenced by values and social contexts. Referring to the literature, a drawback of the protective motivation theory is that it fails to account for the influence of external factors, such as culture and social norms, on individuals' threat and coping appraisal. One major argument from a socio-cultural standpoint is that individual perceptions are determined by cultural biases, and not by individual cognitive processes. For example, people with fatalistic tendencies perceive the world as unpredictable and uncontrollable. They concur that their fate has already been determined, and they have no absolute control over what will occur. In the context of the “Big One” earthquake, fatalistic thinking can be detrimental as it may lead individuals to believe that they cannot take action to protect themselves and their communities. This problem is alarming because it can result in a lack of motivation to prepare and take preventative measures even though they have high self-efficacy and response efficacy.

Similarly, individuals may also exhibit “optimism bias” or the tendency to overestimate the likelihood of experiencing positive events and underestimate the possibility of experiencing adverse events. In the context of the “Big One” earthquake, even if the government successfully increases individuals’ coping appraisal, it may not guarantee that they will prepare for the earthquake. This situation is especially true if people

underestimate the event's consequences and believe that they are less likely to be injured. The above discussion is an important issue that needs to be addressed in future research. Further work is required to understand the cross-cultural differences in risk perception and the effects of cultural biases, such as fatalism and optimism bias, on preparedness behavior towards the "Big One" earthquake.

Another possible explanation for why coping appraisal does not affect the levels of preparedness is the lack of prior experience. Prior disaster experience influences the individual's cognitive appraisal. For example, prior disaster experience to a major earthquake may assist individuals in comprehending the necessary preparatory measures based on their personal encounter with risk. Conversely, the absence of prior experience may confuse individuals about the actual effects of a major earthquake and make them unable to take preventive steps. The latter example appears to be the case of the "Big One" earthquake. According to the Philippine Institute of Volcanology and Seismology (PHIVOLCS), the last worst earthquake in the Philippines in terms of strength of ground shaking and death toll was recorded in 1976 (the Moro Gulf Earthquake in Southern Mindanao), and the second strongest earthquake took place in Central Luzon in 1960. That being said, it may be argued that most of Metro Manila's population has no past experience with disastrous earthquakes. Their most immediate impression of a major earthquake may come from the media or personal accounts. Therefore, the lack of prior experience may make it difficult for them to comprehend how serious a magnitude 7.2 earthquake is and how necessary it is to prepare for the earthquake despite several government warnings, thereby impacting their coping assessment. This condition echoes the cultural belief that people do not feel they are vulnerable to earthquakes until they experience its effect, which can result in low levels of preparedness.

At this stage of understanding, it is possible to infer that increasing an individual's self-efficacy and response efficacy might not be the most effective way to encourage preparedness behavior, as opposed to the claims of several authors mentioned earlier. When comparing the result to those of older studies, it can be pointed out that only a few have applied the protection motivation theory in the context of unknown catastrophic events, such as the "Big One" earthquake. Most of the studies mentioned were primarily concerned on common hazards, including typhoons, fire, landslides, and endemic diseases. The seemingly different nature of the "Big One" earthquake sets it apart from common hazards. The fact that the "Big One" is perceived to be severe and its impact is unknown makes it

more difficult for the public to evaluate their ability to cope than in the case of common hazards. Furthermore, the lack of prior experience and the effect of cultural biases may also impede their coping appraisal process, resulting in a low level of preparedness. Therefore, one implication of this study is to include the need to consider cultural and social factors when assessing and managing risks.

Additional Findings: The Effects of Socio-Demographic Factors on Levels of Preparedness

The control variables of this study include sex, age, educational level, income, and homeownership status. Of these variables, the study showed that only home ownership has a significant relationship with preparedness levels. Simply put, this finding implies that renters, as opposed to homeowners, are less likely to be prepared for an earthquake, supporting the work of Moez et al. (2020). One possible explanation may be that renters may not feel responsible for the property's maintenance because they do not own it. The lack of control over the property may restrain their actions to take necessary adjustments to make their homes earthquake resistant. On the other hand, while the study found that sex, age, education, and income were not significant determinants of earthquake preparedness, these results must be interpreted cautiously. One major issue is that the study's limited sample size and sample homogeneity (where all the participants can be noted as residing in the same barangay) make it challenging to determine the relationship between other socio-demographic variables and earthquake preparedness. Nonetheless, this limitation can be addressed for future studies using a larger sample size to represent the studied population better.

