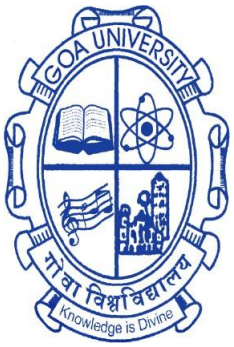
Goods and Services Tax Compliance in India with Special reference to Compliance Behaviour in the State of Goa

A THESIS SUBMITTED IN PARTIAL FULFILLMENT FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

in Commerce

IN GOA BUSINESS SCHOOL
GOA UNIVERSITY



By

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March *2026*

DECLARATION

I, Mr. Gajanan Bharat Haldankar hereby declare that this thesis entitled "Goods and Services Tax Compliance in India with Special reference to Compliance Behaviour in the State of Goa" represents work which has been carried out by me and that it has not been submitted, either in part or full, to any other University or Institution for the award of any research degree.

Place: Taleigao Plateau.
Date : Mr. Gajanan Bharat Haldankar

CERTIFICATE

I hereby certify that the above Declaration of the candidate, Mr. Gajanan Bharat Haldankar is true and the work was carried out under my supervision.

Prof. Santosh Patkar
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Mr. Gajanan Bharat Haldankar

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Chapter 1
Introduction

1.1 Background of the study

Taxation has generally been accepted to be one of the most essential instruments that the governments employ to generate financial resources to support the socio-economic growth. As Salami (2011) stated that tax is a significant and readily available in the form of revenue because the state has inherent authorities to impose and collect tax. A working tax system is a key factor that makes welfare of people easy, supports infrastructure and supports the delivery of required services such as education, healthcare and social security (Surugiu et al., 2021; Amonkar et al., 2024). The taxation system adopted worldwide involves a mix of both the progressive direct taxation such as the income taxation and the company tax as well as the regressive indirect taxation such as the sales tax, the value added tax (VAT) and the excise duties (Muduli et al., 2022; Salim et al., 2019). On the contrary, where direct taxes are remitted by individuals or other organizations directly based on income or profit, indirect taxes are remitted on consumption, which at the end of the day are paid by the end consumer through businesses. Most modern economies use a mix of both forms of tax such that the equilibrium, effectiveness as well as administrative viability is achieved.

A significant shift towards indirect forms of tax has been observed in the world over in the recent decades, particularly the creation of Goods and Services Tax (GST) or VAT. Since then, GST was introduced and since the year 1954 more than 160 countries adopted it as a way of standardizing fragmented tax systems, eliminating cascading impact of taxation, increasing transparency and improving compliance (Garg et al., 2023). GST has been celebrated as a neutral tax, simple tax and the fact that it is able to incorporate the tax base by taxing consumption rather than incomes. India

followed the international trend, as it introduced its variant of GST on 1st July 2017, becoming one of the most radical and significant changes in taxation in its post-independent history (Kir, 2021). Indian GST replaced a number of indirect duties, including excise duty, service tax, VAT, octroi and custom duties, with a single and transparent tax system (Kumar and Babu, 2018; Debnath, 2019). The economic integration, reduction of tax evasion, reduction of compliance costs and simplification of conducting business were the key objectives of the GST implementation (Sandhu and Atwal, 2019). Since its establishment, GST has contributed a lot to the mobilisation of revenue. In the 2023-24 financial year, the gross GST collection was ₹ 20.18 trillion (approximately USD 246.10 billion) and the highest monthly collection was ₹ 2.10 trillion in the month of April 2024 with an increase of 12.4% compared to the same period (Aulakh, 2024; Ministry of Finance, 2024). This act shows the heightened reliance on an indirect tax in India and the centrality of GST in the finances.

System of tax effectiveness however does not solely depend on how the tax system is designed but also the level of compliance on the part of the taxpayer. Tax compliance can be defined as the degree to which taxpayers make their payments as required by the law and not under the coercive methodology (James and Alley, 2002). In this case, GST compliance is applicable in regards to filing of returns within the stipulated times, appropriate calculation of tax and appropriate record keeping as required by law. Despite the fact that, GST is structurally sound, the issue of compliance still is a significant one on both a global and an Indian level. The issues of non-compliance, evasion and fraud continue to be a persistent challenge among the nations of the entire world, including the developed economies (Liang et al., 2019; Abdu and Adem, 2023). The problems of the country are made worse by the federal nature of the country, socio-economic diversity, digital divide and informal sector. The complexity of the GST laws, the need to engage the services of tax professionals and policy changes can be extremely challenging to small and medium enterprises (SMEs) in particular (Maheshwari and Mani, 2022).

India consists of 28 States and 8 Union Territories (UTs) each of them has got its own demographic, economic and administrative features.

GST compliance has a regional difference because of the difference in tax morale, digital preparedness, informalities in business and taxpayer education (Mondal et al., 2023). Hence, the need to study the differences in compliance behaviour regionally exists irresistibly. This will help policy makers to develop region specific tax administration methods and assistance mechanisms. The State of Goa in this respect provides a very relevant case study on which to focus the behavioural study. The key sources of impact on the economy of Goa are tourism, trade and micro, small and medium enterprises (MSMEs). The informal sector in state and prevalence rate of seasonal and service-based jobs are also high. But there has been a lack of research to understand the perception of GST compliance requirements and reactions of business in Goa with respect to their tendencies to behave, the reliance on consultants and utilisation of digital platforms. Tax compliance is not merely an administrative process, but a behavioural process, which is determined by a host of psychological and other contextual factors. The Deterrence Theory (fear of punishment), Institutional Trust (belief in governmental systems) and Cost-Benefit Analysis (benefits of compliance and non-compliance) are various theoretical models that provide useful information on how and why taxpayers make their decisions to comply or not (Alm & Torgler, 2011). The experience of these sources of behaviour especially within the Indian environment is critical in the formulation of the working policies and outreach programmes.

Despite the existing number of studies, that have been conducted to explore the aspect of tax compliance with regard to the legal, administrative or structural angle, the gap of empirical studies that explore the behavioural side of micro level GST compliance still exists. Moreover, existing literature is inclined to believe that India is a homogenous tax jurisdiction which does not take into account the differences in regions. There is little research on how such variables mediate between compliance behaviour, particularly that of newly introduced tax regimes like GST and the variables of tax morale, trust in government, costs of compliance and complexity. This study is therefore timely and required. It is targeted at examining the level of GST compliance on all the states and Union

territories (UTs) on the Indian continent by the use of the secondary data and at the same time, the deep-dive on economic and non-economic predictors of compliance behaviour among the GST-registered businesses in Goa, by the use of primary data collection. This two-fold approach not only helps to quantify the GST compliance inclinations at a national level but also provides a less obtrusive and context-centric data on the action of the taxpayers thereby substantiating the literature base and helping the policymakers to come up with more impactful, all-encompassing and beneficial tax-policies.

1.2 Problem statement

Tax compliance is a complex issue in the world, which both developed and emerging economies continue to grapple with in today's world. Although taxation is one of the pillars of funding of the public good and macroeconomic stability, adherence to taxation laws, especially in the indirect tax system, has manifested in an inconsistent and unforeseeable manner (Liang et al., 2019; Abdu and Adem, 2023). Governments in the world have realised the fact that tax compliance is not only an issue of enforcement but also it is entrenched in behavioural, structural and institutional contexts. This has not been realized yet despite the introduction of digital tax systems and simplification measures which make high voluntary compliance elusive. Under indirect taxation, GST (Goods and Services Tax) and VAT (Value Added Tax) have been internationally accepted as effective and contemporary tax systems, which have been used to integrate markets, eliminate cascading taxation effects and to expand the tax base. Nevertheless, experiences across a number of countries show that GST/VAT systems are not resistant to compliance related challenges. A lack of filing, fraudulent invoicing, incorrect reporting and problematic record-keeping remain some of these issues that erode the potential of such systems (Garg et al., 2023). What makes the issue even more serious is that the current literature in the area of tax compliance has been largely devoted to direct taxes in the past and that little to no effort has been put into the compliance behaviour with indirect taxes systems, particularly on the

business level. This has established an empirical and concept gap in learning how business reacts to GST-specific requirements.

India being one of the most populous and diversified countries in the world brought forward GST on 1st July 2017 in a historic indirect tax overhaul into the country which aims to harmonize its fragmented taxation system, ease of doing business and revenue collection. Although the system has demonstrated to bring more revenue and enhance digitisation in administration of taxes the behavioural pattern of compliance among entities registered under GST is not consistent. The 28 States and 8 Union Territories (UTs) in the country are very diverse in areas of digital preparedness, taxpayer education, business informality, and administrative infrastructure (Mondal et al., 2023). This is varied due to many factors. The compliance behaviour of small and medium-sized businesses (SMEs) and traders is often influenced by frequent changes in policies, technical failures in the GST portal, a lack of awareness among small taxpayers and the trust that they place in external tax consultants. Although the GST statistics at the national level provide significant information on the aggregate trends of compliance, they tend to obscure the fact that the behaviour and structural issues of taxpayer in various locations are different. More to the point, the existing literature rarely goes into micro-level or behavioural factors of GST compliance and there is a general lack of studies that examine the interaction between psychological and non-economic determinants and economic variables to determine how such variables impact compliance decisions.

Moreover, very little is known about the influence of compliance behaviour at the business level particularly, in small states such as Goa, with its distinct economic framework that operates on tourism, the retail business and the micro-enterprise. The informality, seasonality of income and dominance of unorganised operations make Goa a unique and under researched location as far as GST compliance is concerned. There is a paucity of research on how firms in those areas interpret and react to the changing GST framework, how institutional trust, audit fear and perceptions of complexity and moral attitudes affect their compliance behaviour. Another gap that is evident in the literature is the absence of

empirical analysis of the mediating variables like tax morale, trust in government, complexity of taxes and the cost of compliance in influencing compliance behaviour in the context of GST. These constructs are extensively covered in the world literature but the use of the constructs in the Indian GST context is still limited and sporadic in nature with majority of the studies addressing individual variables or administrative viewpoints. Integration of behavioural theories, e.g. deterrence theory or institutional theory, is also limited in explaining compliance behaviour in relation to the Indian GST regime. It is against this background that the current research finds a two-fold research problem: At a national level, there is the need to determine and compare the GST compliance patterns in the various states and Union territories (UTs) in India using sound secondary data to understand the differences that exist in tax compliance among the various demographic and economical conditions. On the regional scale, there is an urgent need to perform in-depth behavioural research on the topic of GST compliance among Goan businesses and how both economic (e.g., compliance costs, tax rate) and non-economic (e.g., tax morale, trust) variables affect compliance behaviour.

This type of multi-layered investigation is essential to produce subtle data, which can support policy changes, increase the level of voluntary norm adherence and improve the overall effectiveness of the GST system in India.

1.3 Research questions

In order to gain a comprehensive insight into the dynamics of GST compliance in India, it is critical to explore the macro degree of regional differences and micro-degree behavioural determinants. In line with this, the following research questions will be addressed throughout this research as they investigate variances in compliance behaviour by states and Union territories (UTs) in India, determine the impact of important economic and non-economic variables and evaluate the mediating aspect of the selected behavioural variables in GST compliance by businesses in Goa. Based on the considerations, the following research questions are developed to be

used in this study.

RQ 1: Does Goods and Services Tax (GST) compliance behaviour differ among businesses across different States and Union Territories (UTs) in India?

RQ 2: What are the economic and non-economic factors that influence tax compliance behaviour among GST-registered businesses in Goa?

RQ 3: Does tax morale, trust in government, tax compliance cost and tax complexity mediate the relationship between select economic and non-economic factors and tax compliance behaviour among GST-registered businesses in Goa?

1.4 Research Objectives

The overall objective of the current research is to evaluate patterns and determinants of the Goods and Services Tax (GST) compliance in India, specifically on the compliance behaviour of businesses in Goa. The following objectives are used to guide the research to fulfill both national and regional perspectives. These aims also examine population variation of compliance among Indian states and Union territories (UTs), examine the role of different economic and non-economic variables in taxpayer behaviour and assess the mediating variable of important behavioural constructs with GST compliance. According to these considerations, the particular objectives of the study are the following:

RO1: To evaluate Goods and Services Tax Compliance of businesses across all States and Union territories (UTs) of India.

The sub objectives are

- To investigate GST compliance behaviour among large population States in India.
- To study GST compliance behaviour among medium population States and Union Territories (UTs) in India.
- To analyze GST compliance behaviour among low population States and Union Territories (UTs) in India.

- To compare GST compliance patterns among large, medium and low population States and Union Territories (UTs) in India.

RO2: To examine the influence of economic and non-economic factors on tax compliance behaviour among GST-registered businesses in Goa.

RO3: To explore the mediating role of tax morale, trust in government, tax compliance cost and tax complexity on tax compliance behaviour among GST-registered businesses in Goa.

1.5 Study significance

The present research is adding value to the theoretical and practical perspectives of the discipline of public finance, tax administration and behavioural economics. Its importance can be described on the three levels: theoretical, methodological and practical.

To begin with, the study fills a serious research gap by concentrating in the study of the GST compliance behaviour that is a somewhat unexploited field in the Indian context. To a large extent, the current body of work on tax compliance in India has traditionally focused on direct taxes like income or corporate tax and little scholarly focus has been given to the compliance under the indirect taxes like GST. The combination of economic variables with behavioural variables will make this research go beyond traditional legal or administrative research to provide a behavioural holistic picture of taxpayer compliance. This aids in the development of behavioural economics of taxation in that compliance is not only achieved by deterrence, but also by trust, fairness perceptions and psychological motivation.

Second, the research design is valuable due to its two-level research. On a macro level, it offers a comparative evaluation seemingly unmatched of GST compliance trends in India in terms of its 28 States and 8 Union Territories (UTs) by categorizing them into large, medium and low population groups. Such categorization gives empirical data of the differences between regions, which has been obscured by the aggregate data at the national level. On micro level, the research will bring some new

knowledge through examining compliance behaviour within businesses within Goa, an informal and seasonal employment, service-based state. This is the two-level method that enables the research to identify the institutional differences (between regions) and behavioural differences (at the business level), which makes the methodology of the research on tax compliance more comprehensive.

Third, the research has a significant methodological contribution as it tests the mediating value of the key behavioural constructs, including tax morale, trust in government, tax compliance cost and tax complexity, in compliance behaviour. Though these constructs have been well-known in the study of international tax compliance, little empirical use of the constructs in the context of the Indian GST regime has been conducted. The incorporation of them into a structural model and their mediating effects allows the study to contribute to the evolution of behavioural models of compliance in emerging economies and it shows how indirect links (e.g., trust - morale - compliance) may be as significant as direct links.

Finally, the research has a good policy implication. It will help policymakers, tax authorities and professional bodies by presenting practical recommendations by determining both the economic and behavioural factors that can determine GST compliance. At the national level, the macro analysis explicates the differences in compliance in the region providing empirical guideline to support why the varied compliance approaches are not only appropriate in various state groups based on population demographics. Regional level Goa-based analysis allows understanding the compliance pressures to MSMEs and service-oriented firms and tourism-related businesses-areas, which frequently feature poorly in policy discussions. Such findings can be used to inform taxpayer education programmes, streamline digital platforms and SME-supporting mechanisms. In addition, the study by emphasizing the importance of trust in government and tax morale raises the need to develop institutional credibility and transparency coupled with enforcement in an effort to attain sustainable voluntary compliance.

Outside India, the results can be compared to other developing and federal economies that are either applying or adapting GST/VAT

mechanisms. The experience of India, especially the role of behavioural and institutional factors in a diverse economy, can teach how compliance strategies can be applied in other similar settings around the world.

1.6 Scope of the study

The research area of this study includes macro and micro level of the Goods and Services tax (GST) compliance in India hence encompassing a general comparative study with a narrow behavioural research study. This two-facet model will enable the study to both capture country trends in compliance in varying states and Union Territories as well as to enable in-depth coverage of business-level compliance behaviour in a localised setting.

Jurisdictionally, the study measures the GST compliance behaviour based on second hand data, all of the 28 States and 8 Union Territories (UTs) of India. The data used to make the analysis is monthly filing of GSTR-3B returns between 2017 and 2024 which allows to conduct a systematic analysis of compliance through time. The States and Union Territories are grouped into large, medium and low population states in order to offer meaningful comparisons and thus, the heterogeneity of the demographics. This category makes sure that institutional, infrastructural and socio-economic variance are put into consideration when explaining the patterns of compliance. The research approach, which takes a comparative approach, helps to learn more about the differences in compliance across regions and sheds light on whether the implementation of a GST has been successful in reaching uniformity across the federal system of India. Significantly, macro-level is narrowed down to secondary data analysis and does not imply direct contact with taxpayers in all the states.

On the micro level, the current research takes the behavioural perspective in studying GST compliance among registered businesses in the State of Goa, using a primary data obtained based on a structured survey. The regional focus is Goa since it has a unique economic profile in that it is a service-based economy and highly relies on tourism, trade, and micro,

small, and medium enterprises (MSMEs). Most of these businesses operate in and around the informal sector setting and compliance behaviour is particularly complicated. The research focuses on the impact of both economic (e.g., Tax penalties & Fines, Audit probability, Tax rates, Tax compliance cost, financial constraints) and non-economic factors (e.g., Tax morale, Trust in Government, Tax complexity, Digital payments, Tax awareness) on the compliance behaviour. This two-fold interest guarantees that the structural as well as the behavioural aspect is put in place in the analysis in a systematic manner.

Moreover, it goes as far as analysis of mediating variables, such as governmental trust, tax morale, cost of compliance with taxes, and tax complexity. These mediators are evaluated to assess how reliant they are in forming the connection between economic and non-economic determinants and the actual compliance behaviour. This emphasis on mediation contributes to explanatory richness to the study because it reveals the indirect routes which affect compliance and not just merely direct cause and effect.

Geographically, the main data collection is confined to the GST registered businesses in Goa and not to the unregistered enterprises, households and other states in India. Thematically, the scope does not cover legal drafting or interpretation of the GST Act per se but rather it covers compliance behaviour as it occurs through filing practices, tax morale and taxpayer perceptions. In methodology, the study is limited to quantitative analysis, based on descriptive statistics, non-parametric tests and complex structural equation modelling methods; it does not involve qualitative dimensions of approach, which can be in-depth interviews or case studies.

The results are supposed to have a practical use to tax administrators and policy makers in the central and state levels. The scope at the national level identifies regional differences and institutional gaps and these can be used to inform the differentiated strategies in compliance in large, medium, and low population states. The Goa-specific analysis helps at the regional level to gain knowledge on the compliance issues of service-oriented and SME-led economies and allows the policymakers to create specific education, support and digitalisation programs.

1.7 Contribution of the study

This work has several unique and substantial contributions to the literature on tax compliance and especially in the framework of Goods and Services Tax regime in India. The contributions cover both theoretical, empirical, methodological and policy fields, thus deepening into the knowledge of academia and practical policymaking.

To begin with, the research is one of the first and the most detailed studies of GST compliance behaviour in India. Although most of the current studies in the area of taxation has long been focused on direct levies like personal income tax and corporate tax, indirect tax compliance, especially using GST framework, is relatively unexplored. Filling such a gap, the study will add to the variety of literature on tax compliance and illuminate the dynamics of an indirect tax system that is at the heart of the Indian fiscal system. This novelty is especially significant because GST remains a fairly new tax system, which was implemented in 2017 and still remains in development regarding law, enforcement and taxpayer behaviour.

Second, the study contributes to the methodology of the study by incorporating both secondary and primary sources of data. On a national level, it assesses GST compliance in all 28 States and 8 Union Territories (UTs) based on monthly data on the available return-filing (GSTR-3B) data for 2017-2024. This is the most extensive evaluation of compliance patterns in India that is possible using this dataset. The study introduces institutional and infrastructural differences that have never been effectively analysed in previous literature by categorising States and UTs based on the level of population (large, medium, and low). At the regional level, the research gathers first-hand survey information of GST-registered companies in Goa, thus giving a micro-level of behavioural outlook. It is a two-level structure that plugs the gap between macro-compliance trends and firm-level behavioural understanding, providing an attribute of research in tax compliance that is unheard of in terms of breadth and depth.

Third, the study is valuable as it focuses on the behavioural determinants of GST compliance, an aspect that is very easily neglected in

policy-based or administrative analyses. In particular, it investigates the effect of not only the economic (e.g., Tax penalties & Fines, Audit probability, Tax rates, Tax compliance cost, financial constraints) but also the non-economic (e.g., Tax morale, Trust in Government, Tax complexity, Digital payments, Tax awareness) factors. The integration of the two areas answers the increased academic urge to adopt an integrative approach to taxpayer behaviour that does not only focus on financial values but also psychological, institutional and moral factors.

Fourth, the research contributes to the theoretical insights into understanding the mediating role of key variables, e.g., tax morale, government trust, tax complexity, compliance cost, between the more determinative variables and compliance behaviour. This mediation analysis is more than the classical deterrence paradigm, which is mainly focused on sanctions and punishment. Rather it puts into focus the insidious but mighty nature of the behavioural constructions in achievement of compliance, thus adding to the behavioural economics of taxation.

Fifth, the research proposes and empirically verifies the presence of financial constraints and digital adoption as the explanatory variables in the GST compliance scenario. These constructs are mostly overlooked or under researched in indirect tax literature but they are very applicable in a fast-digitising economy such as India. Money has impact on how a firm can invest in compliance and digital adoption impacts on record-keeping, transparency and filing returns easily. Through these two dimensions, the research presents not only a new contribution but also is in line with the modern discourse of financial inclusion, digitisation and taxation administration in the emerging economies.

Sixth, the research contributes to the theoretical discussion on tax compliance through the multi-theoretical approach. Most of the existing studies use Deterrence Theory only, whereas this study adopts a combination of several perspectives, such as Deterrence Theory, Social Exchange Theory, Attribution Theory and Institutional Theory. This type of integration will enable one to have a more complete picture in compliance behaviour within the Indian GST environment. As an illustration, the Deterrence Theory describes compliance in terms of fear of punishment,

the social Exchange Theory describes compliance or non-compliance in terms of reciprocal relationships between taxpayers and the state, Attribution Theory describes how businesses give meaning to their compliance or non-compliance behaviour, and Institutional Theory describes the contribution of trust and legitimacy and norms in influencing behaviour. The integration of these views makes the study even more detailed and multi-dimensional in the explanation of compliance behaviour.

Seventh, the research has policy and administration implications. Its dual level structure (national and regional) produces the results that are directly applicable to the GST Council, State Governments and tax administrators. The national level of comparative analysis of compliance among population-based groups of states identifies institutional bottlenecks and regional disparities that must be differentiated in policy interventions. Regionally, the behavioural perspectives of Goa sheds light on how SMEs and service-based business are subjected to compliance burdens thus allowing policymakers to develop support systems, taxpayer education programmes and enhancement of digital infrastructure.

Lastly, the study has added to the emerging body of emerging economy tax compliance literature and India serves as a significant source of reference to the other developing countries, either implementing or reforming GST/VAT systems. The experiences of India based on its federal, plural and digitising environment have broader generalisation in other multi-jurisdictional or transitional economies with similar compliance issues

1.8 Structure of the thesis

The thesis is structured into five chapters, which discuss a particular aspect of the research process to make the presentation of the study clear and coherent.

Chapter 1: Introduction

This chapter presents a comprehensive introduction to the study by presenting the background and context upon which the research is built. It articulates the research problem and defines the research questions and

objectives guiding the research investigation. Furthermore, the chapters highlight the significance of the research, outlines the scope and contributions of the study. Finaly, it describes the overall structure and organisation of the thesis.