CHAPTER V: CONCLUSION

CHAPTER OVERVIEW:

- This final chapter discusses the key findings, originality, and contributions of this research, as well as their implications for future research and practice. It first reiterates the study's primary research objectives, questions, and hypotheses. It then discusses the most significant findings and insights derived from the data analysis. In particular, the key results of this study demonstrate how an individual's threat assessment, coping assessment, and access to information influence the level of preparedness for the "Big One" earthquake.
- The second section of this chapter discusses the practical implications of these findings, drawing on relevant literature and theoretical framework to offer insights into their broader significance for the field of disaster risk reduction and management. The results highlight the importance of interpreting scientific evaluations of risk and communication messages in a manner that motivates households to better prepare for a major earthquake. This may involve targeting specific demographics for disaster preparedness initiatives, collaborating with multiple sectors to improve access to disaster-related information, and implementing other strategies.
- In the last section of this chapter, the author considers the study's limitations and proposes directions for future research. The section explores the potential sources of bias, the restricted sample size, and gaps in the theoretical framework and methodology. This section also offers suggestions and insights for future studies, with a focus on exploring additional socio-cultural aspects of earthquake preparedness, expanding the sample size, extending the scope of this study to other populations, and utilizing a qualitative approach to gain a more profound understanding of the meanings and experiences related to the influence of public risk perception on earthquake preparedness.

5.1 Major Findings and Conclusion

The major thrust of the present study was to help improve disaster risk communication strategies by providing decision-makers and practitioners with a better understanding of the public perception of a major earthquake risk and its effect on household preparedness. The main research question posed was *“What are the factors affecting the levels of preparedness among households in response to the anticipated “Big One” earthquake in Metro Manila?”* Although there are multitude of studies on earthquake preparedness, the novelty of this study lies in its scope on examining the role of public perception of risk on preparedness levels among a specific demographic residing directly on top of an earthquake fault, thereby offering invaluable insights for improving disaster preparedness and reducing the potential harm caused by a major earthquake.

To guide this study, the protection motivation theory (PMT) of Rogers was employed. Based on this theory, the author predicted that individual’s threat appraisal (perceived severity and perceived probability), coping appraisal (response efficacy and self-efficacy), and access to information would affect earthquake preparedness. Using ordinal regression analysis, the study revealed that several key factors play a significant role in affecting earthquake preparedness. These are perceived severity of earthquake risk, perceived probability of earthquake risk, access to information, and homeownership.

Firstly, the findings of this study suggest that the perceived level of preparedness for the "Big One" earthquake is strongly influenced by an individual's perception of the severity and probability of the risk. This is consistent with what has been found in previous studies (Ong et al. 2021; Floyd et al. 2020; Milne 2000), which claimed that an individual’s threat appraisal based on perceived severity and probability predicts preparedness levels. In simpler terms, people are more inclined to take precautions against a threat if they believe the risk is severe and likely to happen. Conversely, if they perceive the risk as trivial or unlikely to occur, they are likely to ignore it and not take any protective measures. **Secondly**, this study found that access to information positively affects the level of preparedness towards earthquake risk. This result reflects the findings of several authors (Jin, 2021; Creticos et al.,2008), who also claimed that an increase in the usage of information sources affects disaster preparedness. **Thirdly**, this study also found that home ownership predicted the participants’ level of earthquake preparedness. This finding is

consistent with that of Rostami-Moez et al. (2020) who claimed that renters are less likely to be prepared for an earthquake compared to homeowners.

On the other hand, another major finding of this study denotes that there is no correlation between an individual's coping appraisal and their level of preparedness. This finding, surprisingly, contradicts the protection motivation theory's premise that greater awareness of the need for preparedness actions (response efficacy) and confidence in executing them (self-efficacy) leads to greater preparedness. This result further challenges the common assumption that increasing coping appraisal, as a strategy for increasing preparedness levels, can be universally applied to all types of disaster. This offers a new perspective on how individual's coping appraisal affect preparedness level towards a catastrophic and unknown risk, such as the "Big One" earthquake.

Taken together, this study provides important insights into the use and limitations of PMT in understanding preparedness levels towards a major earthquake risk. The results of the study, therefore, offer important implications for disaster risk research and for the development of more effective risk communication strategies, which will be thoroughly explained in the succeeding sections.

5.2 Policy Implications and Recommendations

The findings of this study provide several practical and important implications for future risk communication strategies. Great efforts are needed to ensure that policymakers and risk communicators consider the following points when reevaluating their communication strategies in the context of a dread and unknown risk, such as the "Big One" earthquake:

1. Emphasize Threat Appraisal in Risk Communication Messages

Individual's threat appraisal, including the perceived severity and probability of earthquake risk, has been found in this study as a crucial factor influencing earthquake preparedness. It is, therefore, recommended that risk communicators integrate fear-based appeals and content, based on the severity and likelihood of a major earthquake, as a means of promoting responsible behavior in protecting individuals from the associated risks. This can be accomplished through the effective framing of risk messages. For instance, it would be helpful to use striking statements, impactful videos, or visually disturbing images to illustrate the devastating consequences of earthquakes, including loss of life, destruction of property, and the likelihood of occurrence within

the individual's lifetime. Such approaches should be incorporated in developing training programs, instructional manuals, and informational materials for earthquake preparedness.