Chapter 2: Review of Literature

This chapter synthesises existing national and international research on tax compliance. Furthermore, using the TCM framework, it systematically reviews GST related studies in India. It introduces the important theoretical frameworks that underpin the study's hypotheses. Additionally, the chapter reviews the major factors influencing GST compliance, highlights the research gaps to be addressed and presents the conceptual framework guiding the study.

Chapter 3: Research Methodology

This chapter presents a detailed account of the research methodology utilised in the study. First it outlines the research design and data analysis procedure for objective 1. This is followed by research design and data analysis procedure for objective 2 and 3. Additionally, it explains the development and validation of questionnaire for the study including face validity, content validity and pilot testing. The chapter also elaborates the analytical tools used, including Kruskal Wallis test, Structural Equation Modelling (SEM), IPMA and NCA.

Chapter 4: Data Analysis and Results

This chapter presents the detail analysis of the data collected for the study. It begins with data analysis and results of objective 1, including descriptive statistics and Kruskal Wallis analysis. This is followed by objective 2 and 3 analysis and results encompassing preliminary analysis of primary data. The chapter than proceeds with SEM analysis which includes measurement model assessment and structural model assessments. Additionally, the chapter details the results of mediation analysis, Importance-Performance Map Analysis (IPMA) and Necessary Condition Analysis (NCA) providing an in-depth analysis.

Chapter 5: Findings, Implications and Conclusion

This chapter presents the objective wise findings and provides an in-depth discussion of the results in light of the theoretical framework and empirical evidence. Furthermore, it elaborates theoretical implications and practical implications of the study, demonstrating the study's contributions to both academic literature and tax authorities. This is followed by conclusion of the study. At last, the chapter addresses the study's limitations and directions for future research.

Chapter 2
Review of literature

2.1 Introduction

The current chapter is a review of the available literature on the topic of tax compliance starting with the studies conducted in the global context and then moving to those studies involving Goods and Services Tax (GST) in the context of India. An in-depth review is done to get the idea of the development of concepts, the theoretical basis and the empirical data on tax compliance on the global perspective as well as in the context of India. The chapter is divided into various parts to make it systematic. It starts with the narrative review of studies on tax compliance which had been carried out in the world and proceeds with the systematic review of studies specifically aimed on the GST studies within the Indian context. Subsequent to this, the theoretical backgrounds that underpin the study are addressed in detail that are Institutional Theory, Social Exchange Theory, Attribution Theory and the Deterrence Theory, which together is used to explain the formulation of the study hypotheses. The literature, in its turn, is used to find the research gaps and thus define the necessity and justification of the current study. Several hypotheses are developed based on the theoretical insights and the gaps in the empirical evidence to each objective of the research. The chapter is followed by the hypothetical model proposed according to which the further empirical analysis would be conducted.

2.2 Review of Tax Compliance and GST studies

2.2.1 Tax compliance studies

A game-theoretic model of tax compliance behaviour in Jamaica was used by Alm et al. (1993). They estimated the determinants of audit selection and individual underreporting using unique micro-level data derived using audited and random tax returns. Their findings greatly

suggested that the audience of the audits was not randomly chosen, which produces empirical evidence of strategic audit behaviour. The likelihood and amount of underreporting was observed to be positively dependent on both income and marginal tax rates whereas payroll tax benefits minimized the possibility of evasion. Although these relationship existed, the underreporting elasticities were not very large which implies that taxpayers were not very responsive to changes in the policy. This study was significant in demonstrating the compliance as a sequential interaction between tax payers and tax authority and this study has made a significant contribution to the process of understanding tax behaviour in developing economies.

According to the research conducted by Alm et al. (1993), compliance as an endogenous rule under audit selection has been investigated through laboratory experiments. These rules ensured that audit probability also depended on the reporting behaviour by the taxpayers unlike random audits since it made the environment more strategic. The research discovered that endogenous audits had a higher level of compliance than random selection. Further, reputational effects were also realized with detection in one period leading to compliance in subsequent periods. The laboratory design enabled researchers to approximate taxpayer and tax authority relationships in a controlled environment and introduce new understanding on the effects of audit institutions on behaviour. Their results highlighted the importance of strategic design of enforcement in enhancing compliance results.

Slemrod and Blumenthal (1996) carried out a massive survey of 1,329 American corporations in order to estimate the cost of compliance of income taxation. They stated that the average expenditure per firm was about 1.565 million annually, which amounted to over 2 billion in the country. State taxes were also comparatively more expensive to comply with than federal taxes, mainly due to the issue of non-uniform state systems. Respondents identified that Tax Reform Act of 1986 had significantly become difficult especially on the alternative minimum tax, inventory capitalization and foreign source income. The results indicated that compliance expenses were a major burden on companies and that there

was a conflict between complexity and efficiency in designing taxes. The present work can still be considered as one of the most referred empirical approximations of the costs of business compliance.

One of the most influential literature reviews applied to tax compliance was given by Andreoni et al. (1998). Evaluating theoretical, empirical and experimental literature, they found out that the compliance could not be described using deterrence models of audit and penalties. Other variables like tax morale, perceived fairness, institutional trust and social norms were important in determining taxpayer behaviour. The other aspect that was focused in the review is the size of the U.S. tax gap as well as the measurement problems. Notably, the authors incorporated the opinions of economics, law, psychology and sociology, which made the study a multidisciplinary standard. Their development established the background of the expansion of the research on tax compliance beyond the economic paradigm.

In a controlled field study in Minnesota et al. (2001) examined the effectiveness of normative appeals in inducing compliance. Letters with emphasis laid on civic duty or fairness were sent to taxpayers and no letter sent to a control group. The authors used a difference-in-difference method to measure the changes in reported income and taxes paid. The results indicated that there was not much overall impact of normative appeals but some subgroups experienced slight behavioural changes. The researchers came to the conclusion that the low-cost and mail-based persuasion techniques could not have a significant impact on compliance in comparison with such deterrence techniques as audits. The experiment offered uncommon field-based information on the extent of moral suasion in tax administration.

Torgler (2002) enhanced the scope of research on compliance by exploring the topic of tax morale using experimental data. In his analysis, he highlighted that the level of enforcement in the majority of the countries was too low to be able to attribute high compliance to deterrence terms only. Rather, he theorized that compliance was motivated by extrinsic reasons such as moral duty, equity and trust in the government. The research differentiated compliance as a rational computation and as a

cultural and moral behaviour and changed the theoretical prism through which the study of tax behaviour is carried out. Torgler made a significant contribution by combining the psychological and institutional aspects to support the argument on multidisciplinary approaches to tax compliance.

Alm and McKee (2004) modeled the tax compliance as a coordination game by using laboratory experiments. They discussed cases of audits being caused by nonconformance to normal reporting and not being randomly chosen. Findings indicated that taxpayers tend to collude in underreporting and may be discouraged through audit rule changes. Surprisingly, the compliance also increased with no increase in the audit rate and this indicates that the design of the audit was more significant than the frequency. The work has enhanced the insight on compliance as an interactive and dynamic process as a result of both taxpayer coordination and tax authority strategies.

Torgler (2004) compared cross-cultural disparities in tax morale between both Costa Rica and Switzerland using both field surveys as well as experiments. The researchers discovered the Swiss taxpayers had better tax morale, which was, in large part, due to better social norms and institutional trust. He distinguished between internal (individual moral standards) and external (recognition of governmental fairness and quality of services) norms. The results indicated that cultural and institutional contexts were very important to the outcomes of compliance. This study was among the first to demonstrate at a systematic level the way in which tax morale varies between nations contradicting the generality of deterrence-sensitive models.

The study by Kim (2005) investigated how audit misperceptions and uncertainty affect compliance. His theoretical framework had taken into consideration taxpayer bias in estimating audit risk and showed how uncertainty might affect audit compliance. In the study, it was found out that the introduction of a little randomness in the audits would result in a distinct equilibrium whereby evasion was minimized. Notably, the discussion revealed that it was not possible and even desirable to remove all uncertainty because uncertainty might also be used as a policy instrument. This view expanded the literature of enforcement by adopting behavioural

misperceptions under the compliance theory.

The pioneer work reporting on the costs of corporate tax compliance in India was for a postal survey of 45 firms as published by Das-Gupta (2006). The findings approximated the cost of compliance of between 5.6% to 14.5% of corporate tax incomes. The smaller companies had to shoulder significantly bigger expenses, whereas far-reaching dependence on outside consultants and extended litigation only increased the expenses. The research also indicated that the compliance costs in India were retrogressive in nature with smaller business being affected more than the larger businesses. Although the methods of this study and the response rate were limited like in the cases of low response rates, this groundbreaking study provided a lot of insight on the Indian tax system and formed a foundation on future reforms, such as the establishment of GST.

Kirchler et al. (2006) examined how common subjective perceptions between taxpayers and tax officers influence compliance behaviour in Australia. The researchers had used 292 compliant taxpayers, 547 non-compliant taxpayers as identified by the Australian Tax Office and 358 officers who dealt directly with taxpayers. The results indicated that common beliefs about the complexity of tax laws, distributive fairness, ethics, government attitudes led to the increased willingness to cooperate. More notably, the research brought out that the compliance was mediated by perceptions of procedural fairness and the quality of taxpayer-authority interaction. This piece of work contributed to the field of study by going beyond the feature of deterring in order to show that tax compliance also consists of mutual trust as well as shared representations of taxation.

Maciejovsky et al. (2007) studied the dynamics of compliance using experimental studies, which entailed the influence of the audits and sanctions with time. They found that compliance tended to lower at once, following an audit, a trend which they termed as the bomb crater effect. This was explained by the fact that taxpayers erroneously conceived of having a lot of luck, similar to the fallacy of the gambler, where people believed that they were unlikely to have their audits replicated shortly after doing one. Sanctions were not as powerful, but occasionally precipitated compensatory behaviour, with taxpayers becoming more evasive to gain

losses. The experiment has shown that compliance is not fixed but influenced by psychological preferences and behavioural changes that occur after the enforcement interventions.

A special issue on tax compliance and policy was published by Torgler (2008). The author has highlighted how complicated compliance is and how the puzzle of compliance, as it is based on the theory of deterrence, entails that compliance is significantly greater than it would be based on the deterrence theory alone. He reasoned that social norms, morale of tax paying and trust in institutions are very important explanations. The problem featured the research on simplification, legitimacy of state institutions and more general political and cultural factors of compliance. The generalisation of the field offered by Torgler concentrated on the necessity to shift to a multidimensional focus that brings together the behavioural and institutional insight to the field of deterrence.

In the study, the efficacy of information framing in tax compliance was examined by Holler et al. (2008) through the regulatory focus theory. They experimented in two studies on the interaction between messages framed on the possible benefits of compliance and the possible costs of non-compliance with regulatory focus among taxpayers (promotion vs. prevention). The findings indicated that compliance was enhanced in the regulatory fit conditions i.e. when the framing was more appropriate to the motivation orientation amongst individuals. The results indicated that information campaigns have to be effectively customized to psychological dispositions so that they can be most effective. This study has diversified the arsenal of compliance tools because it has connected the framing of communication with behavioural economics.

In a cross-national survey (Hard-Earned Income and Tax Compliance) carried out by Muehlbacher et al. (2008) in eight countries, the authors found out that the source of income does not affect the willingness to comply. The results also revealed that there were more adherents to income viewed as hard-earned in comparison to windfalls or unearned gains. This tendency has been strong in very varied cultural and institutional settings that the ideas of fairness and legitimacy are a powerful

mediator of compliance. The paper has highlighted the psychological basis of tax behaviour, substantiated by the fact that the character of income determines moral judgments on the issue of paying taxes.

In their argument on tax compliance, Kirchler et al. (2008) generated the powerful slipery slope model. They claimed that compliance is based on two dimensions, namely power of authorities and trust in authorities. Power in the absence of trust results in a situation of forced compliance and trust in the absence of power results in voluntary compliance. The climate of synergy in taxation needs to have a mix of the two to encourage collaboration and not a confrontation between the taxpayers and the governments. This framework combined enforcement and trust, providing a dual-pathway strategy to enhance compliance to policymakers by combining the models of deterrence by economics with psychological and institutional views.

The group engagement model was used to study the connection between procedural fairness and compliance (Hartner et al., 2008). The researchers established that just and respectful treatment by tax collecting agencies stimulated motivational deferential postures whereas unfair treatment stimulated defiance and resistance. The national identity mediated this relationship in part, which supports the suggestion that legitimacy and fairness are critical components in compliance choices. What is intriguing is that although fairness influenced attitudes and intentions it was only defiant postures that had significant effect on real non-compliance. The research has emphasized that responsive regulation which involves persuasion and fairness should come before coercion.

Cummings et al. (2009) explored the differences in tax morale between Botswana and South Africa through surveys and artefactual field experiments. Although the two countries were geographically close, their compliance behaviours were greatly contrasting considering there were differences in the history of governance. The researchers affirmed that good governance and institutional trust increased the level of compliance, even when the policies of enforcing the compliance were similar. Notably, they demonstrated that enforcement mechanisms had more success with increased tax morale. This study presented a strong feeling that compliance

is inherent in political norms and quality of governance rather than enforcement.

Kastlinger et al., (2009) undertook laboratory experimentation to determine audit sequence effects on compliance. They discovered that post-audit compliance tended to decline as was expected in regard to the misperception of chance effect, although preliminary audits in the tax life of a taxpayer augmented compliance in the long run. On the other hand, extended audit-free posts decreased compliance, but a single extra audit has the ability to revert cooperative behaviour. The paper implied that it is possible that timing and sequencing of audits are as crucial as the frequency of audits, a suggestion that is of practical use to tax administrations in the development of enforcement policies.

Alm and Yunus (2009) examined spatiality and persistence based on income tax compliance at the state level on the basis of state panel data in the period of 1979 to 1997. They have discovered that there was strong evidence that the compliance decisions are affected by past experiences (persisting) as well as by the behaviour of other taxpayers (spatiality). When audit rate was higher, the level of compliance was high, but the level of social norms and information sharing amongst taxpayers influenced behaviour as well. The paper expanded the concept of compliance by demonstrating that it is not a vacuumed decision, but rather one that exists within social and time frames. The findings supported the rationale of paying attention to peer effects and long-term behavioural changes in compliance policy.

Muehlbacher and Kirchler (2010) gave a conceptual enhancement of the slippery slope model of tax compliance that differentiates voluntary compliance and compulsory compliance. They claimed voluntary compliance is through trust on tax authorities whereas enforced compliance is guided by the power of authorities. The article pointed out that the two components are interconnected in influencing tax behaviour in that no single factor, be it deterrence or trust can be applied to explain seen compliance. Their synthesis of psychological and economic literature presented a straight forward theoretical model that could inform empirical research and policy discussions on the construction of balanced strategies

of compliance.

One of the empirical tests of the slippery slope framework was done by Wahl et al. (2010). They experimented with trust and power levels using both laboratory and online experiments to see the effects on tax compliance. Findings proved that the two dimensions had a positive effect on compliance but generated different forms: trust led to voluntary compliance, power led to enforced compliance. Surprisingly low levels of trust but high levels of power led to more strategic behaviour i.e. minimal compliance. The results confirmed the theoretical argument of the slippery slope structure and demonstrated that it was applicable to the student and self-employed taxpayer samples.

Alm et al. (2010) investigated the importance of taxpayer information assistance services in enhancing compliance. They recreated laboratory experiments, where complexity and uncertainty were added to the situation of tax filing and tested whether taxpayer services decreased error and increased compliance. Their findings indicated that uncertainty reduced both the filing and reporting compliance, but the information service provision substantially lowered the willingness of taxpayers to file as well as the accuracy of reporting. This piece of work lent credence on the idea that effective tax administrations can be based on deterrence as well as service provision.

In the study by Mathieu et al. (2010), the authors have examined distribution of costs of compliance with personal income tax in the UK, after the introduction of self-assessment. Based on survey statistics, they discovered that compliance was found to be retrogressive and it impacted the low-income earners disproportionately, but old taxpayers were not as badly hit as projected. Income, occupation and education were the determinants of compliance cost, the more complex the tax affairs the higher the cost. The paper has raised the issue of fairness and efficiency of the self-assessment systems demonstrating that cost of compliance may create obstacle to equity in taxation.

Leder et al. (2010) studied the effects that regulatory fit in information framing had in influencing perceptions on fiscal exchange and compliance. In two experiments, they discovered that under the conditions

of the same information framing as that of the motivational orientation to taxes (promotion versus prevention focus), participants perceived more favourable fiscal exchange and complied more. The study recommended that compliance might be enhanced by using specific communication strategies that are consistent with psychological orientations of taxpayers. This took the literature a step further and related fiscal psychology to motivational theories.

Kirchler and Wahl (2010) have created Tax Compliance Inventory (TAX-I), a standardised tool to assess various intentions behind compliance behaviour. The TAX-I differentiated voluntary compliance, enforced compliance, tax avoidance and tax evasion. They validated and replicated the factorial structure of the inventory by empirical validation as well as replication and established the reliability of the inventory in both surveys and experiments. This contribution has solved decades-long measurement inconsistency problems in compliance research and it has offered a powerful instrument of cross-study comparability.

Using decision-making experiments, Kastlinger et al. (2010) examined gender differences in compliance. They discovered that women were more obedient than men and that gender-role orientation was a better predictor of behaviour than biological data including the second to fourth digit ratio. The compliance by women was not influenced by the audits much and men would be more likely to evade after being audited. These results implied the fact that deterrence and context are not the only factors that influence compliance behaviour but also socialisation and gender norms.

Muehlbacher et al. (2011) put the slippery slope model to the test using a massive sample of 3,071 Austrian, UK, and Czech tax payers. Their findings indicated that voluntary compliance was positively correlated with trust in authority whereas enforcement compliance had a relationship with the authority power. Voluntary compliance had a positive relationship with education and negative relationship with enforced compliance, implying that more educated taxpayers like cooperative instead of coercive tax climates. This work was a solid cross-national validation of the framework by providing a unified foundation to its position as one of the significant

theoretical models of compliance.

The research article of Alm and Torgler (2011) answered the question: Do ethics matter? in tax compliance. They reasoned that deterrence and rational choice models of compliance fail to explain the fact that the majority of taxpayers comply even when the rate of audit is low and the penalties are relatively mild. Rather, they emphasized on how ethics, morality, fairness and social norms influence compliance behaviour. Their conceptual work suggested a combined framework of enforcement, service and trust paradigms where ethics take the Centre stage. This research made a significant impact on the change to the understanding of non-economic factors of compliance.

Hartner et al. (2011) examined the effect of distributive fairness and identity on the compliance with EU taxes. They used a survey conducted in the UK on 1,000 respondents and established that the perception of fairness during EU transfer payments had a significant effect on compliance. Individuals identifying solely with the nation perceived transfers as unjust and indicated they were less willing to obey, whereas dual identifiers that identified with the nation and with Europe perceived transfers as advantageous and were willing to obey. The research highlighted the relevance of the perceptions of fairness and social identity in influencing the tax morale among the supranational level.

Alm and McClellan (2012) develop the individuals to firms whereby the tax-morale literature posts are suggested to explain the company compliance as being incomplete according to the classical deterrence models. They use the pooled firm-level data of the Business Environment and Enterprise Performance Survey (BEEPS) and World Enterprise Survey (n=34 countries and n=8,000+ firms) of taxes as an obstacle to proxy firm tax morale and correlate it with the reported compliance attitudes and behaviours. Their two-step analysis indicates that companies with more intrinsic tax morale are more intolerant of cheating and exhibit greater compliance intentions even after adjusting for the effect of enforcement and institution. They inference is that compliance policies that only focus on audits and fines are incomplete and that interventions that influence intrinsic motivation and perceived legitimacy have the ability to alter firm

behaviour. The paper redefines the puzzle of compliance by establishing that organisational values and national cultural-institutional environments mediate into the business taxation decisions like it does with individuals, and thus broadens the scope of analytical perspective to the research of business taxation.

MacGregor and Wilkinson (2012) focus on the relationship between economic patriotism and tax morale and compliance attitudes in a sample of trained Volunteer Income Tax Assistance (VITA) participants in the United States. They discover that people who are more patriotic express more positive opinions about paying tax to benefit the nation, they are more accepting of progressivity and the view that evading taxes amounts to being unpatriotic even though they do not support paying an increased amount of tax than legally required. These findings imply that the patriotic identity is more a normative anchor that increases tax morale that supplements enforcement-based techniques with appeals to collective identity and civic duty. In theoretical terms, the paper empowers patriotism and trust, fairness and social norms as a non-pecuniary factor that drives compliance-related attitudes and it inspires specific messages that associate civic identity to legal compliance without complicating that they might be willingly overpaid.

Alm et al. (2012) suggest that we need to re-conceptualize the research paradigms that study tax compliance and no longer rely on the single-agent economics-of-crime model but to consider the multifactorial (many actors, taxpayers, peers, accountants, tax authorities, government) and multidimensional (interaction) approaches. Based on a review of weak or context-specific deterrence effects, the authors support mixing economic with psychological strategies and predict the slippery slope paradigm as a paradigm of integration, in which power (enforcement) and trust (legitimacy, fairness) interrelate to determine compliance. Their accentuation of the group processes, social norms and the perceived government performance is coupled with the demand of designs that consider the interaction climates (antagonistic vs. synergistic) and not the fixed risk calculations. The article relocates compliance as a multilevel, relational occurrence, leading researchers to paradigms that are more

representative of the complexity of the real-world institutions.

The slippery slope framework is tested on the level of Italy by Kastlunger et al. (2013), who diverge between coercive and legitimate power and analyze their associations with trust and compliance types. On a sample of self-employed taxpayers and entrepreneurs (N = 389) they establish that trust positively correlates with voluntary compliance, with legitimate power positively correlating with trust and enforced compliance and coercive power associated with enforced compliance, negatively with trust. Interestingly, forced compliance had some relationship with greater evasion, which highlights the dangers of too heavy dependence on punishment measures. The paper proves the complexity of power and explains the influence of the quality of authority (legitimacy versus coercion), which preconditions the trust-compliance nexus in high-evasion-concern context.

According to Torgler (2013), a rare field experiment in Switzerland identified differences between underreporting and over deduction by examining administrative corrections of tax-returns, following a moral-suasion letter, signed by the fiscal commissioner of the comune. Although it confirms this point has already been made in previous literature, the study reveals that there are regular variations in the effect of normative appeals: moral suasion hardly changing under declarations but reinforcing factors of identity and mutual trust that are inherent in official communication, creating subtle effects of influencing the compliance margins. The paper builds evidence base on what suasion can and cannot accomplish by exploiting access to data on the correction, as opposed to self-reports and refines the methodological instrument of evaluating compliance reactions to non-pecuniary measures.

Lozza et al. (2013) incorporate the political ideology in the slippery slope model through a mixed methods research study involving self-employed taxpayers in Italy. Quantitative analysis and focus groups on the Internet show ideology-specific trajectories to compliance: Left-leaning taxpayers indicate greater voluntary cooperation and respondence to power of coercion, right leaning taxpayers indicate greater imposed compliance and grow increasingly responsive to evasion as institutional trust grows.

The results suggest not only that compliance climates vary among ideological groups but also that policy levers (trust building versus enforcement) will have to be differentially calibrated so as not to activate reactance and in order to be compatible with the value structures of taxpayers. On this political-psychological prism compliance messaging is subtly colored.

Kogler et al. (2013) make a cross-cultural test of the assumptions of the slippery slope in Austria, Hungary, Romania, and Russia, where the respondents were subjected to the scenarios that manipulated trust and power. As hypothesized, high trust + high power has the highest intended compliance and the least evasion whereas trust favorably increases voluntary compliance but power increases enforced compliance. Though audit/fine power is a critical issue, its results are country-specific, which supports the idea that institutional goodwill and reasonable treatment are the focal point in the long-term compliance. The study offers solid empirical evidence of the main propositions of the framework across different countries and highlights the importance of context-sensitive policy mixes.

Hayes and Baker (2014) provide a unique participant-observation report detailing U.S. federal tax compliance audit in the alcohol and tobacco industry and captures how auditors in fact address engagement issues in a six-year timeframe of practice. This research demonstrates that resolutions depend on the judgment of the auditor, understanding of the Code of Federal Regulations and the U.S. Code and the willingness of the auditee to alter the operational and reporting practices and any non-compliance with an enforcement regulation is considered material. There were outcomes such as the further application of excise tax/penalty and negotiated procedures amendments to achieve compliance again. The authors compare the communication patterns of governmental tax compliance audit and external financial statement audit, where the former have a more complicated, multi-sourced knowledge flow (e.g., CFR/USC, GAGAS, national experts, legal counsel). The participant observation methodology does such a task methodologically to provide texture that is lacking in questionnaires/experiments and help to understand the

interactions between negotiation, networks of expertise and administrative law in a compliance environment.

Kirchler et al. (2014) overview the change to the paradigm of cooperation of compliance based on the idea of the shift of classical deterrence (audits/fines) to the paradigm of cooperation based on the idea that the ongoing tax compliance is a result of the combination of power (effective-enforcement) and trust (fair, transparent, service-oriented administration). Going back to the Allingham-Sandmo model, they describe the endemic excess compliance in relation to deterrence expectations through psychological determinants- attitudes, legitimacy and fairness perception and put formal guidance to tax administrators namely intensify service and deference and moderate control to prevent crowding out intrinsic motivation. The paper sums up the slippery-slope impulse (trust to voluntary compliance, power to forced compliance) and requests interdisciplinary solutions that bring in institutional legitimacy and social norms in the policy.

Calvet Christian and Alm (2014) are tested the hypothesis that moral emotions, such as empathy and sympathy, influence the behavior of taxation with laboratory Tax Compliance Games in measured empathic concern and priming intervention conditions. They discover that increased sympathy correlates with increased compliance and empathy priming also increases compliance, which confirms models in which identity, guilt/virtue and prosocial orientation affect reporting. The combination of validated psychological scales and experimental elicitation present in the study offers causal support that noneconomic moral factors contribute any explanatory power to the existing audit and fines and can assist in explaining observed compliance levels that surpass the expectations of the standard model.

In their field experiment, Gangl et al. (2014) follow the newly-established firms in Austria to test the hypothesis that close supervision (a friendly deterrence manipulation) can enhance the timely payments. However, unexpectedly supervision did not increase the overall compliance and even delayed payments, which are all in line with the crowding-out effect of intrinsic motivation when the supervision is perceived as an attempt to control, but not support. The findings dampen the median result

of small deterrence and indicate that administrative climate is not less important, badly-framed supervision may be counterproductive even among the traditionally perceived as more risky evaders firms.

Hofmann et al. (2014) isolate coercive power (audits) and legitimate power (transparency, fairness, procedural quality) experimentally and examine the combined influence on trust and interaction climate and intended compliance. They demonstrate that legitimate power contributes to trust based on reason and service climate leading to higher voluntary cooperation whereas coercive power itself leads to a more antagonistic climate and forced compliance. Notably, coercive and legitimate power, when combined, produce more intended compliance than either of the two power styles do, which means that the exercise of power, regardless of its legitimacy and its manifestation as transparent, predetermines the success of this method and the effect of trust.

According to Blaufus et al. (2014), based on interview data, they estimate income tax compliance costs among working individuals in Germany (tax year 2007) to be between 6 and 9 billion (3.1-4.7 %) of the personal income tax revenue. The self-employed incur higher costs and costs increase with income and education level and decrease with married couples who join the tax returns, female taxpayers indicate less time burden. The German administrative paradigm alleviates part of the burden but creates significant distributional regressivity in compliance costs, which creates efficiency and equity issues and implies priorities in simplification.

Thompson and Booker (2015) explore perception of auditors as independent and objective by third parties (bank loan officers) in situations where taxes compliance services are provided by external auditors to a nonpublic audit client and further to their executives. In between-subjects design, officers feel that there is less independence/objectivity of the auditors when auditors also provide tax compliance services to the entity; perceived reliability of the audit report also declines when services are extended to executives. The results suggest the presence of economic-dependence and self-review issues even in the nonpublic arena, which can be used to justify the absence of SOX-like act protections in nonpublic corporations.

Alm et al. (2015) explicitly examine the external validity of laboratory tax-compliance experiments with data and matched lab protocols on IRS National Research Program data. They demonstrate that lab behavior patterns (e.g. mean reporting rates, enforcement response patterns) are similar to those in the field and that students and non-students overall behave in a similar way when subjected to the same treatments. Although there are small treatment-specific differences, the bottom line is that the laboratory evidence can be applied to natural compliance environments, making the laboratory a useful policy-testable environment.

In a survey-experiment Kasper et al., (2015) entrench media excerpts of tax authorities to manipulate perceived trust and power and assessed desired compliance in Austria. The media frames that cause higher levels of trust and/or greater levels of authority power are significantly linked to intended compliance, which agrees with the slippery-slope model and education is positively linked with the levels of indicated trust. The paper builds upon previous vignette research by utilizing real-life media content by demonstrating that news reporting has the potential to influence the perceived authority climate and consequently compliance intentions.

Casal et al. (2016) also study the question of whether giving voice to taxpayers enhances compliance because of the option of making decisions as a single payment or on separate contributions (voice on contributions) and through the option of participants to make decisions on how to allocate tax money (voice on distribution)? In all experimental conditions, both versions of voice have a powerful effect on compliance and further refacing the contributions to the payments in terms of social spending (as opposed to taxation) enhances the payments. Findings are that voluntary cooperation can be significantly increased through the reduction of social distance and the increase of procedural fairness through participation.

Pántya et al. (2016) contrasted flat and progressive income tax systems experimentally to determine the impact on both work performance and tax compliance in 20 decision rounds involving a real-effort task (N = 191). In a contradiction to a popular belief that proportional taxation motivates, the research proved that a greater degree of work performance is evident within a progressive system. Nevertheless, as the system was

altered to progressive to a flat system, the tax compliance of the participants rose, implying that system manipulations can remodel the perceived fairness and attainable strategy. The design was used to differentiate between stable regimes and transitions between regimes which enabled the authors to isolate effects of change as well as level effects. The findings demonstrate that the form of tax systems and transitions have a joint effect on effort and reporting and that fairness and complexity have counteracting effects. Comprehensively, the paper gives fine details that the progressive-flat trade-off is not a one-dimensional phenomenon: performance and compliance can react differently and contrary to each other with regard to level and change.

Alasfour et al. (2016) examined the tax morale determinants and compliance in Jordan through a questionnaire and multivariate analysis. They say that corruption is perceived as reducing tax morale and increasing non-compliance, but that efficient public expenditure is perceived to boost morale and decrease non-compliance. The increase in non-compliance with the high rates of audit and penalties is related to the decreased compliance rates, whereas the high rates of tax and perceived unfairness make the non-compliance rates higher and the dependence on risk aversion, financial restrictions and referent groups moderates these effects. The effect is also dependent on the sociodemographic (e.g., gender, age, education, occupation, religion) which highlights the heterogeneity in tax ethics regarding context and individuals. Notably, the paper posits that the view of tax evasion as morally right within a high-corruption context is sometimes accepted, which underscores the imperativeness of government legitimacy in terms of voluntary compliance.

Behavioral-experimental evidence of Dulleck et al. (2016) states that psychic costs can be used to help explain compliance in a situation beyond monetary deterrence through quantifying heart rate variability (HRV) as a physiological stress measure during tax choices. Their results show positive relationship between psychic stress (the consideration of norm violation) and payment of dues, which is found to be consistent with the moral sentiments and social norms as a way of maintaining dues payment even where tax auditing is low. The heterogeneous types are distinguished in the

analysis according to the heterogeneous profiles of stress, tax morale and compliance and present evidence that physiological responsiveness is projected on behavioral heterogeneity in terms of reporting. The study broadens the empirical instrumentation by connecting psychobiology to compliance choices, which contributes to the models in which the non-pecuniary disutility of cheating has a significant impact on outcomes.

Gangl et al. (2016) conducted an experiment on the question of whether cooperation with the state can be increased through the application of patriotism cues without unintentionally promoting nationalism. In a survey and three experiments, they tested patriotism through national flags, landscapes and primes of national achievements and they found that indirectly-mediating national pride, patriotism (reported and induced) causes compliance, in part by enhancing trust in the institutions of the countries and voluntary motivation to comply. It is worth noting that the national success was raising trust and willful cooperation without the side-effect of nationalism as with flags, so communication design has the ability to create social capital without triggering contentious identity framing. The piece proves that patriotic identity may be exploited to increase compliance through trust channels, which supplement enforcement.

Torgler (2016) presents a survey of data sources and methods in the tax compliance research, listing key survey data and popular variables to create a tax morale and compliance proxy. He also considers lab and field experiments, simulations, surveys and holds that the next step is improved access to data, comparability across countries and multi-method designs. The article is a useful guide into the available data, measurable variables, and gaps, especially of hidden behaviors such as evasion. It argues the necessity to match theory and data, and urges scholars to combine deep datasets with clear identification policies to get beyond stylized deterrence projections.

Mendoza et al. (2017) utilize country-based data (2003-2014) in testing their hypothesis of whether an increase in audit intensity necessarily brings about an increase in compliance. Verifying audits as checks/actions per 100 taxpayer and compliance as how executives felt auditors were evasion-prone they find U-shaped relationship: compliance is maximized at

a certain point, but furthermore increases in auditing backfires the relationship, which is in line with over-enforcement theorizing that implies distrust and loss of voluntary cooperation. The research indicates that the compliance-auditing relationship is not linear and has a plausible possibility of being dependent on the voluntary versus enforced compliance. The implication of this finding to policies includes the calibration of the audit levels to prevent the occurrence of diminishing and negative returns.

Alm et al. (2017) study the peer effects by giving the experimental subjects information about the filing and audit results of the so-called neighbors. The statistically significant and economically significant effect on the filing and amount reported is statistically significant and economically large depending on the content of information and may enhance or deteriorate compliance. The indication is that compliance is socially institutionalized, individuals tend to comply more when they think that their peers comply and cheat when they think that their peers cheat. The findings support a service paradigm where tax authorities create informational spaces that give impetus to norms and enforcement.

Stamatopoulos et al. (2017) measure the costs of corporate income tax compliance in Greece based on survey and financial statement data and examine the determinants of compliance costs based on the size of firms, their age, the industry, the location and the legal form. They discover huge compliance expenses and high heterogeneity, smaller and younger firms, some areas and some types of legal forms have greater costs and the elements are broken down into internal, external, educational and acquisition costs by the Standard Cost Model. The paper contains policy implications of retrogression and effectiveness in the crisis-driven economy, calling on simplifying and directing relief.

The results of meta-analyses of survey studies (459 samples; N = 614,286; 111 countries) by Hofmann et al. (2017) positively correlated age, sex, education and income with tax compliance. Small effects are averagely significant which are stronger in the Western countries and it means that there are sociodemographic differences but should be controlled, rather than foregrounded, in models. Findings discount arguments that demographics are the major forces, making the case shift to institutional

and psychological forces.

In Stark and Kirchler (2017) the study of inheritance tax compliance is conducted on a multifactor survey experiment in Austria and Germany to examine whether bringing about the principle of earmarking revenues on projects as part of the normative value principle (e.g. social justice, equality of opportunity) enhances acceptance and compliance. They discover that earmarking may increase compliance intentions and this most certainly happens in Austria and that normative principles and conventional socio-psychological variables are important predictors of behavior. There is no significant difference in compliance between affectedness (must pay or will probably pay) and value congruence and perceived legitimacy may predominate in the determination of intentions.

In their study Slemrod et al. (2017) investigated the impact of the implementation of Form 1099-K in the United States that compels small businesses to report credit card and electronic sales to third parties. The study based on the Internal Revenue Service **(**IRS) administrative data, established that the overall compliance effect was small yet significant amongst highly exposed taxpayers to the reporting. In particular, of the 30 percent of so-called sensitive sole proprietors, who had never filed a return, the policy change resulted in the filing of Schedule C and those who had been reporting it before raised reported receiving by as much as 24 %. Most of them however offset these gains by inflating the expenses so that the impact on the net taxable income is diminished. The results emphasize that although third-party reporting may lead to compliance, its ability to do so will depend on the kind of income and the possibilities of evasion shifting to less regulated types. This research has solidly supported the idea that the information reporting systems are useful in enhancing compliance, although their effectiveness shows diminishing return filing when taxpayers are able to strategize around the purpose of reporting an asset.

The study by Muehlbacher et al. (2017) examined the influence of the mental accounting on the tax compliance of self-employed taxpayers. They proposed utilizing the prospect theory and claimed that the creation of a mental segregation of taxes payable based on disposable income would establish a psychological reference point, which would increase

compliance. The experimental results proved that those of them who created a distinct mental image of the taxes were more willing to save money and reported the income with honesty. The research also established that the issue of mental segregation was of greatest importance when the taxes could not be externally specified as in the case of self-employment relative to the case of employees whose tax payments are pre-determined. Another finding included personal differences: the age, gender and prior experience also had an impact on the desire to keep mental tax accounts. The results support the importance of cognitive framing and self-control processes in enhancing compliance levels and in particular among small businesses which tend to evade.

The research by Alumnia and Lopez-Rodriguez (2018) explores the reaction of firms to the Large Taxpayers Unit (LTU) in Spain, a body that oversees firms that have over 6 million in revenues. They wrote down using confidential financial statement data that companies were bunched strategically just below LTU so as to be not enforced as seriously. The impact was even more powerful in upstream industries with more paper trail implying that enforcement and traceability of transactions are complementary in preventing evasion. The research also revealed that companies manipulated revenues and labor reporting and inputs in order to avoid auditing. On the whole, the findings indicate that size-based enforcement regulations have the potential to generate distortions in behavior and they also give evidence that more rigorous monitoring generates compliance benefits in cases when used together with third-party reporting tools.

Olsen et al. (2018) investigated the influence of emotions in tax compliance among Turkish small business owners in the slippery slope paradigm. In a survey experiment that used 411 participants who were self-employed they discovered that high enforcement power by tax authorities created negative emotions, which brought about increased compliance by enforcing compliance but also enhanced intentions to evade. On the other hand confidence on the authorities lessened the negative emotions and increased voluntary compliance. Notably, the high power and high trust reduced the negative feelings and contributed to compliance, which proved

the presence of an interaction between the institutional context and a psychological reaction. The paper emphasized the fact that the compliance is not an entirely rational calculus on costs and benefits but an intermediate by the affective responses to the behavior of authorities. The paper extends the behavioral models of tax compliance by explicitly incorporating emotional processes in the model.

The theoretical model created by Lee (2018) examines the impact of optimism, pessimism and audit uncertainty on tax compliance. The research claim was that the compliance of the taxpayers is based on the psychological expectations in case of uncertainty on the possibility of audit process. Pessimistic taxpayers are those that overestimate the probability of an audit to happen and therefore, they will enhance compliance, whereas optimists will reduce compliance. It is a mean preserving change of audit probability that, therefore, raises the expected compliance because the perceived risk of pessimists has risen. The model suggests that tax officials can lack reason to disclose information about audits because uncertainty itself can positively affect the revenues. This theory extension closes the divide in enforcement transparency and behavioral heterogeneity in risk perception. The study narrows down the classical expected utility theories on tax evasion by focusing on the psychology of taxpayers.

Alm (2018) has conducted a review of the decades of studies on the motivation of tax compliance (theory, empirical evidence and policy application). The article reiterated the classical economics of crime theoretical results that only partially accounted for the behavior, but could not be applied to the much greater obedience in reality. Rather, compliance will be influenced by a combination of discouragement, perception of fairness, tax morale, social norms and administrative ease. Based on laboratory experiments, field evidence and behavioral economics, Alm emphasized the role of psychological and institutional as well as enforcement. He concluded that effective compliance programs should be based on the ratio between audits and penalties to the steps that help to create trust and voluntary motivation. The future research requirements were also identified in the review, especially cross-country comparisons and integration of behavioral insights in policy designs.

Chan et al. (2019) examined the relationship between the response time of decision-making and tax response behavior. Based on experimental data, they discovered that fully non-compliant individuals were faster in reporting income, which indicates the impulses to avoid, whereas fully compliant individuals also made decisions fast. Partially compliant taxpayers, however, had the greatest response times, which was the cognitive conflict between honesty and self-interest. The analysis showed that there was an inverted U-relation between response time and compliance with the highest compliance levels being 60 percent. In addition, the respondents who had high cognitive abilities had short response times at both ends of the compliance and those who had low abilities took more time to deliberate. These results introduce the concept of decision latency as a behavioral indicator of compliance which provides information about cognitive processes on which tax honesty is based.

Alasfour (2019) examined the issue of tax evasion prevalence in Jordan, but he approached it as a virtuous cycle of distrust between the state and citizens. The research claimed that evasion has been promoted as a morally acceptable practice by the sociocultural norms based on poor transparency and accountability. The past inefficiencies, corruption and use of indirect taxes have contributed to the lack of trust and the citizens no longer see evasion as a criminal act but a survival strategy. The article recommended changes that would enhance accountability, change taxation to measures based on income and lower excessive exemptions and incentive. The author came to a conclusion on the sustainability of compliance which is the need of culture transformation to high trust and ethical values by institutional reforms. This brings out the profound mutual dependence of the quality of governance, social norms and tax compliance.

Bruno (2019) constructed a theoretical framework to examine the relations among tax enforcement, tax morale and compliance in the transition economies. The model considered tax morale to be endogenous to the perceptions of the agents on the other agents to comply with it and the quality of the institution. It conjectured that the poor political institutions and a low morale effectively result in poor compliance as well as poor enforcement equilibria. It is noteworthy that unequal enforcement

was experienced with the third-party reporting groups bearing heavier burdens than self-reporters. The paper further established that good political institutions cannot work without credible enforcement information and this creates the possibility of weak morale, poor enforcement and extensive evasion. The model can be used to explain why tax evasion is persistent in the post-Soviet and Eastern European economies, in which the institutional reform is lagging behind the formal democratization.

Alshira'h and Abdul-Jabbar (2019) investigated how the perceptions of tax fairness improve the sales tax compliance among the Jordanian manufacturing SMEs. On the basis of survey data (n=215 valid responses) the results of the study which was analyzed through means of structural equation modeling revealed that fairness is a strong predictor of compliance behavior. SMEs who viewed the taxation system to be fair and just had the voluntary intention of complying. On the other hand, unfair burdons were perceived to dishearten compliance, a factor that led to low compliance levels of VAT in Jordan. The results emphasize that fairness is an important non-economic factor that helps to determine compliance especially among the small businesses in developing economies. It is advised that policymakers should formulate clear and fair tax policies that will enhance the level of compliance and revenue collection.

The fundamental assumptions of the slippery-slope framework were tested by Batrancea et al. (2019) in 44 countries and found that the influence of trust and power of tax authorities together predict compliance. They present results based on cross-national survey data and harmonized measures whereby trust is closely related with voluntary compliance, power with enforced compliance and high trust and power with the highest intended compliance. The scope of the study shows that these two determinants are not unique to individual jurisdiction but move across different institutionalized environments which supports the argument of balanced approaches to enhance the legitimacy and also provide credible implementation.

Alshira'h et al. (2020) suggested a socio-economic model of sales tax (VAT/GST) compliance in SMEs, which builds on the model suggested by Fischer and included the tax knowledge (moderator) and tax service quality

(direct effect). The concept paper synthesizes the existing knowledge in the field of economics and behavior by stating that the compliance of SMEs depends on structural (rates, administration), psychological (morale, norms), and institutional (assistance, clarity) factors and the knowledge determines how these factors may be translated into behavior. The model is set up to be empirically tested within the context of Jordanian SMEs in which the management of VAT/GST and information frictions are relevant.

The article by Ya'u et al. (2020) investigated the compliance with petroleum profit taxes among the oil and gas companies in Nigeria in terms of deterrence, and it is a modification of Allingham Sandmo model by introducing the element of royalty rates. In a survey of 300 companies and estimating a PLS-SEM, the authors discovered that tax rate and royalty rate were negatively related to compliance whereas the penalties and probability of detection were positively related. The findings suggest that the statutory burdens are likely to undermine the incentives to comply, but the presence of credible sanctions or audit probability leads to increased compliance, which is why it is necessary to redefine the rates along with reinforcement.

Marques et al. (2020) combined both the responsive regulation and the slippery-slope to reconsider tax investigations in Portugal. Insisting on the fact that inspectors alternate between the role of advisor and investigator, they suggest a so-called tax investigation diamond that orders the less-to-more coercive interventions and controls the motivation postures of the taxpayer (cooperation vs. resistance). This model prioritizes the use of procedural fairness and building trust in the initial stages and the use of coercion during emergencies to ensure maximum redressment instead of imprisonment. This training and policy testable propositions are based on a practitioner-oriented framework.

Wadesango et al. (2020) examined Zimbabwean post-2014 and post-2018 Finance Acts tax amnesties within the SMEs. Based on a multivariate regression of survey data, they find that there is an opposite association between amnesty and future compliance in line with the fears that repeated or expected amnesties undermine equity perceptions and deterrence. The authors suggest that it is better to publicize the sanctions after amnesty, ensure the amnesty is a rare and conditional event, and evaluate contextual

preparedness prior to implementation to prevent the normalization of non-compliance.

The study by Robbins and Kiser (2020) in the United States was based on a national factorial survey experiment with the aim of opposing state coercion, state reciprocity and moral attitudes to predict income tax evasion. They have strong support of coercion, support of moral attitudes (moral imperatives (duty to pay) and morally aligned values (values aligned with taxation)) but little support of state reciprocity. The findings indicate the importance of non-pecuniary moral motivation to explain willingness to comply in the weak third-party reporting conditions, as this may benefit policy debate that commonly addresses audits and fines only.

Al-Zaqeba and Al-Rashdan (2020) applied the Theory of Planned Behavior to the high-income professionals in Jordan to evaluate the effects of attitudes, subjective norms and the perceived behavioral control on behavioral intention, which induced the change in tax compliance behavior. On 485 responses using PLS-SEM they demonstrate that all three antecedents in Theory of Planned Behavior (TPB) forecast intention, intention forecasts behavior and that contextual pressure (customs tax) mediates negatively between intention and behavior. The results indicate that social influence and the feeling of control matters and that high levels of ancillary taxes have the potential to crowd out intention to action.

Alm et al. (2020) reexamined laboratory experiments (278 participants; 8,340 observations) to unconfound individual-level reactions to the increase in audit rates. Though the effect size is the same as in previous studies - increased audit rates increase compliance, there is wide dispersion, with two-thirds of the respondents reacting in the expected direction, one-sixth not and one-sixth actually responding contrary to expectation (compliance declines as audits increase). It is this heterogeneity that warns of one size fits all audit policy and that segmented approaches are needed to suit the types of behavior.