2. Target Specific Populations

Risk communicators should focus on populations that are at greater risk or may be less likely to take preparedness measures. Since the result of this study indicated that renters exhibit a lower level of preparedness for earthquakes compared to homeowners, it is highly recommended that government entities, policymakers, and risk managers take proactive steps to address this disparity by launching targeted preparedness programs specifically aimed at renters. Such programs should aim to increase their understanding of earthquakes, educate them on the measures they can take to protect their homes, and appeal to their emotions and beliefs.

3. Develop and Implement Information Dissemination strategies.

Based on the findings that access to information increases earthquake preparedness, it is recommended that practitioners explore ways to further enhance information dissemination efforts through various channels. This can be achieved by partnering with media organizations, community groups, volunteer organizations, and local government units (such as through barangay assemblies) to disseminate information about the potential impact of the "Big One" earthquake and encourage preparedness activities. Additionally, it is essential to invest in technologies and platforms that can offer real-time information about the potential impact of the "Big One" earthquake and encourage preparedness activities. Finally, it is crucial for policymakers and disaster risk managers to regularly evaluate information dissemination strategies and make necessary adjustments as needed to guarantee that the target audience, particularly those vulnerable, has access to information that positively contributes to their preparedness.

By considering these implications, risk communication strategies can be effectively designed to further increase preparedness levels and promote public safety during earthquakes.

5.3 Limitations and Suggestions for Future Research

This study has several limitations. The first limitation is that the protection motivation theory used in this research is primarily anchored on a psychological paradigm. Thus, it could not explain the impact of socio-cultural factors on earthquake preparedness. Previous studies have shown that cultural and social factors significantly shape individuals' risk perception and preparedness behaviors. The study's limited scope in this area implies that future research should consider the influence of other variables, such as cultural biases and social norms in addition to psychological factors.

Second, while the impact of access to information on earthquake preparedness has been found significant in this study, key questions remain about whether and how associated factors, such as accuracy, timeliness, and trust in the information sources, contribute to preparedness levels. Therefore, it is highly suggested that more work is needed in this important area.

The third limitation is the small sample size, affecting the study's ability to identify the effects of other socio-demographic variables, such as sex, age, income, and education, on earthquake preparedness. A larger sample size would have allowed the study to find more accurate estimation of the impact of socio-demographic variables on preparedness. In a related manner, another limitation of this study may come from the potential population bias. Given that only the residents who live in the major subduction zone in Barangay Bagong Silangan make up the sample group denotes that the sample may perceive risks differently as opposed to other populations in Metro Manila. It is therefore recommended that one should be cautious when interpreting and generalizing the study's outcome. Nonetheless, obtaining a broader range of sample, such as extending this research in other settings like schools, offices, and commercial establishments, is also beneficial to better understand the potential impact of risk perception on earthquake preparedness in different contexts.

Finally, the methodology was purely quantitative, limiting the study's capability to delve into the underlying reasons and emotions behind why individuals have a heightened sense of risk perception towards the "Big One" earthquake and how it translates into preparedness actions. Qualitative research methods, including in-depth interviews and focus group discussions, could have offered a more profound understanding of these complex phenomena, which can extend beyond the psychological factors explored in this

study. Hence, the findings of this research can be reinforced by future studies using qualitative approaches to highlight deeper meanings and experiences surrounding the impact of public risk perception on earthquake preparedness.

Notwithstanding the abovementioned limitations, the present study represents one of the first comprehensive efforts to examine the factors affecting earthquake preparedness through the lens of protection motivation theory and in the context of the potential “Big One” earthquake in the Philippines. The findings of this study contribute to the existing limited research aimed at understanding public risk perception, improving earthquake preparedness of most vulnerable populations, and ultimately reducing the potential disaster-related consequences, such as extreme damage to properties and significant loss of life.

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APPENDICES

APPENDIX A: SURVEY QUESTIONNAIRE

CTRL No. _____



1-1, KANDA-SURAGADAI, CHIYODA-KU, TOKYO, JAPAN

Survey Questionnaire

Warm greetings!