Battiston et al. (2020) also took advantage of a natural study in Italy to conduct a study on the impact of publishing audit blitzes on VAT compliance. They calculate that the media publicity of local audits by use of two large cities and a difference in differences design reveal that media

publicity in local audits enhances short run fiscal statements compared to no publicity of blitzes. The findings suggest that informational interventions that is creating awareness of the presence of enforcement via media publicity can be a low-cost complement to conventional audits, in terms of increasing perceived detection and norm salience.

Reviewing theory and evidence in the field of tax compliance by the wealthy, Gangl and Torgler (2020) described political legal, social and psychological processes that distinguish the wealthy and average taxpayers. They suggest that those with high wealth are likely to have more opportunities to avoidance, different social reference groups (advisors, planners) and value profiles that can increase reactance to taxation, hence good policy would be found in specific combinations of coercion (hard) and legitimacy-building (soft) at macro, middle and micro levels. The agenda reviewed will feature focused transparency, viable enforcement and trusting services to this segment.

Alm et al. (2020) combine the initial evidence and the behavior theory to predict the effect of the COVID-19 fiscal responses on post-pandemic tax compliance. They maintain that the crisis policies (lockdowns, stimulus and emergency benefits) change the perceptions of fairness, transparency and state capacity by taxpayers that consequently influence morale and readiness to comply. A set of design principles is developed throughout the paper, generously provide support and communicate clearly, assure procedural justice, the accessibility to services, target audits and credible penalties against free-riding and positive management of framing and hindsight biases as conditions normalize. The authors emphasize that, both enforcement and legitimacy are necessary to create compliance, long-term benefits can only be earned through the transparent justification of actions and norm-building and not through the use of deterrence.

Alshira'h and Abdul-Jabbar (2020) are focused on Jordanian manufacturing SMEs, which is why they are extending the theory of deterrence by testing their hypothesis that patriotism can moderate the relationships between audit probability, tax rates, penalties and sales-tax compliance. They meet this result using large PLS-SEM survey which

implies that audits and penalties have a positive effect on compliance, there is no direct impact of statutory rate and patriotism has a stronger positive impact of audits/penalties and a weaker demotivating impact of rates. The authors present the point that the influence of patriotic identification acts as an amplifier of motivation that directs enforcement to voluntary cooperation and that the importance of visibility detection add to national-building stories in the context of VAT/GST systems.

Mittone et al. (2021) test in a laboratory environment aggressive audit strategies in which human actors over inspect in comparison with a random audit rule. The almost complete compliance brought about by over-inspection continues when the audits become, subsequently, algorithmically random and barely deterrent, would suggest that the compliance spillovers are positive and not backlash. The experiment reveals that a social norm of honesty can be formed when openly maintained during a period of high pressure and when the pressure is eased, this norm can be maintained, but no agent of the random rule disciplines tax payers. By demonstrating path-dependence of compliance dynamics: preliminary phase of intensive auditing can entrench higher steady-state compliance.

For a study of their relations with tax planning and tax risk, Chyz et al. (2021) identify tax planning and tax compliance fees and conduct an analysis of a hand-collected panel on auditor-provided tax services. Companies that buy higher levels of planning services of their statutory auditor will have lower GAAP/cash Effective Tax Rate (ETRs) high avoidance and ETR volatility (lower tax risk), and when the auditor has higher tax expertise and tenure; no significant relationship is observed when the company only buys compliance services. Notably, planning effects are highly concentrated among customers employing the auditor to provide compliance services as does make auditors incentivized by reputation constraints against the aggressive provision of planning advice; requiring such auditors to also control filings. It suggests that the spillovers of the auditor knowledge can help to decrease the tax expense and uncertainty.

Ibn-e-Hassan et al. (2021) discuss voluntary individual income tax compliance in Pakistan through a multi theoretic framework (expected

utility, equity, social exchange, attribution). According to survey data (n=435) and SEM, they state that tax simplicity has the biggest positive impact on filing and perceived fairness mediates the impact of simplicity, tax morale and perceptions of government spending on intentions and behavior related to compliance. The results highlight administrative simplicity as a first-order lever in developing-country contexts, but also indicate that fair-treatment perceptions transform attitudes into action-referring to complementary roles of simplification and fairness-oriented communication.

Berger et al. (2020) work out an agent-based econophysics model to balance the bomb crater (post-audit evasion rises) and the target (post-audit compliance rises) effects. Heterogeneous agents (ethical, copying, random, endogenously non-compliant) are present in a network and change behavior following audits. They demonstrate that currently an increase in audit probability may counter-intuitively enhance evasion when using certain compositions (a bomb-crater dynamic) and that certain audit plans can inhibit this phenomenon and have target-like behavior. The model emphasizes that the nature of the post-audit dynamics is sensitive to the type of taxpayer and social influence and it advises against the adoption of uniform policies to enforce such an audit strategy and gives motivational type contingent audit designs.

Based on the research of Jordanian SMEs, Alshira'h et al. (2021) approximate PLS-SEM model, the quality of public governance and patriotism predict sales-tax compliance and the effect of governance is mediated by patriotism. Governance and patriotism demonstrate strong positive correlations with compliance and more importantly, patriotism enhances the governance-compliance relationship, which suggests that institutional trust and national identification are supplementary motivation pillars. In the case of VAT/GST administrations in developing economies, the findings indicate that quality of service and visible integrity (that are accompanied by patriotic calls) can shift SMEs into a long-term compliance.

Focusing on affective mechanisms, Enachescu et al. (2021) induce incidental emotions (anger, fear, happiness) experimentally and monitor the

follow-up compliance and electrodermal activity proves the successful induction of emotions. They do not see any systematic differences in the compliance levels among emotions indicating that incidental (context-independent) affect does not have a fundamental influence on tax decisions, unlike well-established effects of integral emotions (e.g., feeling of shame, anger at tax authority service). The investigation refines the theory by defining the emotional routes that are important in the compliance and warning of overreliance on mood-based behavioral nudges.

Vossler et al. (2021) find that in a framed field study of working adults, withholding positions anchor later reporting and under-withholding positions implies that the reported liability (loss-averse reference point) is significantly lower, whereas over-withholding positions implies that the reported liability is more modest. Peer compliance information and information on system fairness both raise reporting but only input on system fairness information modulates withholding choices, a service of liability-certainty compensates the negative under-withholding effect. The article redefines compliance as a two-step decision (withholding followed by filing) and proposes low-cost information policies in order to reduce asymmetric reporting bias.

Alshira'h et al. (2020) in their concept paper proposed a socio-economic model of Sales-tax (VAT/GST) compliance on Jordanian SMEs, which additionally includes Fischer framework with tax knowledge (moderator) and tax service quality (direct driver). The model combines deterrence, fairness, norms and administrative simplicity in a sensible testable framework inspired by the recurring VAT deficits and the informality of SMEs. The authors suggest that in the situation of complicated procedures and a lack of bookkeeping in the taxpayer, the inputs of enforcement can be turned into voluntary compliance with the help of better quality of tax services and taxpayer knowledge.

The study done by Alshira'h et al. (2021) examined the relationship between tax rates and sales tax compliance of Jordanian public shareholding corporations listed in Amman Stock Exchange. On 169 valid surveys that they used on PLS-SEM, they found that tax rate did not significantly influence compliance. The authors contended that listed

companies might not react intensively to change of rate owing to structural enforcement limits and administrative customs and that they argued that compliance choices relied more on the quality of governance, audit approaches and cultural factors rather than on legislative levels. This result is opposite to those of deterrence-based approaches, but is consistent with the literature that has noted low elasticity of compliance in corporate sectors in developing economies.

In the analysis of the SMEs in Indonesia, Timothy and Abbas (2021) concluded that compliance was positively linked to the tax morale, perceptions of justice and trust in the public authorities with the strongest impact of the tax morale. They also established that tax knowledge is a very important supportive factor that can help the intrinsic motivation in making actual compliance. Their findings suggest that voluntary compliance is based on intrinsic norms and perception of fairness and policymakers are to supplement administrative reforms with moral and educational ones.

Adhikari et al. (2021) studied the effects of the third-party reporting in the U.S. using Form 1099-K. They presented the first results using confidential IRS administrative data to reveal that businesses in the large card usage areas reported more receipts in response to reporting requirements, in particular, smaller businesses and those operating in the Business to Consumer (B2C) industry. They however observed counterbalancing increases in deductions as well-meaning a slight net increase in compliance. The results also indicate heterogeneity in the behavior towards third-party enforcing and the rise in compliance is expected to be localized in those areas where the cash substitution is most infeasible.

In their study, Mawani and Trivedi (2021) focused on the topic of compliance with corrupt tax auditors and differentiated between collusive and coercive corruption. On lab experiments, they discovered that collusive auditors (who took bribes when they evaded being caught) lowered compliance, whereas coercive auditors (who took bribes to avoid penalty) counterintuitive increased compliance at moderate bribes because taxpayers wanted to be morally distanced. Nonetheless, compliance gains were destroyed at large levels of bribery. This subtle evidence demonstrates the

type-specific consequences of corruption, since collusion leads to negative effects on compliance more than extortion.

Nguyen (2022) examined the Vietnamese SMEs and the importance of non-economic motivation in voluntary tax compliance. Data obtained in surveys among 339 managers indicated that audit probability, social norms, knowledge of tax and personal norms, identities of fairness and quality of the tax service had a significant impact on compliance. Among them, probability of audit and inspection was the most significant and service quality was the weakest. The paper further supported the idea that voluntary compliance in transitional economies lies within a combination of coercive oversight and the social-psychological processes.

Abu Bakar et al. (2022) studied the strength of taxation bodies and its connection with tax morale and compliance in East Malaysia. Based on a survey information and PLS-SEM, they discovered that coercive power positively affected tax morale, but no impact on legitimate power was detected. Surprisingly, the morale in taxation was found to be negatively correlated with compliance, but it was able to mediate the association between coercive power and compliance. This would be a counterintuitive outcome, indicating that where the institutional trust is low, coercive enforcement can be rhetorically beneficial, yet that morale is not always coupled with compliance behavior.

In a systematic review of 279 studies, Dularif and Rustiarini (2022) identified the non-deterrence paradigm of compliance. They found that they were the most essential determinants because tax service quality and trust in the government, whereas personal norms, social norms and religiosity were less significant, but were still positive. The way they were synthesized highlighted a long-term trend not only to abandon a more deterrence-based model but to focus on models that place more focus on fiscal psychology, service delivery and institutional legitimacy.

Johan and Prasetyo (2022) studied how deductions to zakat relate to the compliance with income tax in Indonesia. Through qualitative empirical legal study, they reasoned that permitting zakat as a tax expense made deductible decreased the sense of twice burden amongst Muslim tax payers (muzaki) and therefore enhanced compliance. They established that the

policy shifted the taxpayers between opposition and obedience although there were still practical problems in its implementation. The research paper has added to the literature on faith-based financial tools and their implication on human behavior.

The article by Sunardi et al. (2022) focused its research on the topic of tax compliance by firms in developing economies based on 45,504 businesses in the World Bank Enterprise Survey. They determined that top managers that were female were linked to greater compliance and financial statement audit enhanced compliance indirectly through accessing finance. These results imply that the compliance does not depend solely on the enforcement but also the forms of governance and inclusiveness of leaders who are women.

The study by Kasper and Alm (2022) experimentally involved the effectiveness of the audit in determining post-audit compliance. They discovered that good audits (finding out the majority of undeclared income) raised later compliance, whereas the opposite of this was true in case of poor audits. In addition, good response to viable audits was exhibited by the previously compliant taxpayers. Their research makes the deterrence models more complex as they demonstrate that it is not only the probability that makes the difference between whether an audit results in strengthening or undermining compliance.

Bani-Khalid et al. (2022) apply the Theory of Planned Behavior (TPB) to understand the intention to comply with sales tax among the Jordanian owner-managers in SMEs, surveyed 385 of these firms, and estimated a PLS-SEM to validate the measurement and structural model, they find that attitude, subjective norms, perceived behavioral control and patriotism significantly drive intention and therefore, non-pecuniary and socio-psychological variables complement deterrence to form

Alm (2022) integrates theory and evidence to produce administration strategies to enhance tax compliance by arguing that agencies should collaboratively: (i) comprehend the reasons people pay taxes (deterrence, norms, tax morale, fairness), (ii) evaluate the compliance implications of technological change (digitalization, third-party data, analytics) and (iii) coordinate administrative policies between the detectors and punishers

(understanding why people pay taxes) and the service givers and culture changers (understanding how people change their culture); the review focuses on the fact that how revenue is raised

Surveying compliance-enhancing behavioral instruments, including nudges, boosts, and sludge, Alm et al. (2023) conclude that enforcement still forms the basis of compliance, nudges demonstrate inconsistent effectiveness, they need to be designed carefully and tested, boosts (competency-enhancing interventions) prove to be more effective though underutilized and elimination of sludge (process frictions) can substantially improve compliance; they advocate stringent before the event assessment and administration closer to academics to ensure that behavioral instruments

In a study on the application of presumptive taxation cut-off rules to provide information on managerial inefficiency and when managers voluntarily under-report, Ferrara et al. (2023) suggest an integrated audit rule that incorporates both firm-level efficiency indicators of stochastic frontier analysis and presumptive benchmarks. Using Italian firm data to explain how the presumptive benchmark can be used to direct audit efforts and the efficiency diagnostics can be used to reduce false positives, improving the allocation of limited audit resources and elucidating when low.

Experimentally, Lancee et al. (2023) investigate unfair audits, which is an audit that overstates the actual income and demonstrate that even though the threat of unfairness can increase aggregate compliance, actually being unfairly audited by at least seven percentage points decreases post-audit compliance, which is consistent with reactance based on fairness. Hence, the perceived procedural fairness is critical, since the over-auditing of an entity may other prevent the voluntary cooperation that is essential to sustainable compliance.

As described by Muller et al. (2023) using MouselabWEB (an online process-tracing tool) was employed to test whether the shift in choices to the higher expected value (EV-evasion) option compared to control due to making expected value (EV) information explicit (verbal, numeric, or visual) is changed. The visual EV cue only increases the higher-EV

(evasion) option versus control choice, but participant behavior is more compliant than the deterrence model would have predicted; without Personal Ethical Willingness (PEW) score adjustments, even with salient information on expected value.

Kresch et al. (2023) examine almost 200,000 households in Manaus, Brazil and find the access to municipal sewer connection, a salient public service not considered in the property-tax assessment formula, is related to higher compliance with property-tax, which is also in line with a social-contract mechanism of linking visible service delivery with willingness to pay and that sanitation can enhance attitudes toward the municipality, which reinforces the role of government performance in compliance.

Using physiological indicators (heart-rate variability) to test national pride priming (iconic images vs. sports scenes), Macintyre et al. (2023) conclude that priming increases tax compliance in nationals but not non-nationals and that out-group effects are present; that different priming stimuli induce different autonomic reactions (parasympathetic vs. sympathetic) and that both stimuli positively correlate with compliance Indicating that mechanisms of ingroup identification can be used to increase voluntary compliance, al

Reconciling mixed results on post audit compliance is made by Kaiser and Rablen (2023) who experimentally demonstrate that results vary with learning opportunity, misperception of audit-risk and censoring. Under exogenous selection, the audit can reduce perceived risk (a bomb-crater effect) and decrease compliance. Whereas under endogenous rules where taxpayers have the opportunity to learn that higher reporting reduces audit risk, post-audit compliance rises and elimination of spurious negative effects can occur with censoring alone.

The cost of Corporate Income Tax **(**CIT) compliance to SMEs in Bosnia and Herzegovina is estimated by Lavić (2023) based on the findings of the study on the cost of CIT compliance, which include an average total of 8.3% of revenues and is clearly regressive. Smaller and younger firms, as well as some sectors, face a significantly higher cost. The location and the use of external consultants also play a significant role. Furthermore, the study encourages simplification, harmonization of entity-level regulations

and incentives across the board to cut the administrative burden and achieve compliance in the transition environment.

In a unique dataset of hand-collected data that disaggregates auditor fees, Chyz et al. (2023) distinguish tax non-audit auditor services designated as tax planning and tax compliance. They studied association with audit quality across multiple selection-adjusted specifications. The finding resulted that there is no negative correlation between tax planning services and misstatements in general and a positive correlation between tax compliance services and audit quality (fewer misstatements). Although, when powerful CEOs or client-advocacy audit firm cultures are present, tax planning may reduce audit quality, suggesting that the that institutional and managerial factors influence the impact of auditor-provided tax services.

Abu Bakar et al. (2023) test the contribution of the quality of governance (namely political stability and rule of law) to tax compliance in East Malaysia conceptualizing tax morale as an intermediary. They adopted PLS-SEM and 592 salaried and self-employed taxpayers. They found that the quality of the rule of law increases the tax morale, which consequently increases compliance and that political stability also has a positive relationship with compliance. Practically the authors stated that the credible enforcement increases taxpayers' moral motivation to comply voluntarily thereby reducing dependency on coercive measures.

Alm (2023) explains how the compliance landscape is being rewritten by twin shocks including digital technologies and the COVID-19 pandemic. Advances in information flows, analytics and third-party reporting having the ability to enhance capacity to enforce the law and that pandemic responses have an ambiguous impact with increased change in trust in government more likely to be associated with an increase in inequality. Alm argues that the policy needs to ensure compliance by leveraging technology, necessitating modernizing administration and addressing emerging digital risks and suggests that policy should reinforce trust, modernize administration and focus on new digital risks.

Based on the evidence of the U.S. institutional holdings, Jacob and Todtenhaupt (2022) discuss the potential of the foreign investors to take advantage of hundreds of bilateral withholding tax (WHT) overpayment

removals in 36 investment countries and 110 issuing countries. They measure the compliance costs relating to reclaiming foreign WHT overpayments and show that increased costs, delays and additional administrative costs are major factors that deter foreign portfolio investment (FPI). The paper also indicates that relief-at-source systems, in which the rate of treaty is imposed directly on payment, as opposed to the system where refund claims are made after the fact, can address these frictions and encourage cross-border investment.

Hebous et al. (2023) take advantage of the multi-year random audits in Norway of a particular personal income tax deduction to estimate post-audit behaviour. Following up on an average of 30,000 taxpayers up to six years post audit, they discover that taxpayers identified as noncompliant then followed up by enforcing sanctions or not, increased their compliance through both information feedback and audit experience. These results are contrary to the expected effect of bomb-crater that suggests that the taxpayer decreases compliance during an audit because it is expected that the risk of re-audit decreases. Rather, the evidence implies that even in the absence of punitive actions, audits can be used to enhance learning and strengthen future compliance.

Bondu and Sangisetti (2022) research workers in the Kurdistan Region of Iraq in order to investigate the correlation between tax awareness and perceptions of evasion, perceived compliance norms and self-reported compliance. Their result shows that higher tax awareness and negative perceptions towards evasion relate to higher intentions of complying, which implies the relevance of knowledge and normative climate in low-capacity environments. The paper also shows that an education policy combined with a better quality of service and a believable enforcement system could change the attitudes of taxpayers and encourage more capable behaviour.

The article by Kogler et al. (2023) estimated the country-specific trust and power indices using experimental evidence, covering 44 countries and regions. These indices were compared to the shadow economy indicators and corruption. Both trust in and power of authorities are negatively related to noncompliance proxies, which supports the slippery-slope framework at the macro-level, which is why the findings are in

support of the slippery-slope framework. The research paper emphasizes the significance of achieving balanced policies, which would guarantee legitimacy and credible enforcement at the same time.

Muehlbacher et al. (2023) deal with one of the underlying methodological problems in the laboratory experiments on tax-compliance, i.e., whether the participants are asked to disclose income or tax. They show that the compliance rates and relative effects of the tax rate, audit probability and fines are higher when the subjects report taxes instead of income. It is demonstrated that operationalisation of the dependent variable can have a significant impact on the findings of the research and that it has been established that more design transparency and standardisation should be applied to comparative research on experimental tax compliance.

In their study, Ayoola et al. (2023) use OLS regression on a sample of 365 taxpayers to study the issue of personal income tax compliance in Nigeria. Their findings indicate that quality of tax administrative services and trust taxpayers have with tax authorities independently lead to compliance and trust also has a key moderating influence in transaction between administration and compliance. Within the developing-country environment of Nigeria where informality and corruption make tax administration challenging the study identifies that enhancing the quality of administrative provision and enhancing the perceived credibility of tax collection agencies is the key to encouraging compliance.

Daskalaki and Karampinis (2023) evaluate a 2011 Greece reform to make statutory auditors report a Tax Compliance Report (TCR) to medium and large companies. After a difference-in-differences design, they conclude that non-conforming tax avoidance (using book-tax differences) reduces in treated firms after the TCR is issued and conforming tax avoidance boosts. These findings imply that the margins of avoidance can be reconstituted by the external auditors. The research also reveals that increased audit work and implementation of the TCR by financial-statement auditors enhance the overall compliance incentives.

Thu Do Thi (2024) explored business tax compliance in Vietnam based on the survey data on 202 companies in Thai Nguyen province. The paper highlights that, socio-economic factors and legislative system have

the best bearing on tax compliance, whereas business attributes and characteristics of tax authority have a relatively less impact. This quantitative study underscores the fact that the antecedents of compliance behaviour are found at the structural and institutional level, rather than the firm specific character. The results imply that a legal and socio-economic environment should be strengthened to improve compliance.

Mohamed and Gan (2024) examined how mandatory audits affect the compliance of income tax among small to medium sized enterprises traded in the Egyptian stock market of SMEs. The study based on surveys of auditors, SME managers and academics and the financial reports of 56 SMEs proved mandatory audits to be the most effective way to increase the level of tax compliance. Interestingly, auditors had higher expectations of the gains of audits than the SME managers, implying that there may have been disparities between the perceptions of the stakeholders. A tax compliance scale was also developed by the study, which is specific to SMEs and this improved the measurement of compliance behavior.

Tawfik and Elmaasrawy (2024) examined the determinants of quality of tax audit of the newly imposed content creation tax in Egypt. Detecting 179 tax auditors and employing PLS-SEM, they discovered that good legal systems and quality communication between tax governments and the taxpayers enhanced formal obedience. Nonetheless, compliance as actualized was mostly affected by the regulations and laws, whereas organizational determinants did not have a significant effect. The research illuminated the problem of compliance in the fast-developing digital economy with a particular focus on the significance of the specific audits conducted to tackle the issue of tax evasion in content creators.

Appiah et al. (2024) investigated voluntary tax obedience among SMEs in Ghana and the role of the tax knowledge, fairness and trust in government. According to the survey results of 341 SMEs, the analysis of which was conducted with the help of SEM, it was found that perceptions of fairness, the knowledge of the tax system, the trust to institutions were the significant predictors of compliance. Moreover, tax fairness moderated the relationship between tax knowledge and compliance and it is necessary to have transparent and fair tax systems. Their results point to the

behavioral and social aspects as the most important factors of compliance in the developing economies.

Alshira'h (2024) explored the compliance level on VAT in the Jordan retail sector and examined the role played by compliance costs and government trust. Based on survey data conducted on 189 retailers and structural equation modeling, it was realized that the cost of VAT compliance did not have any significant impact but trust in the government was a strong and positive predictor of compliance. The findings highlight that non-economic criteria, especially institutional trust, can have a strong decisive role in the compliance even when administrative burden is imposed on business. The research paper adds to the existing body of literature on the subject of behavioral tax compliance in developing economies.