My name is Lymuel Razon Magsino and I work as a Local Government Operations Officer at the Department of the Interior and Local Government. I am currently pursuing my Master's Degree in Public Policy at Meiji University's Graduate School of Governance Studies in Tokyo, Japan under the Project for Human Resource Development Scholarship.

As part of my research, I am investigating the public's risk perception regarding the predicted "Big One" earthquake in the Philippines. The goal of this study is to improve the government's disaster risk communication strategies and increase household preparedness.

In this regard, I kindly ask for your assistance in completing a brief survey questionnaire, which should take approximately 10 minutes. The questionnaire is divided into four parts: (a) Socio-Demographic Information, (b) Information about the "Big One" earthquake, (c) Preparedness Actions, and (d) Risk Perception. I assure you that all responses will be kept confidential and used exclusively for academic research purposes.

If you have any questions or need further information, please do not hesitate to contact me at 0915-475-4001.

Thank you in advance for your time and cooperation.

PART 1: SOCIO-DEMOGRAPHIC INFORMATION

1. What is your age? _____

2: What is your sexual orientation?

- Male
- Female
- Others

3: What is the highest level of education you have completed?

- No formal Education
- Primary Level (Elementary)
- Secondary Level (Highschool)
- Tertiary Level (College)
- Higher than Tertiary

4: Which of these categories describes your monthly income?

- Less than ₱9,520
- Between ₱9,520 to ₱21,194
- Between ₱21,194 to ₱43,828
- Between ₱43,828 to ₱76,669
- More than ₱76,669

5: Do you rent or own the place you are currently residing?

- Own
- Rent
- Others _____

PART 2: INFORMATION ABOUT THE “BIG ONE” EARTHQUAKE

6: From where do you mostly receive information about the “Big One” Earthquake?

- Television
- Radio
- Social Media (Facebook, Twitter, Instagram, etc.)
- School
- Websites
- Posters, Brochures
- Work
- Family Members
- Friends
- Local Authorities (City Government, Barangay)
- Others, please specify: _____

7. What is your preferred manner in which to receive information about the “Big One” earthquake?

- Poster / Brochure
- Public Meetings
- Radio
- Television
- Newspaper
- Internet (Website, Email, etc.)
- SMS / Text Messages
- Social Media (Facebook, Twitter, Instagram, etc.)
- Others, please specify: _____

8. What information would you like to know about the “Big One” Earthquake? (Select all that apply)

- General emergency preparedness
- Earthquake risks to my community
- Evacuation orders and procedures
- How to help vulnerable populations (*e.g. senior citizens, PWD, children*)
- Mental health implications of disaster
- Family disaster preparedness planning
- Emergency information for businesses/ organizations
- Others, please specify: _____

PART 3: EARTHQUAKE PREPAREDNESS

9. To what extent do you estimate that your family are prepared for the “Big One” earthquake?

- High
- Moderate
- Low
- Very Low

10. What steps have you taken to prepare yourself for the “Big One”? (Select all that apply)

- I have collected preparedness information.
- I have attended meetings on emergency preparedness.
- I have prepared a family emergency plan.
- I have prepared disaster survival kits.
- I have taken special training on emergency preparedness.
- I have availed home insurance for natural disasters.
- I have talked to my family about natural disasters.
- Others, please specify: _____

PART 4: RISK PERCEPTION

11. On a scale from 1 to 10, with 10 being the most afraid and 1 being the least, please circle the number that best characterizes your level of fear about the following situations.

Crime	1	2	3	4	5	6	7	8	9	10
Fire	1	2	3	4	5	6	7	8	9	10
Typhoon	1	2	3	4	5	6	7	8	9	10
Flood	1	2	3	4	5	6	7	8	9	10

The “Big One” Earthquake	1	2	3	4	5	6	7	8	9	10
Landslide	1	2	3	4	5	6	7	8	9	10
Volcanic Eruption	1	2	3	4	5	6	7	8	9	10
COVID -19	1	2	3	4	5	6	7	8	9	10

For each of the questions below, kindly circle the response that best describes how you feel about the statement, where 1 = Very Unlikely; 2= Unlikely; 3 = Likely; 4 = Very Likely.

	Very Unlikely	Unlikely	Likely	Very Likely
12. How likely do you think it is that you would be seriously affected by the “Big One” earthquake?	1	2	3	4
13. What is the possibility that the “Big One” earthquake will impact you?	1	2	3	4
14. To what extent do you believe that the recommended actions by the government will reduce your risk from the “Big One” earthquake? (see question 10)	1	2	3	4
15. To what extent do you believe that you could undertake the actions recommended by the government (see question 10)?	1	2	3	4
16. To what extent do you believe you have been exposed to information about the "Big One" earthquake?	1	2	3	4

Thank you very much for your participation.