The Agbanyo et al. (2024) study involved investigating how perceived political corruption influences tax compliance intentions of the private enterprises in Ghana using tax morale and tolerance as mediators. Based on survey information of 1,133 companies and structural equation modeling, the authors have shown that corruption decreases tax morale, tolerance and compliance intentions. Nevertheless, the ill effects of corruption were reduced by both tax morale and tolerance, indicating that they are significant in curbing corruption in high corruption settings. The results underpin the necessity of anti-corruption reforms in order to enhance voluntary compliance.

The study by Fochmann et al. (2025) discusses the influence of incidental emotions on the behavior of tax compliance in Germany. Using the survey data of 22,220 taxpayers and a controlled lab experiment of 297 participants, the study established that positive background emotions like those during weekends decreased compliance attitudes unlike negative emotions that increased compliance. The results undermine the classical concept of deterrence models and emotions are proposed as an important behavior factor in compliance. This study would expand the psychological explanation of taxation by correlating incidental emotions with the compliance decisions.

2.2.2 GST studies in India

The GST law in India has been contributing significantly to the growth of the country since it was introduced (Aulakh, 2024) but it is still on the first stages and is continuously evolving. Specifically, the studies on GST in India have been developing, and the researchers are constantly adding their work to the field (Dey, 2021). Consequently, there is a need to implement this body of research to have a more comprehensive and profound understanding in developing a solid basis of future research directions. Currently there are two quality review articles in area of GST in India that have been identified by the authors through a search in Scopus database. The former is by Guna and Anuradha (2021) where they have narrowed down on GST papers applicable to implication of GST on MSME's in India and beyond India. The databased they have utilized include, Research gate, Google scholar and Directory of Open Access Journals (DOAJ) and papers were downloaded until 2020. The authors have taken review guidelines that are described by Gough (2007) as they are described in his work in 2007. Second review is done by Maheshwari and Mani (2023) where the authors concentrated on under-reporting the effects of GST on different sectors of the Indian economy. They have availed quality of print and online source papers to their service and pointed out the effect of GST in 14 sectors of Indian economy. The above two review articles are both topic-specific to the effects of GST, but there is a distinct gap in the literature, i.e. lack of thorough review synthesising the overall research and advances on the field of GST in India, which will offer more research direction in the future to the scholars in the same field. Moreover, even in their bibliometric analysis of GST, Dhar and Khandelwal (2020) stated that the systematic literature review in the field of GST research is needed. Therefore, this is why this review of literature was meant to fill this gap. Specifically, we have attempted to serve the purpose of answering critical research questions which include, what are the developments and other research being done in the field of Goods and services tax in India post its implementation? Where do we go as far as future of research in Goods and Services tax research in India? To respond to this question, the

current review employed Preferred Reporting Items of Systematic reviews and Meta-Analyses (PRISMA) protocol of scrutinizing the articles and theories, context and method (TCM) framework of systematic literature review process. Scopus database has been used to do the literature review and the review make a number of significant contributions.

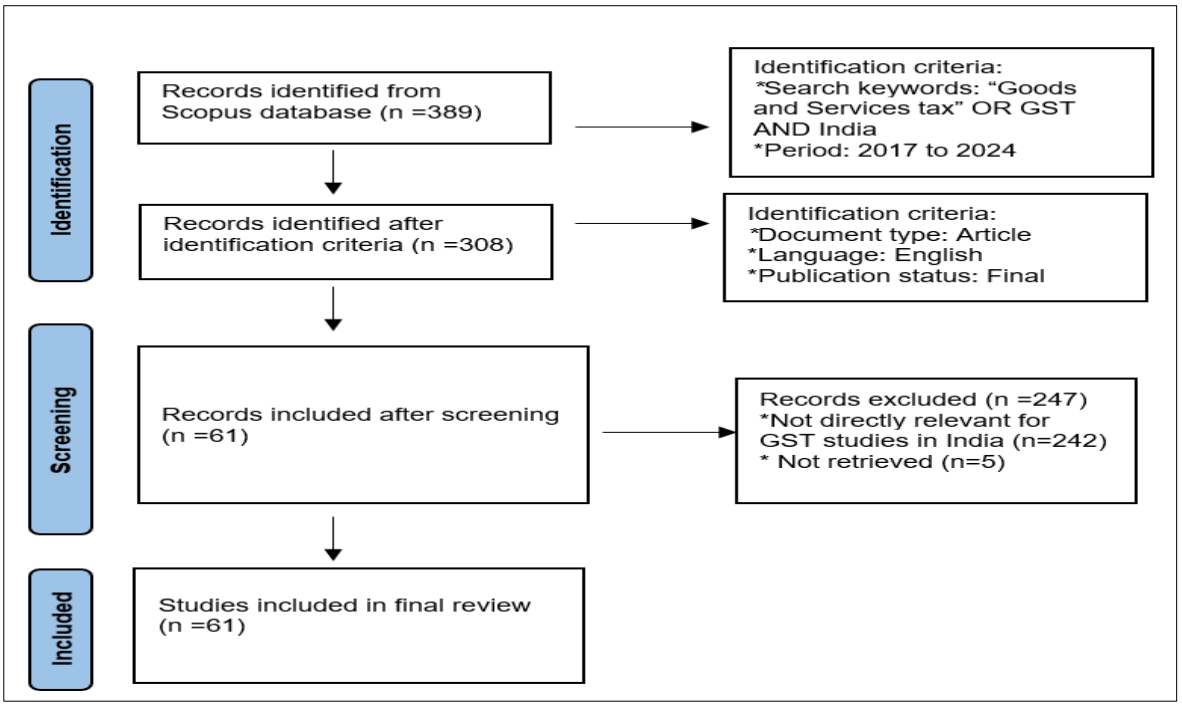
To begin with, it is the first comprehensive review study in the field of GST in India and will seal the gap in the literature, therefore, contributing immensely to the existing body of knowledge. Secondly, the review is the first systematic review in the area of GST in India which will integrate PRISMA and TCM framework. Thirdly the review is identifying present significance avenues of research in the future. Therefore, the review is of immense value in enhancing the overall literature in the field of indirect taxation at national and international levels.

The review structure is the following. The review is structured in a proper manner and has six sections. The first section, Introduction, helps us to consider the background of our study which is necessary to give some background and explain the need, the importance and value of our review. Passing on to the second section of the presentation, Methodology, we applied the PRISMA protocol to carefully identify the relevant literature on the basis of inclusion, exclusion and screening criteria. The third section, Descriptive analysis of the literature, provides a detailed clarification of Publication trends, Journals wise distributions of publications and number of Citations. The fourth part, TCM framework has been incorporated in the review to address the theories, contexts and methods applied. In the fifth part Future research directions, section wise possible future research direction is discussed. Implication and Conclusion is the sixth part of the review where we have summaries our study by discussing the implications and summarising the overall review study.

1. Research methodology for review

The review uses PRISMA protocol to carry out systemic review of literature suggested by Moher et al. (2020) is aimed to help researchers to improve reporting of systematic review and meta-analysis. The first step of PRISMA that was used is identification in which a keyword string that

includes Search terms of Goods and services tax OR GST and India was used and Boolean operators (TITLE-ABS-KEY ("Goods and service* tax") OR TITLE-ABS-KEY (GST)) AND TITLE-ABS-KEY (India)) AND PUBYEAR >2016 AND PUBYEAR <2025. The search of the Keyword was done on the title, abstract and key word section of the article. This search was done on Scopus database between the time frame of 2017 and March 2024. The year of start is taken as 2017 since GST in India was adopted since this year. Also, the search was limited to Scopus database because in this database high quality peer reviewed research article are indexed (Bhatia et al., 2021). A total of 389 articles were obtained at this point. In addition, the search during the identification stage was limited to articles published in English language in the entire subject area. At this point the articles were narrowed down to 308. A detail screening was done on these 308 articles in next step to weed out articles that are not a focus on Goods and service tax in India that have led to 242 articles being filtered out. Another 5 articles were dropped because they could not be retrieved. Following the screening process 61 articles are finally incorporated in detail systemic farmwork based review process. The flow diagram of PRISMA protocol with inclusion and exclusion criteria is presented in Figure 2.1.



Source: Author's compilation

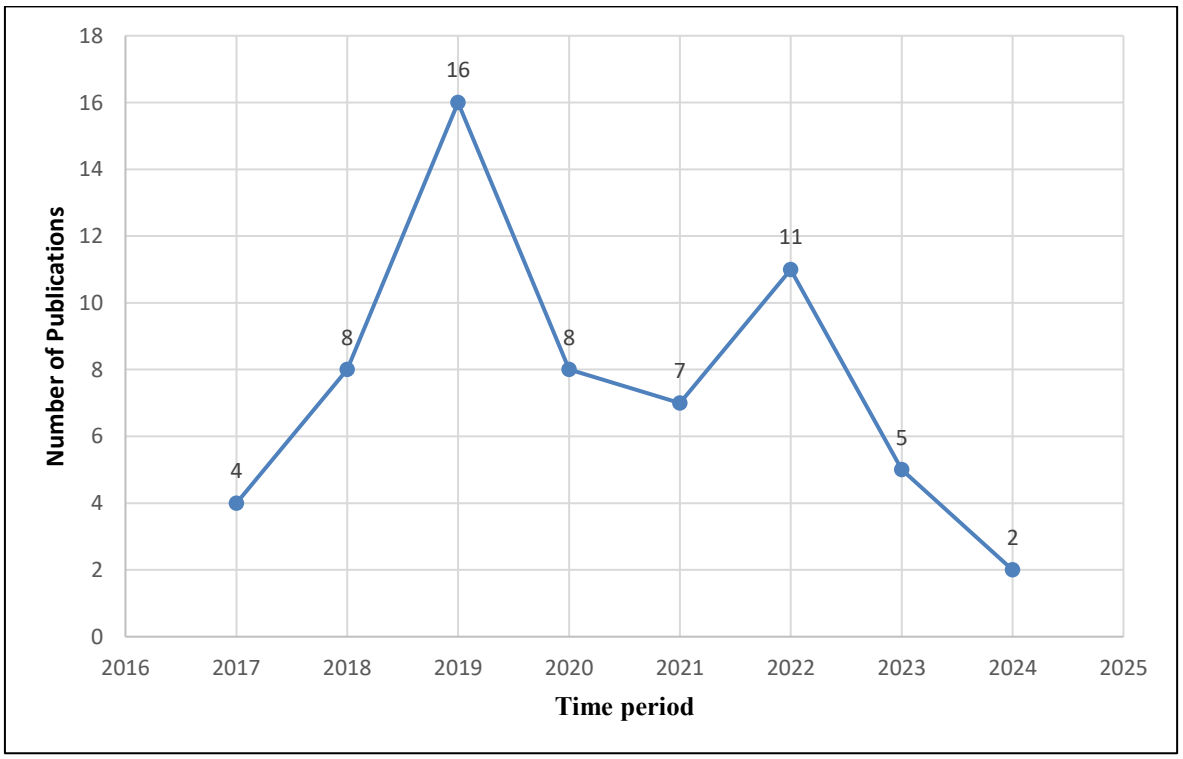
Figure 2.1: PRISMA protocol for article selection

2. Descriptive analysis of the literature

This part will explore the development in area of GST in India in the form of publication trend, articles published in various journals, and number of citations that they have obtained over the years.

A. Publication trends under review

Figure 2.2 is the development of research papers publication to be used in the review study to show how the research related to GST in India has been developing since its establishment. When GST was introduced in 2017, 4 papers were published with a moderate level of academic interest. In 2018 it started to grow significantly because there were 8 papers published. In addition, there was a high increase in articles in the year 2019 with 16 publications. In 2020, witness a slow decline in the number of publications of 8 papers then slight decline with seven in 2021. A good growth was recorded in 2022 of 11 publications. In 2023 publications have however decreased to 5 papers with a subsequent decrease to 2 publications in the year Up to March 2024.



Source: Author's compilation

Figure 2.2: Trend of publications for review

B. Journals wise distributions of publications under review

Table 2.1 illustrates the articles published in various journals that can be considered in the current review study. As indicated in Table 2.1, it is clear that Indian Journal of Finance lead in terms of publications with 5 articles, then followed by Tobacco Control journal and International Journal of Innovative Technology and Exploring engineering with 3 publication each. There are 3 publications each in four journals, which are Sustainability, International Journal of Mechanical Engineering and Technology, Journal of Advanced Research in Dynamical and Control Systems and SCMS Journal of Indian Management. The other journals are reflected by 1 publication each. The compilations also portray the publications of the articles of various spectrum of disciplines like Finance, behavioral Finance, Economics, Management, Entrepreneurship etc.

Table 2.1: Journals name and number of Publications under review

Journal Name	No. of Articles	Articles
Indian Journal of Finance	5	(Shokeen et al., 2017) (Sharma and Kumar, 2017) (Nayyar and Singh ,2018) (Shukla and Singh, 2018) (Muthukamu and Amudha, 2020)
Tobacco Control	3	(Goodchild et al., 2017) (John et al., 2019) (John and Dauchy, 2021)
International Journal of Innovative Technology and Exploring Engineering	3	(Shanti and Murty, 2019) (Uppal et al., 2019) (Beemabai and Krishnakumar, 2019)
Sustainability	2	(Bhalla et al., 2022) (Bhalla et al., 2022)
International Journal of Mechanical Engineering and Technology	2	(Rengamani, 2018) (Ashok and Kumar, 2018)

Journal of Advanced Research in Dynamical and Control Systems	2	(Rao and Kishore Babu, 2018) (Kumar and Kishore Babu, 2018)
SCMS Journal of Indian Management	2	(Ganesh, 2019) (Thumma et al., 2020).
Economic and political weekly	1	(Chakravarty and Dehejia, 2017)
Systems Research and Behavioural Science	1	(Ojha and Vrat, 2019)
Indian Journal of Public Health Research & Development	1	(Rao and Neeraja, 2018)
Revista ESPACIOS	1	(Srivastava and Bisaria, 2018)
Vikalpa	1	(Shukla and Kumar, 2019)
Journal of Revenue and Pricing Management	1	(Kumar et al., 2019).
International Journal of Economics and Business Administration	1	(Paliwal et al., 2019).
Humanities & Social Sciences Reviews	1	(Tekwani and Raghuvanshi, 2019)
Indian Journal of Fisheries	1	(Salim et al., 2019)
International Journal of Research in Pharmaceutical Sciences	1	(Gautam et al.,2019)
International Journal of Recent Technology and Engineering	1	(Garg and Anand, 2019)
International Journal of Recent Technology and Exploring Engineering	1	(Sandhu and Atwal, 2019)
International Journal of	1	(Gautam et al., 2019)

Advanced Science and Technology		
International Journal of Supply Chain Management	1	(Gautam et al., 2019).
International Journal of Control and Automation	1	(Prakash et al., 2020).
Indian Economic Review	1	(Mukherjee, 2020)
Journal of Public Affairs	1	(Maheshwari and Mani, 2022)
Entrepreneurship and Sustainability Issues	1	(Kumaraswamy, 2020)
Eurasian Chemical Communications	1	(Roy et al., 2020).
International Journal of Management	1	(Benjamin and Singh, 2020)
International Journal of Business Information Systems	1	(Chowdary et al., 2020)
Economic Change and Restructuring	1	(Mallick, 2021)
Global Journal of Flexible Systems Management	1	(Deshmukh et al., 2022)
SSM-population health	1	(Law et al., 2021)
Universal Journal of Accounting and Finance	1	(Dey, 2021)
Journal of Policy Modeling	1	(Majumder et al., 2021)
Journal of Distribution Science	1	(Naik and Haldankar, 2021)
International Journal of Game Theory	1	(Bhattacherjee and Sarkar, 2021)
Materials Today:	1	(Sharma et al., 2022)

Proceedings		
Business Perspectives and Research	1	(Dhar and Khandelwal, 2022)
Finance: Theory and Practice	1	(Singhal et al., 2022)
Social Philosophy and Policy	1	(Rajagopalan, 2022)
Journal for ReAttach Therapy and Developmental Diversities	1	(Khalid et al., 2022).
Indian Growth and Development Review	1	(Majumder et al., 2021).
Vision	1	(Basavanagouda and Panduranga, 2022)
SAGE Open	1	(Bhalla et al., 2023)
Cogent Economics & Finance	1	(Thayyib et al., 2023).
World Review of Entrepreneurship, Management and Sustainable Development	1	(Geeta and Mathiraj, 2023).
International Journal of Professional Business Review	1	(Ramkumar et al., 2023)
Research Journal of Textile and Apparel	1	(Pandey et al., 2023)
International Journal of Intelligent Systems and Applications in Engineering	1	(Gayathri and Priya, 2024)
International Journal of Business and Systems	1	(Desai et al., 2024).

Research	
Total	61

Source: Author's compilation

C. Number of Citations under review

Table 2.2 represents the top 10 articles which were cited in the field of GST in India taken into consideration during this review study. The citation analysis has been conducted through the use of Google scholar database where the best article in terms of citations is Nayyar and Singh (2018) article which is published in the Indian Journal of Finance with 138 citations followed by Mallick (2021) article with 47 citations that is published in the Economic Change and Restructuring journal and in third place is the Deshmukh et al. (2022) article with 33 citations published in the Global Journal of Flexible Systems Management. Fourth in the list is article by Shokeen et al. (2017) that has 32 citations but it is also published in Indian Journal of Finance. Article by John et al. (2019) with 28 citations is next on the list as it is also published in Tobacco Control journal. In the sixth place, there is the article by Mukherjee (2020) published in Indian Economic Review and with 26 citations. The seventh ranked article by Chakravarty and Dehejia (2017) has 25 citations that have been published in Economic and political weekly. The second paper by John and Dauchy (2021) on eight ranks has 18 references to Tobacco control journal. The previous two articles have 16 citations each, published by Shukla and Kumar (2019) in Vikalpa and Bhalla et al. (2022) in Sustainability journal.

Table 2.2: Ten most cited papers under review

Article title	Authors	Journal Name	Citations*
A comprehensive analysis of goods and services tax (GST) in India	(Nayyar and Singh, 2018)	Indian Journal of Finance	138
Do governance quality and ICT infrastructure	(Mallick, 2021)	Economic Change and Restructuring	47

influence the tax revenue mobilisation? An empirical analysis for India			
Goods and Services Tax (GST) Implementation in India: A SAP–LAP–Twitter Analytic Perspective	(Deshmukh et al., 2022)	Global Journal of Flexible Systems Management	33
Impact of goods and services tax bill on the Indian economy	(Shokeen et al., 2017)	Indian Journal of Finance	32
Estimated impact of the GST on tobacco products in India	(John et al., 2019)	Tobacco Control	28
6. Goods and Services Tax efficiency across Indian States: panel stochastic frontier analysis	(Mukherjee, 2020)	Indian Economic Review	26
Will GST exacerbate regional divergence?	(Chakravarty and Dehejia, 2017)	Economic and political weekly	25
Trends in affordability of tobacco products before and after the transition to GST in India	(John and Dauchy, 2021)	Tobacco control	18
Role of Trust in Adoption of Online	(Shukla and Kumar, 2019)	Vikalpa	16

Good Service Tax Filing in India Examining the Effect of Tax Reform Determinants, Firms' Characteristics and Demographic Factors on the Financial Performance of Small and Micro Enterprises	(Bhalla et al., 2022)	Sustainability	16

Source: Author's compilation from Google scholar as on* (8-06-2024)

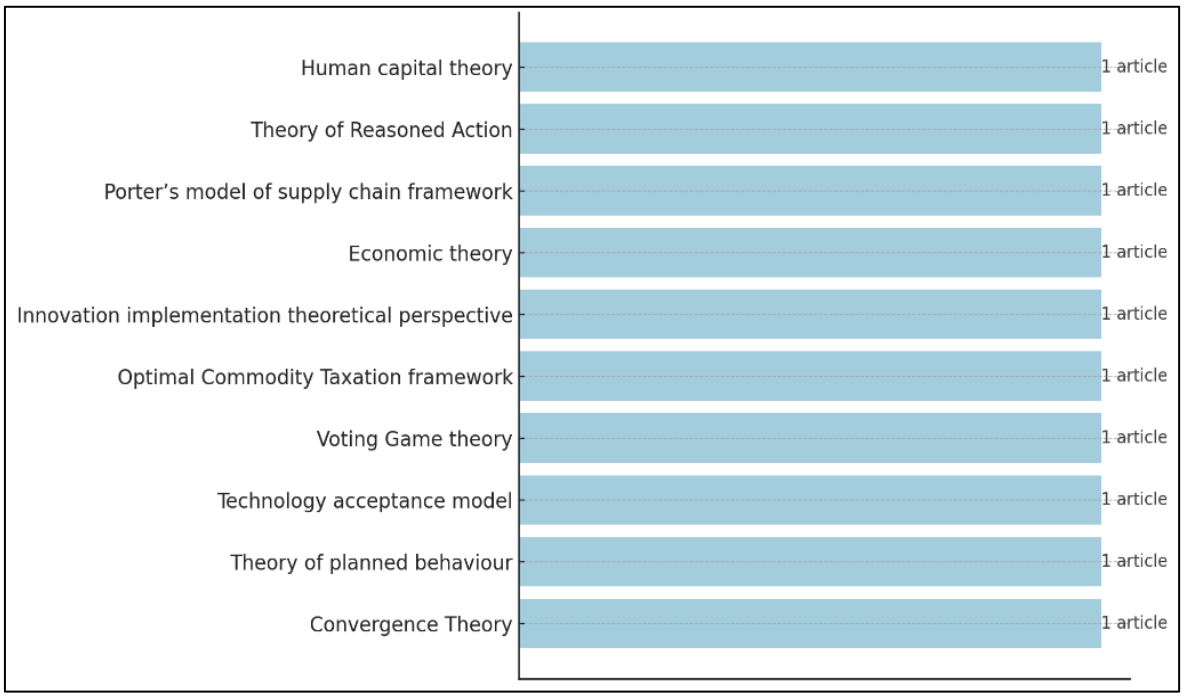
3. TCM framework

The framework of Paul et al. (2017) is TCM that we have chosen to guide our current systematic review study. The TCM framework enables the identification and analysis of the current theories, the research context, and the methodologies applied in the past earlier researches (Koi-Akrofi, et al., 2023). Thus, using this framework we can recognize and talk about the theories, context and approaches taken in field of GST in India which will help to determine the areas of research in future. The constituent of TCM framework have been addressed in detail as follows:

A. Theories

Theories give researchers an orientation in responding to their research questions in order to attain the research objective (Lim et al., 2021). Within the framework of the current review study, the researchers have incorporated a mere 10 theories and theoretical framework into conducting the study in the field of GST in India out of 61 papers that they have selected. Figure 2.3 illustrates the chart of the theories that were to be used in the study. According to the Figure it is evident that comparatively small amount of theories and frameworks have been applied in field of GST in India with 1 counts each. One of the famous theories that are applied to GST research in India is Technology acceptance model (TAM), Theory of planned behavior (TPB) and Theory of reasoned actioned (TRA) that are

usually employed in the area of social and behavioral research. Researchers have applied these theories in the context of GST to comprehend the level of adoption among businesses (Shukla and Kumar, 2019) and the effects of GST on the performance of businesses (Bhalla et al., 2022; Bhalla et al., 2023). Conversely, the other theories explore the financial and economic policy of GST in India. As an example, as Chakravarty and Dehejia (2017) examined regional income disparities through convergence theory, Bhattacherjee and Sarkar (2021) analyzed the voting process in GST law, Majumder et al. 2021 looked at the optimal commodity tax rate, Dhar and Khandelwal (2022) explored the effect of GST on the supply chain management with Porters model of supply chain to name a few. This implied that GST research is at its exploratory phase and scholars are still testing various theories.



Source: Author's compilation

Figure 2.3: List of theories under review

B. Contexts

Contexts refer to the specific circumstances and the environment under which the investigation occurs (Paul et al., 2017). The various areas of research in GST, the respondent's group and the States/Union territory (UTs) where research is conducted has been analyzed as the context of the

review in current study. Table 2.3 gives the information of the various areas of research of GST in India. According to this table vast share of GST research in India consisting of 35 articles have examined the effect of GST on various segments in India. These studies in particular have analyzed the way GST has impacted the aspects of Indian economy including Micro, Small and medium enterprises (MSMEs), small businesses, Multinational companies and other industries like Shipping, Gold, Handicrafts, healthcare, Marine fisheries sector, Mutual funds, tobacco businesses, Carpets and Floorings, Information technology (IT) and food sectors, supply chain, real estate and many more. This is proceeded by the perception and awareness research on GST adoption and GST implementation with 13 research. These studies cover collection of areas such as the problems and issues of GST, perception and awareness of implementation of GST to various stakeholders. Finally, 13 articles are used to demonstrate GST research in other fields like Optimal tax rate, GST revenue, Forecasting, Equity and complexity, voting procedure, Covid 19 impact, Role of GST practitioner, Blockchain technology, GST efficiency, return filing and Tax buoyancy.

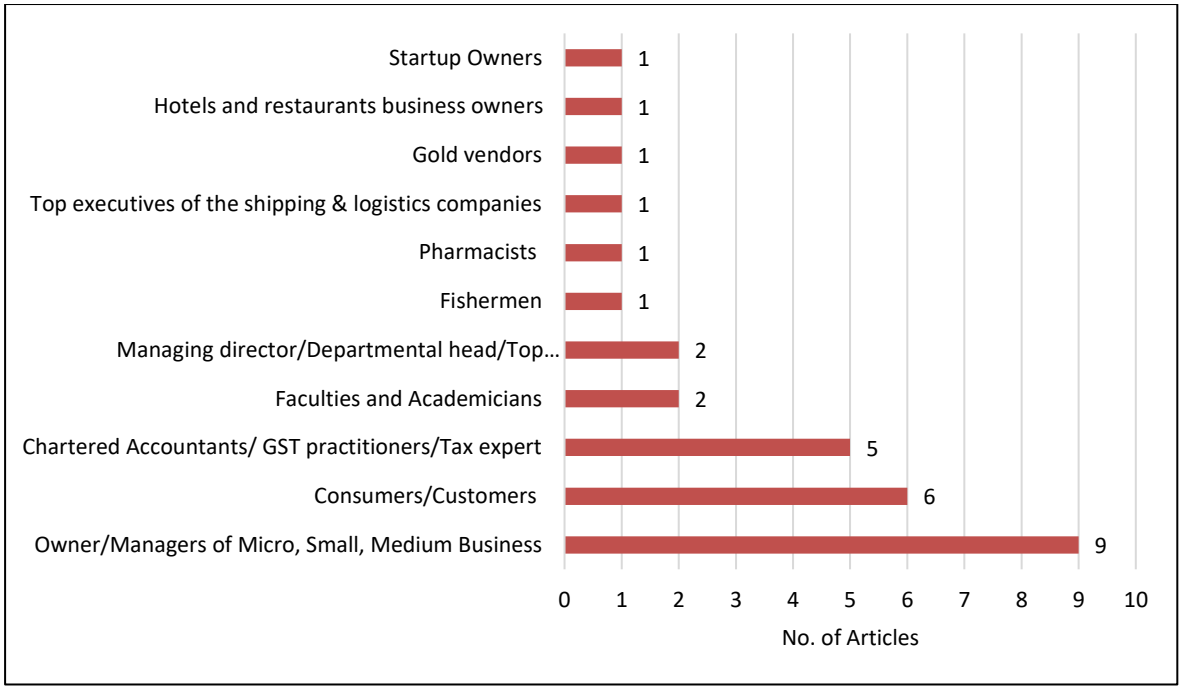
Table 2.3: List of domains of GST studies in India (Reviewed Studies)

Domains of the study	No. of articles
Impact of GST on: MSMEs/MSMEs business performance, Tobacco business/Products/Affordability, Small Business, Regional income disparities, Middle income earners, Shipping companies, Gold industry, Multinational companies, Indian Handicrafts sectors, Indian healthcare industry, Marine fisheries sector, Performance of Companies stock, SME's stock returns, Auto Stocks, Consumers purchasing and Saving behaviour, Manufacturing growth, Exports of Carpets & Floorings Industry, IT sector, Mutual funds, Working capital of selected SME's, Startups, Purchase of aerated drinks in urban India, Indirect tax	35

revenue, Foreign Trade, Performance of firms, Supply chain Management, Food sector, Indian Economy, Import/ Exports and employment Generation and Real estate sector	
Perception/awareness studies about GST adoption /GST implementation on: Challenges/Barriers/Issues faced by business in GST, Taxpayers perception, Perspective towards GST implementation, perception of engineering faculties, perception of Pharmacists, Awareness of Small business person, Benefits of GST implementation, Textile industry stakeholders' perception, A comprehensive analysis of GST in India	13
Other domains: Optimal commodity tax rate, ITC and governance impact on GST revenue, Forecasting of GST revenue, Equity and complexity of GST, voting procedure under GST, Covid 19 impact on GST, Role of GST practitioner in compliance, Blockchain technology, GST efficiency across states, return filing, Tax buoyancy	13

Source: Author's compilation

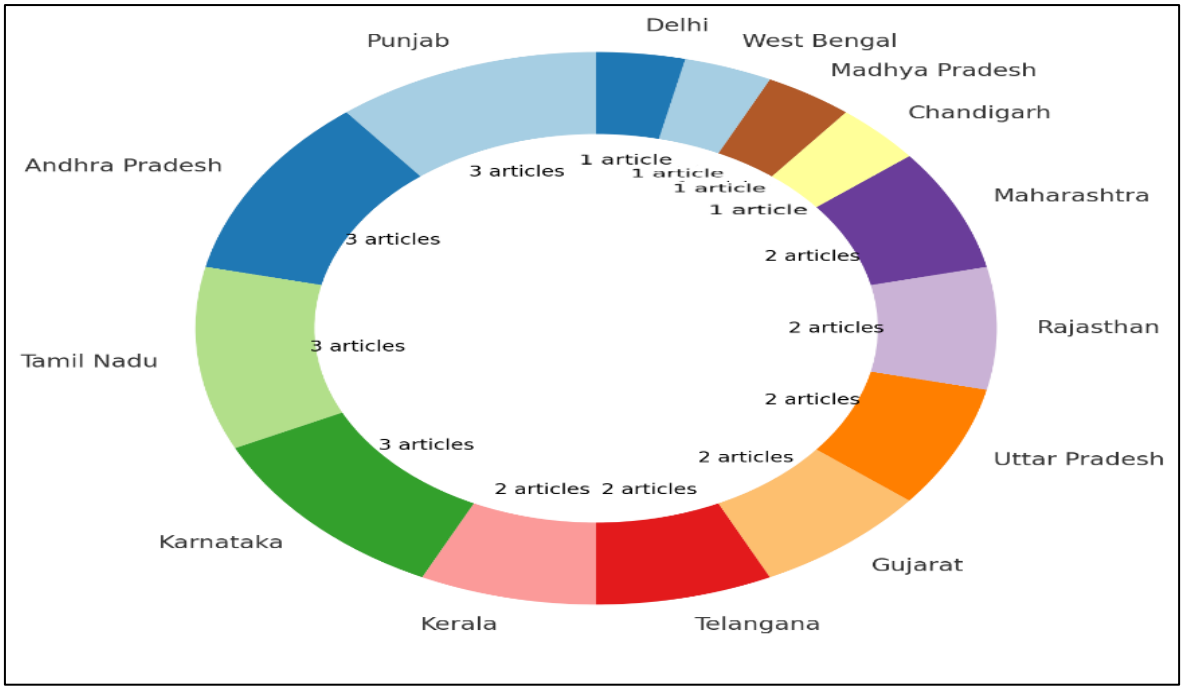
Figure 2.4 demonstrate the pattern of the respondents in the different studies of GST. According to this figure, 9 articles have sampled Owners/ Managers of Micro, Small, Medium Business, 6 articles have sampled Consumers/Customers, 5 articles have sampled Chartered Accountants/ GST practitioners/Tax expert, 2 articles have sampled business owners (Hotels and restaurants) of Top management personals and 2 articles have sampled Startup Owners. This sampling of the different groups of respondents has brought out an assortment of observations concerning the studies of GST in India.



Source: Author's compilation

Figure 2.4: Population under review

The locations of the States/UTs where studies have been conducted in India have been shown in figure 2.5. According to this figure most of the GST studies have been conducted in the State of Punjab, Andhra Pradesh, Tamil Nandu and Karnataka with 3 article each followed by 2 article each in the State of Kerala, Telangana, Gujarat, Uttar Pradesh, Rajasthan and Maharashtra. This concentration of GST studies demonstrates that the research work has been focused in particular States/UTs. India is consisting of 28 states and 6 UTs but this number represents that GST researches are developed in 14 states/UTs of India only meaning that there is a big gap in the geographical scope of GST studies in India.



Source: Author's compilation

Figure 2.5: List of States/UTs under review

C. Methods

Methods refer to the research methods and analysis tools that were used in the research study (Khatri and Duggal, 2022). The methods we have considered and analyzed in this review paper are different data analysis tools that are adopted, data collection, various sampling methods and sample size that are used. Table 2.4 illustrates a wide variety of statistical methods used including the simple level of statistical analysis to the highly developed level of econometrics model. According to this table the data analysis techniques employed are mainly descriptive analysis that comprises of charts, tables, percentage, graphs, frequency and trend analysis of 16 articles. This is then followed by regression analysis using 9 articles, regression analysis has adopted different types of regression methods, these include logit regression, OLS, GLS, SFA to name some of them. The time series analysis with various assumption tests and time series models such as ADF, Jarque - Bera test, ARIMA, VECM etc, come next in line with 7 studies. Subsequently, 6 articles use PLS/CB Structural Equation modelling (SEM), T-Test and Paired t-test. Next is ANOVA analysis that is utilized in 4 articles and then correlation analysis that was used in 3 articles. The 2 articles employ the iterative method, EFA/CFA

and Sentimental analysis in 2 articles each. This is succeeded by the remaining data analysis method applied in 1 article each. Such a spread of data analysis is indicative that the researchers are attempting to delve into understanding of GST study by implementing the fundamentals of descriptive statistics and gradually evolving into a high level of using statistical means.

Table 2.4: List of data analysis method under review

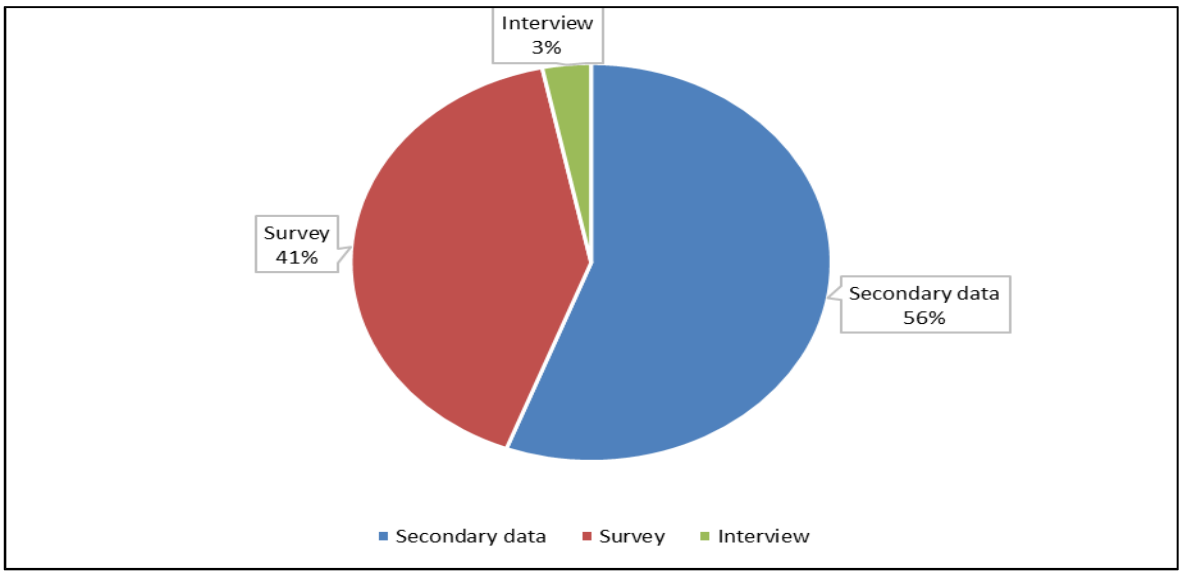
Data Analysis	**No. of Articles**	**Data Analysis**	**No. of articles**
Descriptive analysis (Bar charts, Tables, Percentage, Graphs, Frequency distribution and Trend analysis)	16	PLS SEM/CB SEM	6
Regression analysis	9	T-Test	6
Type of regression analysis		Paired t-test	6
logit regression model	1	ANOVA	4
Stepwise Regression	1	Correlation	3
Regression analysis using nightlights luminosity data set	1	Iterative method	2
Tax Simulation modelling	1	EFA/CFA	2
Linear regression model	1	Sentiment analysis	2
Ordinary Least Square (OLS) regression	1	Interpretive structural modelling (ISM)	1
Semi logarithmic ANCOVA regression	1	Wilcoxon signed rank Test	1
Random Effects Generalized Least Squares (GLS)	1	Chi-squares test	1
Stochastic Frontier	1	Analytical hierarchy	1

Approach (SFA)		process (AHP) technique	
Time series analysis	7	Tukey-HSD	1
Test adopted for Time series analysis		Kruskal Wallis test	1
Augmented Dickey–Fuller (ADF) test	4	DuPont Analysis	1
Jarque - Bera test	1	Multi- Criteria Decision making (MCDM)	1
Ljung - Box test	1	Game-theoretic analysis	1
Heteroskedasticity test	1	SAP-LAP Analysis	1
GARCH and ARCH - LM test	1	Observation method	
Phillips–Perron (PP) tests	1	System Dynamics (SD) approach using causal loop diagram (CLD) and stock and flow diagram (SFD)	1
Sequential Bai–Perron test	1	Principal Component Analysis (PCA)	1
Interrupted time series analysis	1	Dropout deep neural network (D-DNN)	1
Trigonometric Seasonality Box-Cox Transformation ARIMA errors Trend Seasonal components (TBATS)	1	Mixed method approach	1
Exponential Smoothing (ETS)	1	Estimation analysis	1
Exponential Triple Smoothing techniques.	1		
Neural Networks for Autoregression (NNAR) ARIMA	1		

Hybrid Theta	1
Artificial Neural Networks (ANN)	1
Vector Error Correction (VECM) model	1
Johansen-Juselius (JJ) for co-integration analysis	1

Source: Author's compilation

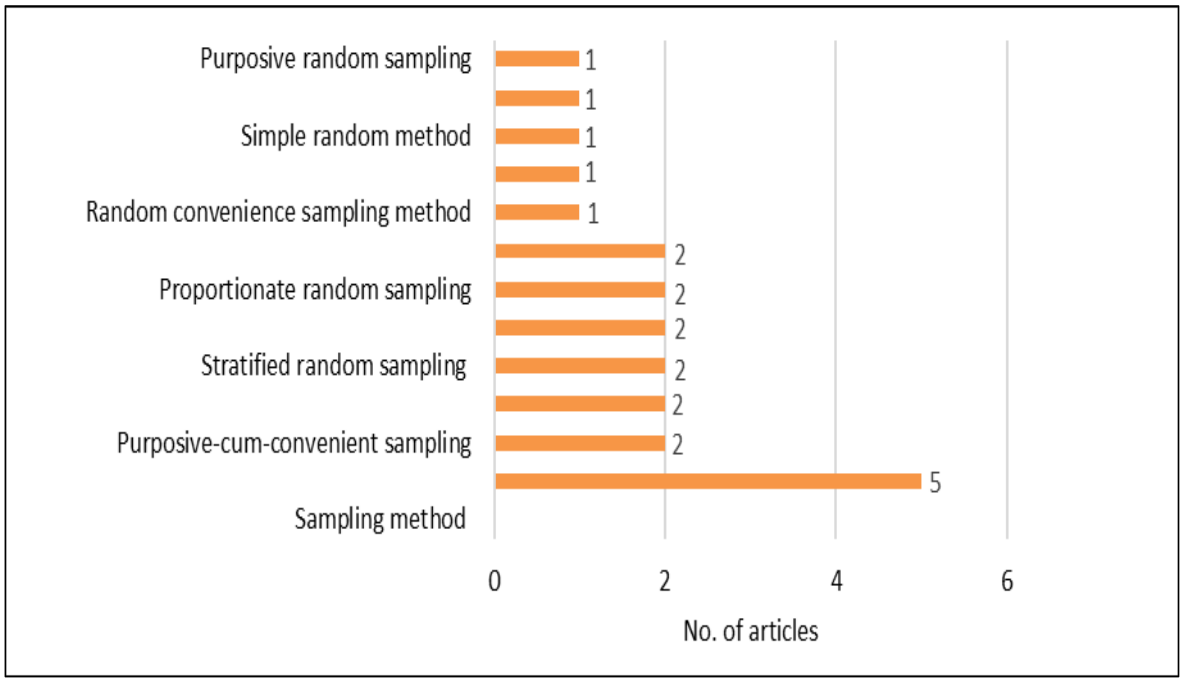
Figure 2.6 shows the approaches embraced in the data collection of GST research in India. Based on this, primary, secondary and interview have been taken as a data collection method in articles under the review study. According to the figure, secondary data collection has been applied in 34 articles (56%). This implies that researchers are often using published database, records and reports in conducting GST studies. Moreover 25 articles (41%) have used survey techniques to describe the perceptions, attitude and behavioural components of the respondents towards GST. Finally, 2 articles (3%) are applying interview method as the data collection strategy to conduct the qualitative analysis to the GST research. The distribution of data collection shows clearly that secondary data in respect of the studies concerning GST is preferred in the Indian country.



Source: Author's compilation

Figure 2.6: Data collection method under review

Figure 2.7 illustrates various a sampling technique that was taken by the researchers in investigating GST in India. In this majority, research is attempting to employ Convenience Sampling with 5 articles. This is an indication that a non-probability sampling was chosen by many authors due to its ease of access. This is preceded by a mixed of probability and non-probability sampling techniques which include Purposive-cum-convenient sampling, Quota sampling, stratified random sampling, Judgmental sampling, Proportionate random sampling and Random sampling with 2 articles each. Finally, there are the following sampling techniques that have been utilized in 1 article respectively; Random convenience sampling method, Proportional stratified random sampling, Simple random method, Multistage random sampling method and Purposive random sampling.

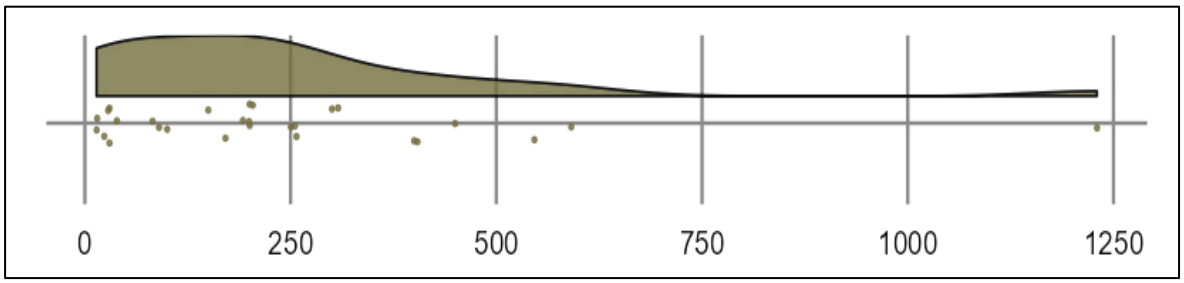


Source: Author's compilation

Figure 2.7: Sampling method under review

Figure 2.8 shows the distribution of the sample size followed in different GST studies in India. The density plot shows that most of the studies that constitute 18 articles have been carried out with a sample size of 0 to 250 respondents. The consequence of which is that researchers have been relying on small sample sizes to conduct GST studies. 7 articles have used as many as 500 respondents. In addition, 2 articles have sampled between 500 to 1000 respondents. And lastly 1 article only have sampled

over 1000 of the respondents. This distribution shows clearly that the GST researches in India are basing on small sample size that can affect the generalizability of the research.



Source: Author's compilation

Figure 2.8: Sample size under review

4. Future research directions in area of GST in India

We had discussed in detail in the previous section Theories, Contexts and Methods used in the area of GST in India. This is where we have identified the gaps in this area and give future research directions.

A. Future directions: Theory

Through figure 2.3 it comes out that the gaps in the utilization of theories in the study of GST in India are significantly large. The existing review portrays that there is a deficiency of diversity and depth of theory perspective as only 10 theories that are used were presented. This can be used to imply that there is a need to consider wider range of theories to have in-depth discussion of the GST law. There are not the economical, psychological, sociological and technological theories. Research in the future ought to thus look at pertinent social and behavioral theories and embrace the interdisciplinary approaches that may contribute to the understanding of various aspects of GST in India. Moreover, further studies and application of wider scope of theories must be considered in future to establish a wide array of conceptual frameworks to examine the phenomena of GST in India.

B. Future directions: Contexts

Regarding contexts, having analyzed the field of investigation in

GST in India (Table 2.3) it becomes obvious that most of the articles (over 50%) of the reviewing articles are devoted to discussing the effects of GST on different spheres of the country. The main cause of this focus is that GST was at its early stages at that time (Garg and Anand, 2019; Sandhu and Atwal, 2019). This is the period that was of interest to the researcher, academician and even the policymakers specifically in the dynamics of its impact on various sectors, considering that it could greatly change the financial landscape of the economy of the country. Also, to test the level of adoption of the newly introduced tax law, some of the articles attempted to learn about the perception and awareness about GST among the different stakeholders. More so, not many researchers are talking about other areas of GST such as voting processes, Optimal commodity tax rate, tax buoyancy etc. Based on the discussion above, there is a considerable gap in the field of study in GST in India. Since GST is maturing in the country, the future researchers can concentrate on numerous significant and varied areas of GST that GST research lacks at present.

The study of the factors that could contribute to GST compliance behaviors, business performance and functioning under new tax regime of various businesses registered under GST law including MSME/SME, Small businesses/proprietorship, hotels, restaurant, textiles, shipping, logistics, supply chain, startups, handicraft, IT, Composition dealers that may be experienced by the businesses will be highlighted by the researcher in future. Moreover, other variables that can also be addressed in research include compliance cost, tax complexity, technology, GSTN, tax rates, working capital constrains, economic or non-economic factors which could have implication on the GST compliance behavior of the businesses, business performance and functioning. To do so population base of major stakeholders like Owners/Mangers of business and Tax professionals can be of great importance. The scholars can also enter the field such as the consumption behaviors of the consumers, Spending behaviors, Consumer GST awareness, effect of changes in tax rates on purchase behaviors, effect on various groups and demographic in the age of GST law. The other fascinating subject may be the effects of GST on the consumer purchasing patterns of sin products including tobacco products, aerated soft drinks.