APPENDIX B: INVITATION LETTERS



1-1, KANDA-SURAGADAI, CHIYODA-KU, TOKYO, JAPAN

10 August 2022

DR. RENATO U. SOLIDUM, JR.
Undersecretary, DOST and Officer-in-Charge, PHIVOLCS
PHIVOLCS Building, C.P Garcia Ave., Diliman, Quezon City

Subject: **Request for Interview**

Dear **DR. SOLIDUM**:

Warm greetings, sir.

My name is Lymuel Razon Magsino, and I am a student at the Meiji University Graduate School of Governance Studies in Tokyo, Japan. I am currently conducting research on public risk perception towards the "Big One" earthquake prediction in the Philippines. This study is aimed at improving government's disaster risk communication strategies and community preparedness.

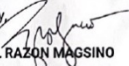
Considering your organization's expertise on mitigating disasters arising from volcanic eruptions, earthquakes, tsunami, and other related geotectonic phenomena, I would like to take this opportunity to request for an appointment / interview with you or your team at your most convenient time (preferably between August 6 - August 30, 2022).

The purpose of the interview is to learn and gain a better understanding of the government efforts to raise public awareness and preparedness towards the "Big One" earthquake prediction. The interview should not take more than an hour.

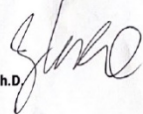
Furthermore, please be informed that participation in the interview and survey is entirely voluntary and does not pose any known or anticipated risk or issue. All information gathered will be dealt with utmost integrity and confidentiality.

Should you have further concerns or require further information, your staff may contact me at 0915-475-4001 or thru email at lragsino@gmail.com.

Your approval of this request will be highly appreciated.

Sincerely,

LYMUEL RAZON MAGSINO

Noted by:


YOSHIKI KOBAYASHI, Ph.D.
Professor



22 August 2022

Hon. Mayor Joy Belmonte
City Mayor
Quezon City

ATTN: Quezon City Disaster and Risk Reduction Management Office (QCDRRMO)

Subject: **Request for Interview**

Dear **Mayor Belmonte**:

Warm greetings, Ma'am.

My name is Lymuel Razon Magsino, and I am a student at the Meiji University Graduate School of Governance Studies in Tokyo, Japan. I am currently conducting research on public risk perception towards the "Big One" earthquake prediction in the Philippines. This study is aimed at improving government's disaster risk communication strategies and community preparedness.

Considering your important role in disaster risk reduction and management, I would like to take this opportunity to request for an appointment / interview with your QCDRRMO team at their most convenient time.

The purpose of the interview is to learn and gain a better understanding of the city government efforts to raise public awareness and preparedness towards the "Big One" earthquake prediction. The interview should not take more than an hour.

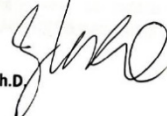
Rest assured that all the responses will be kept confidential and will be used strictly for academic research purposes only.

Should you have further concerns or require further information, your staff may contact the undersigned at 0915-475-4001 or thru email at lragsino@gmail.com.

Your approval of this request will be highly appreciated.

Sincerely,

LYMUEL RAZON MAGSINO

Noted by:

YOSHIKI KOBAYASHI, Ph.D.
Professor



1-1, KANDA-SURAGADAI, CHIYODA-KU, TOKYO, JAPAN

10 August 2022

HON. WILFREDO L. CARA

Punong Barangay
Barangay Bagong Silangan
A Bonifacio St., Barangay Bagong Silangan, Quezon City

Dear **Punong Barangay Cara**:

Warm greetings, sir.

My name is Lymuel Razon Magsino, and I am a student at the Meiji University Graduate School of Governance Studies in Tokyo, Japan. I am currently conducting research on public risk perception towards the "Big One" earthquake prediction in the Philippines. This study is aimed at improving government's disaster risk communication strategies and community preparedness.


With this, I would like to respectfully request your good office a consent allowing me to conduct survey with several randomly selected residents in your Barangay. In particular, the survey will focus on understanding the residents' attitudes, perceptions, and intention to engage in protective behavior towards natural disaster.

Furthermore, please be informed that participation in the interview and survey is entirely voluntary and does not pose any known or anticipated risk or issue. All information gathered will be dealt with utmost integrity and confidentiality.


Your approval of this request will be highly appreciated. Should you have further concerns or require further information, please contact me at 0915-475-4001.

Thank you very much.

Sincerely,


LYMUEL RAZON MAGSINO

Noted by:


YOSHIKI KOBAYASHI, Ph.D
Professor