Moreover, the issue of GST impact on the dealers of these sin products can also be discussed. In addition, the study has been focused on just 14 States/UT of India (Figure 2.5). Such a geographical bias means that more research studies are necessary in the underrepresented States/UTs. The researchers of this States/UTs need to endeavor to carry out research in other areas of GST that will give a nationwide level coverage of GST in the country.

C. Future directions: Methods

There are several Gaps found in methods sections. Based on Table 2.4 results, most of the researchers have embraced descriptive analysis, a facet that necessitates future researchers to embrace the advanced level of statistical analysis. Figure 2.6 shows that secondary data collections prevail over the research, which implies primary data collection activities are required. Also, figure 2.7 shows that there is Convenience non-probability sampling has been employed and this, can be inappropriate in the representation of the population and sample size too as per figure 2.8, most of the studies have sample size that are relatively small and only few studies have sample size above 500. To fill this gap future studies may be under the form of cross-sectional studies in various areas of GST experienced in contexts sections by the aid of high level of regression analysis employing Structural Equation modelling (SEM) with theoretical backing. The future researchers must ensure that the size of the sample needs to be large enough to enhance the strength of the final findings and will guarantee the generalizability of the findings. The Time series analysis also can be used in the future to examine the long-term GST correlation with the number of variables such as GDP growth, digital payments, Job creations, industry development, agricultural development and the Consumer Price Index.

5. Implications and conclusion of the review

This review has a lot of implication in regards to GST in India. Practically the discovery reveals that there is a need to conduct future researches in the field of GST compliance behaviors, business performance

and other activities that could have an impact on the operations of various businesses during the GST regime. The study of these compliance practices can provide the policymakers with useful information through the future research by looking at the performance and other variables that influence this such as the compliance costs, complexity of taxation, working capital constraint etc. This exploration will play an enormous role in assisting the policymakers to establish superior GST regulation and approaches that will ascertain a greater balanced and viable tax system. The changes that should be implemented in the law that would be able to lessen the compliance cost, complexity, issues and challenges will therefore help businesses specifically MSMS, SME and other small business and enterprises. Theoretically, the review study had already contributed a number of significant things through thoroughly reviewing the study according PRISMA protocol and discussing regarding the publication trends, journal publication and citation analysis. This has evidently brought forth changing interest and areas of focus on GST research.

Moreover, using TCM framework the review study has established various gaps regarding perspectives of theories, settings and practices of GST literature. This will serve the already available body of knowledge and will inform the research to come in the area of GST taxation in India and the international level. Also, the present review study is restricted to papers available in Scopus database as such the future researchers can use other databases to supplement this review. Finally, this systematic literature review was conducted to gain insight on the development of GST studies in India and how future research will be carried out and this was achieved through the review of 61 articles which gave a holistic picture of GST studies in the country. This review article serves as a reference base to academician, researcher and policymakers providing numerous research lines in the future in the dynamic sector of GST.

2.3 Theoretical background and hypothesis development for Objective 1

2.3.1 Theoretical background

The process of formulating hypotheses through tax compliance studies needs sound theoretical basis that justifies the tendency of individuals and organisations to either comply or avoid paying taxes. One of the various lenses that have been used in compliance studies is the Institutional Theory which can be of great assistance since it focuses on how formal rules, administrative institutions and social norms influence behaviour. The framework is very applicable in the research of Goods and Services Tax compliance in India where governance systems differ greatly between the various States and Union Territories. This study by putting the analysis within the framework of the Institutional Theory, the effects of institutional capabilities, institutional enforcement and the socio-cultural backgrounds render a collective effect on taxpayer behaviour in various population contexts.

2.3.1.1 Institutional Theory

Institutional Theory offers a theoretical basis of the interpretation of how institutional settings, consisting of formal rules, social conventions, and cultural beliefs, may influence the organisational behaviour and the decision making of an individual (DiMaggio and Powell, 1983; Scott, 2008). Although the theory was initially formulated in the context of sociology and organisational research, it postulates that obedience to rules is not merely determined by the rationality of utility maximisation and coercion but also by the necessity to gain legitimacy and conformity to the rules created in society. This theory is becoming common in the taxation arena to study the effects of compliance not only by legal structures (e.g., tax laws and penalties) but also by the general institutional setting, i.e. the quality of the administration, trust in government, capacity to govern, and existing societal norms (Richardson, 2008; Alm & Torgler, 2011). So, tax compliance is a product of both formal control structure and informal institutional forces.

When applied on the Goods and Services Tax regime in India, the Institutional Theory provides a valuable perspective through which the variation in the compliance behaviour between the States and Union Territories (UTs) can be viewed. Despite the fact that GST is regulated by the same national law, its administration is shared between the central and state governments, which brings about a high level of institutional heterogeneity. States vary regarding their efficiency in administration, quality of taxpayer services, and enforcement capacity and the use of digital infrastructure. In turn, the closer the institutional settings are to being stronger, i.e., characterized by effective enforcement, high transparency, good taxpayer services, as well as being based on digital systems, the higher the chances of compliance-enhancing conditions (Scott, 2008; Levi, 1988).

According to Scott (1995), there are three pillars of institutions namely: regulating, normative as well as cognitive, all of which apply to GST compliance. The regulative pillar is associated with GST regulations and enforcement by the local taxation agencies; the normative is associated with the social norms and values of the taxpayers and local culture and the cognitive pillar associated with the way in which the taxpayers perceive their role under the GST law. These factors differ among States and UTs hence defining the behaviour of compliance differently. As an example, in bigger states in terms of population like Maharashtra and Uttar Pradesh, the administrative capability can be comparatively higher, nevertheless implementation can be more difficult with vast and varied populations. Smaller states and UTs, in their turn, can enjoy the advantages of closer administrative proximity and unified social conditions but in most cases do not have sophisticated technological and enforcement infrastructure.

Researchers also observe that the size of population may impose an institutional pressure on its own and thus affects the strength and the ability of the institutions thus impacting the behaviour of the taxpayers (Florensa, 2004; Samadi & Alipourian, 2021). In compliance management, large populations might have scalability problems, and smaller might have the limits of limited outreach or resources. Thus, a categorisation of Indian States and UTs by large, medium and small population groups is an

important means of examining the effects of institutional capacity inside and outside these groups on compliance.

On the framework of the Institutional Theory, differences in the GST returns filing and compliance behaviour can therefore be interpreted as institutional differences in the rules of governing, enforcement, building trust and cultural norms among Indian States. This theoretical basis is the direct guideline of the first research objective of the study; that is, to assess Goods and Services Tax compliance among businesses in all States and Union Territories of India. It also offers the reason behind the formulation of a hypothesis to suggest that compliance behaviour varies significantly in population-based state groupings.

2.3.2 Research Gap

Although the research on tax compliance has already formed a huge amount of literature, the majority of it has focused on national-level trends or on particular categories of taxpayers, but did not address the issue of spatial and institutional differences among the States and UTs of India. According to the Institutional Theory (Scott, 1995), the human behaviour of compliance is influenced by directive, normative and cognitive structures, but little research has been conducted in exploring how these forces vary in areas of low and high population sizes and administrative capacity. Indian studies often take the country as a homogenous tax space, failure to notice that there may be more enforcement capacity, taxpayer awareness and administrative robustness in one location than another, e.g. a large state such as Maharashtra and a small UT such as Daman and Diu.

It is proposed by international evidence (Florensa, 2004; Samadi and Alipourian, 2021) that the institutional capacity depends on the population size and density, which in their turn affects behavioural reactions to tax regulations. But empirical studies in the Indian environment seldom have tested this relationship. There is little literature on the use of population size as a proxy of institutional capacity to group States and UTs and this gap can be largely considered in order to understand the role of institutional heterogeneity in influencing GST compliance.

This research attempts to address this gap by undertaking a

systematic assessment of the level of GST compliance in large, medium, and small population States and UTs. This way it adds a more subtle, institutionally grounded view of compliance patterns that transcends national averages in order to capture regional variations due to institutional capacity.

2.3.3 Hypothesis development

The research is conducted under the influence of the Institutional Theory and the research gap identified and pursues the following hypotheses:

H1a: GST compliance behaviour significantly differs among large population States in India.

H1b: GST compliance behaviour significantly differs among medium population States and UTs in India.

H1c: GST compliance behaviour significantly differs among low population States and UTs in India.

H1d: There is a significant difference in GST compliance behaviour across large, medium and low population States and UTs in India.

2.4 Theoretical background and hypothesis development for Objective 2 and 3

2.4.1 Theoretical background

This research utilises three theories that are complementary including Social Exchange Theory, Attribution Theory and Deterrence Theory in order to analyse the behavioural determinants affecting GST compliance. All the theories represent various aspects of taxpayer behaviour: relational, psychological and economic and they all present a multi-dimensional approach to explaining the behaviour of taxpayers regarding compliance behaviour among GST-registered businesses in Goa. As Social Exchange Theory demonstrates voluntary compliance in terms of reciprocity and trust, Attribution Theory focuses on how taxpayers' reason about the causes

of compliance or non-compliance and Deterrence Theory focuses on rational calculations of costs and benefits under enforcement. The combination of these views will result in the fact that the economic and non-economic motivation of compliance are not neglected.

2.4.1.1 Social exchange Theory

The Social Exchange Theory (SET), first formulated by Homans (1958), then to be extended by Blau (1964) is developed on the basis of reciprocal relationship, in which human beings are expected to derive maximum profit and minimise costs. As opposed to economic models of behaviour that are exclusively concerned with material gains, SET addresses relational and normative aspects of behaviour, including trust, fairness and reciprocity. In this context, obedience is not the consequence of enforcing the law but also the consequence of a balanced interaction between individuals and institutions. Taxpayers will be more willing to comply in a situation whereby they think that the state is doing what it owes, like provision of public services, fairness and transparency in the management of tax (Molero & Pujol, 2012). On the other hand, taxpayers might feel justified in non-compliance when they perceive that there is government inefficiency, corruption or that they do not feel accountable to them and consider the relationship to be unequally fair.

When applied to the context of GST compliance in India and in this case, Goa, SET can help to offer valuable information regarding the non-coercive sources of taxpayer behaviour. Since Goa is a relatively small state whose government affairs can be easily observed, the perceived fairness and effectiveness of tax administration is a very significant factor in determining the compliance decision. In this study, several constructs will be matched to SET due to the reason that they embrace the relational dimension of compliance. The key here is to have trust in government since the tax payers will respond in a positive way when they think that the institutions are behaving responsibly and fairly. Likewise, tax morale, which is the internal desire to pay taxes, is an aesthetic aspect of the reciprocity concept in which obedience is based on the standards of civic duty and fair play (Alm and Torgler, 2006). Tax complexity also comes

into play in this theoretical perspective: in case the rules are too complex, the tax payer can take that as the government not sustaining the efficiency and fairness that undermines the relationship between them. Lastly, the concept of digital payments plays an important role in the SET because it increases accountability in the government structures, minimizes chances of informal exchange and promotes transparency, which increases trust-based interactions. Taken as a whole, SET points out that voluntary compliance with GST in Goa is not caused only by coercion but by trust, fairness, and reciprocity between a business and the state.

2.4.1.2 Attribution Theory

The Attribution Theory proposed by Heider (1958) and Kelley (1973) is a concept that elucidates the way in which people explain the reasons behind the events and blame the results. The theory argues that individuals assign behaviour to either internal or external causes namely personal abilities and efforts or situational constraints and systemic failures respectively. Such attributions are highly causal and affect the future behaviour of a person and the morality judgments that people associate with their actions. Attribution Theory has been used to explain the rationalisation of compliance or non-compliance by taxpayers in the context of taxation. To illustrate this point, in the case where taxpayers experience hardships in meeting their duties, they can explain the non-compliance by external factors which could be financial strains, liquidity constraints or insufficient guidance and as such, this brings down the feelings of guilt or moral malpractice (Kirchler, 2007). On the other hand, taxpayers can become more responsible and be more willing to comply when problems are blamed internally, such as due to negligence or ignorance.

Applying the Attribution Theory in the context of GST compliance in Goa, one can come up with a helpful theory to explain business behaviour towards compliance with reference to economic and informational realities of the business. There are a large number of small and medium-sized enterprises in Goa that work within relatively tight financial means and usually do not have expertise in tax matters, which affects their perception

of compliance issues. This research gives two constructs that are consistent with Attribution Theory. Tax awareness is an internal attribution since low knowledge taxpayers might feel they are ill-prepared to meet the tax regulations or they might blame the system and say that it did not give them enough advice. Financial constraints, however, are considered as an external attribution since business that are liquidity constrained might take delays or underpayment as inevitable results of circumstances that they are powerless to change as opposed to intentional avoidance. The Attribution Theory of framing compliance behaviour provides the necessary psychological processes that define whether non-compliance is perceived as justifiable or unjustifiable. It is especially applicable to Goa where the resource constraints and the ignorance of smaller businesses are also major obstacles to the compliance.

2.4.1.3 Deterrence Theory

Deterrence Theory of crime, which is founded on the classical economic model of crime suggested by Becker (1968) and the model that has been developed by Allingham and Sandmo (1972) argues that people are rational actors who would consider the expected payoff of non-compliance in comparison to the possible costs of detection and punishment. Based on this theory, taxpayers will comply where the likelihood of being detected and the punishment exceeds the gains that there is by evasion. Compliance is therefore understood as a rationality and therefore driven by enforcement mechanisms like audits, fines and the mode of design of the tax rates. Deterrence Theory has been a prevailing paradigm in tax compliance studies and empirical results have repeatedly indicated that high enforcement and believable threat of punishment deter tax evasion (Wenzel, 2005). Nevertheless, the theory has also been criticized to ignore other non-economic aspects like intrinsic motivation, perception of fairness and trust which also play a significant role in maintaining long-term compliance.

The Deterrence Theory can give relevant insights into the coercive aspect of compliance, in the case of GST compliance in Goa. The risk of non-conformance is likely to be assessed by the businesses in the light of

possible penalties, probability of audit and perceived compliance burden itself. This theoretical lens is the basis of four constructs in this study. Non-compliance is put off by tax punishments and tax fines, which directly affect the cost of evasion. The increase in the probability of audit increases the risk of detection and therefore compliance becomes the less risky choice. The rates of taxes also have effects on compliance the rates are too high and might be seen as unfair and this will deter the deterrence effect and lead to evasion. Lastly, tax compliance cost though not a legal penalty is an economic cost that affects rational decision-making. The compliance costs are high and might deter compliance in case the business makes the calculations that the costs are higher than the benefits of adhering to regulations. Using the Deterrence Theory, this research has determined the significance of credible enforcement mechanisms in terms of guaranteeing GST compliance in Goa as well as acknowledging that the use of coercive mechanisms should not compromise on fairness and efficiency to the extent of eroding voluntary compliance.

2.4.2 Research Gap

Most of the research has a lot to do with deterrence-based approaches to tax compliance, even though it is an expanding literature in India, with a heavy reliance on audits, fines and enforcement, as well as a limited scope. These economic factors are by far very significant; however, this does not rule out the fact that the focus on deterrence only ignores the presence of psychological, cognitive and relational aspects of compliance. The literature of the whole world has persisted in proving that non-economic variables like tax morale, trust in government and perceptions of fairness are equally important and even more so in influencing compliance behaviour (Taing & Chang, 2020). In the Indian GST situation, however, the dynamics between these behavioural drivers and the conventional elements of deterrence is yet to be explored.

Another weakness of the available literature is that there are no combinations of theoretical methods. The majority of Indian researches use the single-theory approaches with primary focus on Deterrence Theory, leaving out the complementary approaches like Social Exchange Theory

(Blau, 1964) and Attribution Theory (Heider, 1958; Kelley, 1973). Consequently, critical dynamics are ignored such as the influence that perceptions of procedural fairness and reciprocality among taxpayers can have on voluntary compliance or how attributing compliance challenges in terms of either internal or external factors will impact behaviour. In addition, little attention has been paid to examining possible mediation mechanisms. Indicatively, how tax complexity can raise the cost of compliance or reduce the trust or how awareness can raise compliance by promoting the comprehension of the tax requirement are poorly theorised and empirically under-tested in the Indian context.

Lastly, prior studies have a significant imbalance in the manner in which they have concentrated as most Indian compliance literature has focused on direct taxes at the cost of indirect taxes like GST. Since GST is one of the foundations of the Indian taxation system and self-assessment and invoice matching constitute its core elements, the behavioural compliance comprehension in this sphere is chief and timely. The current research fills this gap as it constructs a theoretically driven and empirically proved framework which includes both economic antecedents (tax penalties and fines, audit probability, tax rates, compliance cost, financial constraints) and non-economic antecedents (tax morale, trust in government, tax complexity, digital payments, tax awareness). It also presents the fundamental mediators, such as the tax complexity, the compliance cost, trust in government and the tax morale, in order to describe the way these relationships are played out in the culturally and administratively diverse environment of Goa. By so doing, this research contributes to the literature by providing a holistic behavioural model of GST compliance, which is not limited to deterrence because it is multidimensional in explaining taxpayer behaviour.

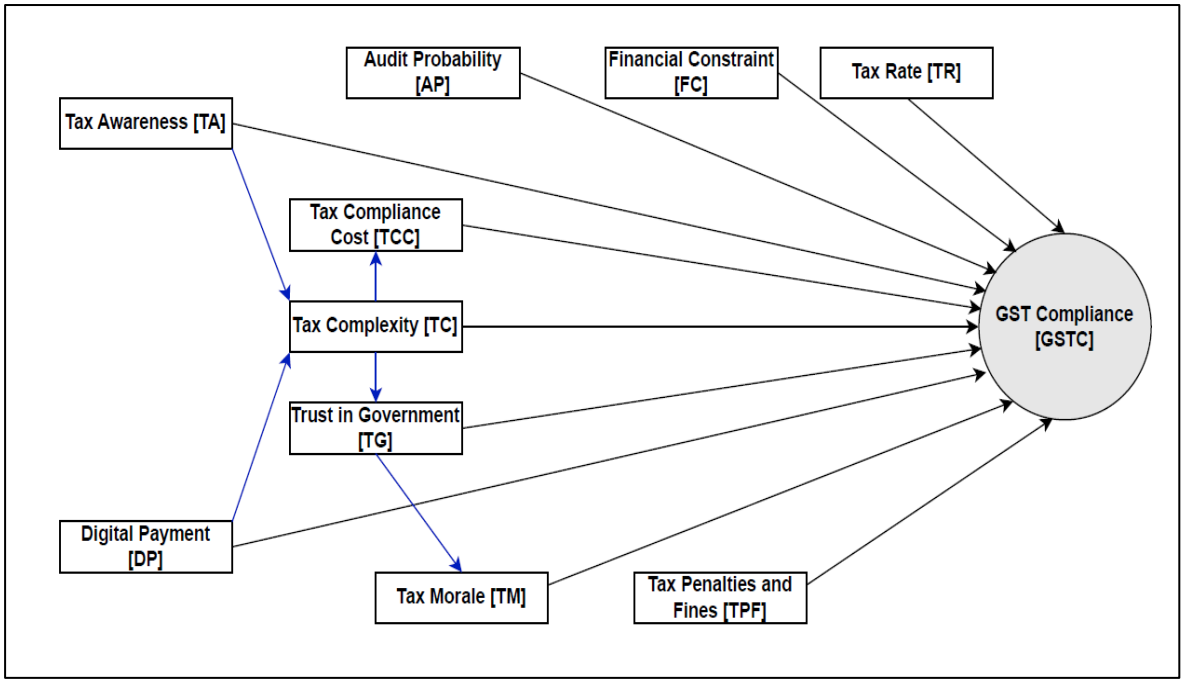
2.4.3 Conceptual Framework

This study conceptual framework combines both economic and non-economic determinants of GST compliance behaviour that is based on Social Exchange Theory, Attribution Theory and Deterrence Theory. As shown in the Figure No: 2.9 Conceptual Framework of GST Compliance

Model, the framework places GST compliance as a dependent variable and has a series of independent variables that constitute both coercive and voluntary motivators of behaviour. These will be tax morale, trust in government, tax complexity, digital payments, tax awareness, financial constraints, tax penalties and fines, audit probability, tax rates, and tax compliance cost. The combination of these dimensions helps the model to reflect the multi-theoretical approach taken in this research, as it is not only deterrence but also psychological and relationship factors.

The framework also involves the inclusion of mediating variables in order to represent the indirect routes in which compliance behaviour is modulated. In particular, conceptualisation of tax complexity, tax compliance cost, trust in government and tax morale are mediators that indicate how independent variables affect GST compliance. As an example, tax awareness can lead to improved compliance not just directly but also indirectly by making tax operations seem simpler; digital payments can lead to improved compliance by creating institutional trust; and tax complexity can lead to diminished compliance indirectly by raising compliance costs or by weakening trust in government. This stratified structure allows the further enrichment of the study of the processes that cause compliance with more than merely immediate impacts.

Broadly, the framework shows the interaction of the economic deterrents and institutional pressures with cognitive, relational and moral variables to affect compliance decisions among GST-registered businesses in Goa. It emphasizes the fact that the results of compliance are both due to rational calculus of the cost-benefit and psychological attributions formed through institutional trust, fairness and consciousness. The framework offers a comprehensive basis upon which the hypotheses as expressed in the following section can be empirically tested by taking such multi-dimensional linkages.



Source: Author's compilation

Figure 2.9: Conceptual Framework of GST Compliance Model

2.4.4 Hypothesis development

The current study defines GST compliance as the degree to which a normal GST registered business adheres to the rules and regulations prescribed under the GST system in India, including timely filing of GST returns, accurate calculation and payment of GST tax liabilities, correct application of GST rates, ethical and honest handling of tax invoices and proper maintenance of GST related records. The issue of GST compliance is not just a technical issue but also a behavioural outcome which is determined by both economic and non-economic factors. Based on the hypotheses on the theoretical components discussed in the previous sections, namely, the Social Exchange Theory, Attribution Theory, and Deterrence Theory, the following section formulates hypotheses that connect the key determinants with GST compliance behaviour among businesses in Goa.

The determinants that will be used in this research are based on previous research and tailored to the GST situation in India. Psychological, normative and relational factors reflect in the non-economic variables of tax morale, government trust, complexity of tax, electronic payments and tax awareness. The economic factors of financial constraints, tax penalties and

fines, audit probability, the tax rates and cost of tax compliance are rational cost-benefit factors that taxpayers will consider in their compliance decisions. In addition to the direct relationship, the study also takes into consideration inter-construct relationships (e.g., the role of tax awareness on tax complexity) and mediating results (e.g., the cost of tax compliance mediating the relationship between complexity and compliance). These avenues are based on proven theories and global literature but they have not been effectively researched through the GST framework in India and Goa in particular.

Accordingly, the hypotheses are divided into three groups:

1. Direct relationships (H2a–H2j): Testing the effect of each determinant on GST compliance.
2. Inter-construct relationships (H2k–H2o): Exploring linkages between independent variables and mediating constructs.
3. Mediation hypotheses (H3a–H3e): Examining the indirect effects of complexity, compliance cost, trust in government, and tax morale in shaping compliance outcomes.

These hypotheses are put together a wholesome effort at identifying the immediate drivers as well as the mechanisms behind GST compliance. They give the empirical basis of testing the proposed conceptual framework that was given above.

2.4.4.1 Tax Morale and GST Compliance

The current study defines Goods and services tax morale as the individual's intrinsic motivation and moral obligation to honestly declare and pay GST taxes, reflected in personal beliefs about the ethicality of GST compliance, rejection of tax evasion and willingness to follow GST laws irrespective of enforcement. Tax morale has been often considered as one of the most powerful non-economic factors of compliance behaviour. According to Alm and Torgler (2006), it is the intrinsic motivation to the law of tax within the aspects of civic responsibility and perceptions of justice and validity of institutions. Increased tax morale has been found to raise the voluntary compliance despite the lack of strict enforcement (Torgler, 2003). Molero and Pujol (2012) further opine that high ethical

standards eliminate tax evasion and enhance compliance. Tax morale applies especially well to the indirect tax systems like VAT or GST to ensure that fraudulent invoice practices and underreporting are avoided.

Tax morale that is based on the Social Exchange Theory demonstrates a mutual relationship between the government and taxpayers, where compliance is perceived as a reward of the government being fair and transparent in its governance. When applied to the Goan context where business is sensitive to the utilization of the public resources, tax morale would therefore be a major force in influencing compliance behaviour.

H2a: There is a significant positive relationship between tax morale and GST compliance.

2.4.4.2 Trust in Government and GST Compliance

The current study defines trust in government as the perception that the government and GST authorities are transparent, accountable and utilize GST revenues responsibly for public purposes. Confidence to institutions has been identified as a key indicator of voluntary compliance in the tax literature. According to Levi (1988) and Torgler (2003), taxpayers are more inclined to comply with the government when they believe government institutions in the country are sincere, transparent and just. This is known as the psychological contract of taxpayers and the state (Feld and Frey, 2002). Empirical research, such as Alm and Torgler (2011), indicates that the greater the institutional trust, the greater the compliance since less coercion is required. Low trust to the government is one of the barriers to voluntary compliance which has been indicated to be low in the Indian context (Gupta and McGee, 2010).

In the Social Exchange Theory framework, the trust is the key to the reciprocal relationship, taxpayers will comply in case they think that the tax revenues are managed in an ethical and benefiting to the people way. In Goa, the aspect of trust in the state tax authorities is likely to contribute important role in terms of compliance over deterrence.

H2b: There is a significant positive relationship between trust in government and GST compliance

2.4.4.3 Tax complexity and GST Compliance

The current study defines goods and services tax complexity as the perceived difficulty, procedural burden and time associated with understanding GST regulations, calculating GST tax liabilities and filing GST returns under the GST system. Complexity of the tax has been widely known to hinder compliance. Richardson (2006) observes that the greater the complexity, the lower the compliance rate and this happens because of the confusing nature of the rules and huge procedural requirements to taxpayers. Kirchler (2007) further demonstrates that complexity results into decreased self-administered compliance and dependence on outside consultants. Perceived complexity is especially acute in the context of GST, in which there are frequent alterations in rules and where several filing requirements are required as well. The research of developing countries (Saad, 2014) shows that the more complex a taxpayer is, the more he or she is likely to make unintentional mistakes or avoid tax evasion.

In connection with the Social Exchange Theory, complexity may be regarded as an indicator of ineffectiveness and unjustness in administration, which undermines the motivation of taxpayers to respond in a positive way. In this case, therefore, complexity will have a negative effect on compliance in Goa GST environment.

H2c: There is a significant negative relationship between tax complexity and GST compliance

2.4.4.4 Digital Payment and GST Compliance

The current study defines digital payment as the extent to which GST registered businesses receives payments through electronic platforms and the perceived impact of these payments on income transparency, financial recordkeeping and the administrative effort required to record business transactions. It has been found that digitalisation of payments is one of the greatest sources of tax compliance. According to Awasthi and Engelschalk (2018), digital payments make the informal economy smaller and increase the level of revenue transparency. Pomeranz (2015) demonstrates that electronic payment systems enhance traceability, which minimizes evasion

opportunities. In India, adoption of Unified payment interface (UPI) and other digital platforms has been rapid and it has been linked to high transparency in transactions, which aids in compliance with GST.

Digital payments, based on the Social Exchange Theory, promote compliance, as they increase transparency and accountability, which improves the trustworthiness of the institution. In the case of Goa, where digital adoption is on the increase, electronic transactions will impart a better way of keeping financial records and less underreporting.

H2d: There is a significant positive relationship between digital payment and GST compliance

2.4.4.5 Tax awareness and GST Compliance

The current study defines tax awareness as the extent to which a GST registered business is aware about its GST obligations, including knowledge of applicable tax types, payment amounts, filing timelines, audit likelihood and penalties for non-compliance. In tax studies, compliance has always been associated with awareness. According to Palil and Mustapha (2011), the more people understand the laws on taxes, the less the errors and the higher the level of compliance. Kirchler et al. (2008) further establish that awareness brings about voluntary compliance since it boosts the confidence of the taxpayers in their ability to comply. Scarcity of awareness regarding GST provisions has been outlined as one of the major challenges of compliance in India, particularly among the small and medium business enterprises (Nair, 2019).

According to Attribution Theory consciousness influences the perceptions of taxpayers about their compliance potential, well-informed taxpayers explain the compliance success by inner factors (knowledge and effort), but uninformed taxpayers can refer to the outer factors. Therefore, greater compliance is likely to be created through greater awareness in Goa.

H2e: There is a significant positive relationship between tax awareness and GST compliance

2.4.4.6 Financial Constraint and GST Compliance

The current study defines financial constraint as the degree to which businesses experience financial difficulties due to the pressure of making timely GST payments and existing financial burdens. It has been demonstrated that financial constraints influence compliance behaviour negatively. According to Alm and McKee (1998), delays in payments or evasion may result where there is lack of liquidity. In a similar way, OECD (2017) points out that small companies, which are less resourceful, tend to see taxes as an extra obligation, which lowers their motivation to comply. In India, research indicates that working capital requirements in the GST have made it more difficult to comply with the SMEs (Poddar and Ahmad, 2009).

Using the Attribution Theory, companies that are experiencing financial pressures tend to blame non-rewarding external circumstances hence explaining the existence of late payments or underreporting. The financial constraints in the Goa context where most of the businesses are run with thin margins should play a major role in compromising compliance.

H2f: There is a significant negative relationship between financial constraint and GST compliance.

2.4.4.7 Tax penalties and fines and GST Compliance

The current study defines tax penalties and fines as the perceived severity and effectiveness of monetary sanctions such as penalties and interest charges applicable on late filing of returns and delayed payment of GST liabilities. The deterrence studies have always facilitated the effectiveness of penalties in enhancing obedience. According to Becker (1968), Allingham and Sandmo (1972), the effective penalties increase the expected cost of non-compliance inducing non-compliance. Higher sanctions have been proven to increase compliance rates as demonstrated by Wenzel (2005). The Indian GST has presented an evasive penalty framework regarding the late filing and poor reporting through the introduction of strict penalties.

Based on the Deterrence Theory, the punishments are used as the coercive force that makes people act according to the rules. In Goa where smaller business entities might be cautious about risks and benefits, the existence of penalties and fines will likely serve as a powerful deterrent to non-conformity.

H2g: There is a significant positive relationship between Tax penalties and fines and GST compliance.

2.4.4.8 Audit probability and GST Compliance

The current study defines audit probability as the likelihood of being subject to enforcement actions by GST authorities such as audits or inspections which in turn encourages accurate GST tax payment and compliance with GST laws. Classical models of deterrence revolve around audit probability. Allingham and Sandmo (1972) add that the probability of detection is high and evasion is low as there is an increased compliance and compliance is low as there is low audit rates respectively. It has been empirically demonstrated through studies (Slemrod et al., 2001) that the compliance is enhanced when the audits are frequent and credible. Indian GST system automated risk-based audit is expected to ensure that detection capacity and deter evasion is improved.

The perception of risk in the Deterrence Theory is strengthened by the audit probability and dissuades non-compliance. The perceived audit probability will lead to compliance in Goa where businesses know the reputational and financial impacts of audits.

H2h: There is a significant positive relationship between audit probability and GST compliance.

2.4.4.9 Tax rates and GST Compliance

The current study defines tax rates as the percentage of Goods and Services Tax (GST) levied on the supply of goods and services, along with the perception towards the fairness and uniformity of the current GST rates implemented. The correlation between the tax rates and compliance has received a lot of debate. Clotfelter (1983) and Alm (1991) discover that

high rates tend to evade because taxpayers consider them to be unfair or rather burdening. Moderate and transparent rates, on the other hand, are linked to compliance (Slemrod, 2007). The multi-slab rate structure of GST in India has been singled out as a complicated and unfriendly system to small businesses, which may decrease their compliance intentions.

Otherwise associated with the Deterrence Theory, high tax rates can be counterproductive to the deterrent effect in that they are considered unfair by taxpayers, which encourages the avoidance of them. In Goa where small businesses tend to run with low margins, the fairness in GST rates perceptions are likely going to be a key determinant in compliance.

H2i: There is a significant negative relationship between tax rates and GST compliance.

2.4.4.10 Tax Compliance cost and GST Compliance

The current study defines tax compliance cost as the financial and administrative burden incurred by businesses in meeting GST requirements, including expenses related to staff time, tax professionals, external assistance and the complexity of GST procedures. The cost barrier to voluntary compliance is tax compliance. One of the most important burdens to SMEs according to Evans (2003) is compliance cost. Pope and McKerchar (2011) contend that high compliance costs put off taxpayers and result to mistakes, evasion or to an active avoidance of the tax plant. Companies in India frequently indicate that using consultants and as well as filing of the GST is costly and this has an immediate effect on their compliance behaviour (Nair, 2019).

According to the Deterrence Theory, taxpayers determine the cost of compliance against the expected benefits, whereby the cost of compliance exceeds perceived benefits, compliance reduces. In Goa where external consultants are used by many SMEs, compliance levels will decline considerably because of the increase in the compliance cost.

H2j: There is a significant negative relationship between tax compliance cost and GST compliance.

2.4.4.11 Tax awareness and Tax Complexity

It is indicated in literature that there is a mutual strong relationship between awareness and complexity. According to Palil (2010), lack of knowledge in taxation tends to boost the complex impression, which and makes observing compliance challenging. According to Kirchler et al. (2008), awareness leads to less psychological inhibition of compliance because the rules and procedures are clearer and increasing perceptions of ambiguity and administrative overload because of low awareness. In the context of the Attribution Theory, low awareness can be externalised in the form of system failure with taxpayers attributing lack of guidance by the government increasing the perception of complexity.

The GST situation in Goa is that, there is a large number of small and medium-sized businesses that lack formal tax education. Therefore, increased levels of awareness will come to decrease the complex perception of GST.

H2k: There is a significant negative relationship between tax awareness and Tax Complexity.

2.4.4.12 Digital payment and Tax Complexity

There is a dual impact of digitalisation of transactions. On one hand, it leads to greater transparency and more informality and makes compliance easier and less ambiguous (Pomeranz, 2015). Conversely, it may also raise the reporting requirements, thereby generating a sense of perceived complexity, especially in the situations of the digital systems being still in development (Awasthi and Engelschalk, 2018). Based on the Social Exchange Theory, the digital payments are an indicator of the institutional accountability and fairness, yet it also demanded extra compliance effort by the businesses.

GST has brought about digital payment in Goa that has not only enhanced traceability but has also added extra recordkeeping obligations. Therefore, perceived complexity is likely to have a positive connection with digital payments.

H2l: There is a significant positive relationship between digital payment and Tax Complexity.

2.4.4.13 Tax complexity and Tax compliance cost

The association between complexity and compliance cost is well-presented. Evans (2003) points out that complex tax systems will directly translate to increase costs because the taxpayer will incur more expenses on professional advice, personnel time and outsourcing. Pope and McKerchar (2011) suggest that complexity does not only enhance the direct financial costs, but also opportunity costs, to the extent to which is applicable to small businesses. According to Deterrence Theory, the more complex it is, the more resources it needs to comply with, which further exaggerates the cost-benefit calculation that taxpayers have to be involved in.

In Goa where businesses typically require the services of tax consultants to file GST returns, the perceived complexity is predicted to positively relate to compliance costs.

H2m: There is a significant positive relationship between tax complexity and Tax compliance cost.

2.4.4.14 Tax complexity and Trust in government

The complexity of taxes has been demonstrated to kill trust in the government institutions in literature. Saad (2014) concludes that taxpayers who believe that the rules are complex see it as a way of inefficiency or intentional vagueness, bringing institutional trust down. On the same note, Alm and Torgler (2011) state that when the taxpayers cannot work through complicated procedures, they might take this as evidence of unfairness and unsecurities by the authorities. In the Social Exchange Theory, the presence of complexity can be an indicator of an unequal exchange, which negatively affects the principle of reciprocity and prevents the willing participation.

The high incidence of change of rules and procedural challenges has been quoted in the Indian GST system and has in most cases contributed to the lack of confidence of taxpayers in the tax authorities. Smaller

businesses that have fewer resources in Goa can find complexity to be viewed as government inefficiency, thus reducing trust.

H2n: There is a significant negative relationship between tax complexity and Trust in government.

2.4.4.15 Trust in government and Tax Morale

The close association between trust and tax morale is noted in many studies. According to Feld and Frey (2002), trust is one of the foundations of the so called psychological contract that determines intrinsic compliance intentions. Evidence of increasing the tax morale is presented by Torgler (2003) and Alm and Torgler (2006) who show that increasing trust in government increases the perceptions of fairness and the legitimacy of the tax system. According to the Social Exchange Theory, taxpayers give back responsible governance with more moral devotion to obedience.

Tax morale of the businesses in Goa will also increase as the businesses are likely to be confident that GST revenues are utilized effectively to serve the people and administration is open.

H2o: There is a significant positive relationship between Trust in government and Tax Morale.

2.4.4.16 Mediating role of Tax Complexity

Earlier studies indicate that awareness and digitalisation have an indirect impact on compliance via complexity. Kirchler et al. (2008) posit that the greater the tax awareness, the less ambiguity which has the effect of minimizing the perceived complexity and increasing compliance. On the other hand, the digital payments can also augment the administrative needs that can lead to an increase in the perceived complexity and indirectly mitigate compliance (Awasthi and Engelschalk, 2018). The Attribution Theory can be used to explain this mechanism, the taxpayers who have difficulties with compliance attribute their problems to the complexity of the system, which influences their behaviour.

Complexity is a major channel that determines the success of compliance by awareness and digitalisation in Goa where most SMEs have

difficulties adjusting to GST processes.

H3a: Tax Complexity mediates the relationship between tax awareness and GST compliance.

H3b: Tax Complexity mediates the relationship between digital payment and GST compliance.

2.4.4.17 Mediating role of Tax Compliance Cost

Studies indicate that complexity usually translates to increased compliance costs that are consequently translated to compliance results. Evans (2003) and Pope and McKerchar (2011) prove that the complex processes require a business to devote a larger amount of resources to the compliance, making perceived burdens heavier. In Deterrence Theory, when the cost is high, the cost benefit analysis is skewed towards non-compliance. Therefore, complexity not only directly but indirectly affects compliance due to the financial and administrative costs it imposes on it.

Businesses in Goa that are highly dependent on external consultants have greater compliance costs when regulations are complicated and, in this case, cost is a key brokering variable between complexity and compliance behaviour.

H3c: Tax compliance cost mediates the relationship between tax complexity and GST compliance.

2.4.4.18 Mediating role of Trust in Government

Some of the studies indicate that complexity has an indirect impact on compliance, because of its impact on trust. According to Saad (2014), high complexity destroys confidence in institutions, whereas fair and simple systems make people more trustful (Alm and Torgler 2011), which subsequently leads to compliance. This mechanism is supported by the Social Exchange Theory, as long as the taxpayers see that the administration is efficient and transparent, they will provide trust in response, making the compliance stronger.

The high frequency of rule changes and challenges in the procedures

used during the GST system, can decrease the trust and thus the compliance. In the case of Goa, confidence in the local governments is especially important due to the dependence on the smaller tax governments.

H3d: Trust in government mediates the relationship between tax complexity and GST compliance

2.4.4.19 Mediating role of Tax Morale

Tax morale is very closely related to trust in government. According to Feld and Frey (2002) and Alm and Torgler (2006), trust promotes the perceptions of fairness, which enhance intrinsic intentions toward obedience. Whenever the institutions are seen as legit and accountable, the moral motivation to comply also rises and this improves compliance. This is part of a virtuous cycle of reciprocity in the Social Exchange Theory where responsible governance breeds trust that boosts morale which in turn fosters compliance.

The GST climate in Goa is such that the business will tend to act voluntarily as long as the institutional trust enhances their civic responsibility and moral obligation.

H3e: Tax Morale mediates the relationship between Trust in government and GST compliance.

2.4.4.20 Proposed Hypothetical Model

Although the previous conceptual model (Section 2.4.3) presented the theoretical bases, as well as the theoretical relationship logic of GST compliance behaviour, the hypothetical model prescribed in the current section, operationalises the conceptual relationships into empirically testable hypotheses. The model as demonstrated in Figure No: 2.10 GST Compliance Hypothetical Model, shows a way of capturing direct and indirect relationship amongst the constructs, incorporating both economic and non-economic determinants and also incorporating mediating mechanisms.

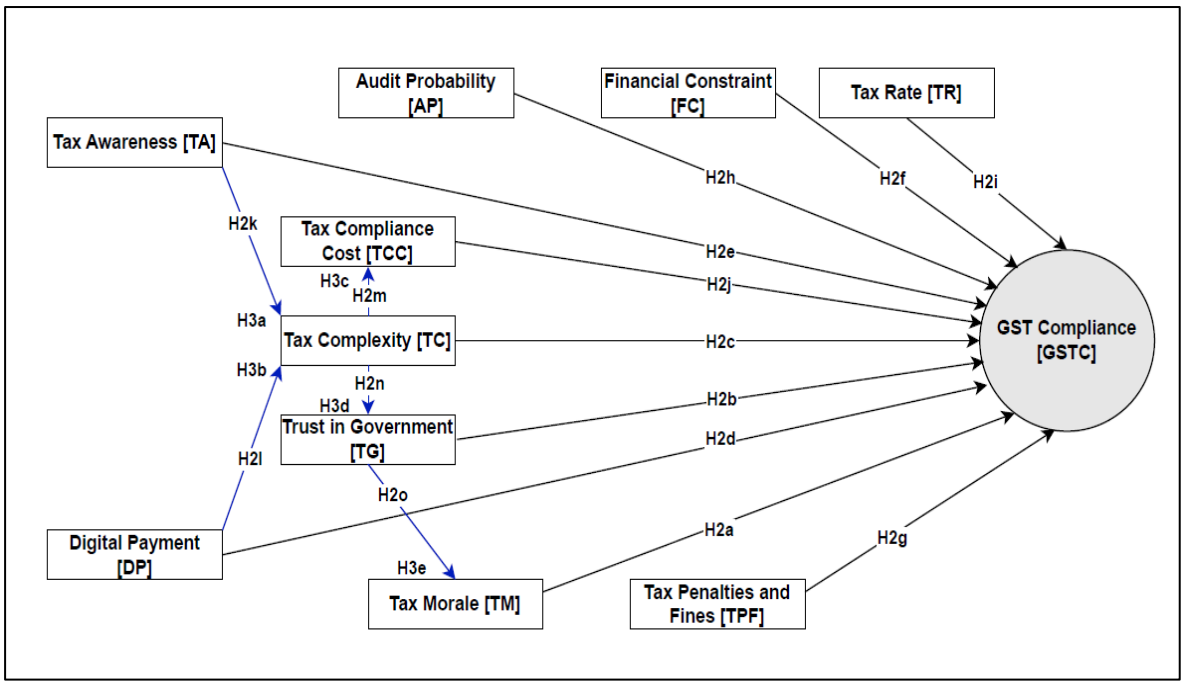
The model brings direct factors that determine the compliance of GST (H2a–H2j) such as tax morale, trust in government, tax complexity,

digital payment, tax awareness, financial constraints and tax penalties and fines, audit probability, tax rates, and compliance costs. Such variables capture several dimensions of compliance both intrinsic and relational as well as rational cost benefit factors.

It also establishes the inter-construct relationships (H2k–H2o), as some of the independent variables are indirectly effective, in that they influence other antecedents. As a case study, tax awareness is hypothesised to drive compliance by simplifying it, whereas digital payment should drive perceived complexity by adding more reporting requirements. On the same note, trust in government is theorised to raise the morale of tax, which intensifies the intrinsic compliance.

Lastly, the mediating pathways (H3a–H3e) are also represented in the model to describe the development of the indirect effects. The mediating factors that convey the impact of awareness, digitalisation and perceived fairness to compliance outcomes are tax complexity, tax compliance cost, trust in government and tax morale. These mediators are what help to understand the mechanisms by which both deterrence and behavioural variables influence taxpayer behaviour in the context of Goa which has been undergoing GST.

Overall, this hypothetical proposal offers a holistic, experimental paradigm, which is based on a number of theories, namely the Social Exchange Theory, Attribution Theory and the Deterrence Theory, to explain GST compliance behaviour. It integrates direct, indirect and mediating effects; therefore, it goes beyond single-theory deterrence models and captures the multidimensional nature of compliance in India.



Source: Author's compilation

Figure 2.10: GST Compliance hypothetical model

Chapter 3
Research Methodology

3.1 Introduction

Transparency, suitability and rigour of the research methodology is intrinsically connected to the success of any empirical investigation (Snyder, 2019). Research methodology can be described as the systematic and rational procedure to follow in order to perform a scientific inquiry, in line with the gain of robustness, validity and relevance in addressing the research problem of the study (Patel and Patel, 2019). Since the tax compliance is multidimensional in nature and implies behavioural, institutional, psychological and structural dimensions, the present research uses a methodologically sound and multi-step research design, which integrates both secondary and primary data in order to meet the objectives of the study. The chapter is fundamentally split into two large parts of methodology that can be attributed to the twofold nature of the study. The initial section covers the research design that the researchers have adopted in the first objective which entails the analysis of GST compliance rates in India through secondary data. The second section is the research methodology of second and third objectives that will take a primary data driven method of investigating the determinants of GST compliance behaviour by businesses in Goa. In this regard, the following sections of this chapter describe the research design, data sources, population, sampling methods, data collection processes, variables measurement, instrument validation, pilot testing and data analysis processes used to answer the research objectives of the study and test the hypotheses.

3.2 Research methodology for Objective 1

In this section, the methodological structure followed in attaining Objective 1 of the study that is to analyse the GST compliance levels among Indian States and UTs is outlined. It describes the general design and type of research, the data collected and the way it was collected and the steps that were used to categorize the States/UTs into population-based units. In addition, it specifies statistical and analytical methods employed in evaluating patterns of compliance, such as descriptive measures, hypothesis testing and post-hoc analysis, with the assistance of geographical mapping to give a more regional point of view.

3.2.1 Research Design

Research design is the overall plan or the blueprint of how a research study is to be undertaken, the processes through which the data is to be collected, measured and analysed (Creswell and Creswell, 2018). The research design may be broadly classified into three types that are categorised as qualitative, quantitative and mixed method research design. The qualitative research design entails the application of non-numerical data like interviews, textual context or observations (Denzin and Lincoln, 2011). The quantitative research design utilizes the structured instruments and statistical methods to gather the numerical information and to test the relationship in the study whereas the mixed method approach combines the quantitative and qualitative research to take a more integrative approach to the research problem (Creswell and Creswell, 2018).

This research study utlises a quantitative research design in objective 1, which will be based on secondary data to determine the levels of GST compliance with the businesses in India. The research questions include the examination of the possibility of the significant differences in compliance behavior across the different categories of populations based on states. To meet the first objective, secondary raw data on monthly e-filing of GSTR-3B returns by the businesses in all 28 states and 8 UTs in India have been gathered through the official GST portal of India, in the section of GST statistics (Goods and Services Tax, 2024). The dataset is from July 2017 to

March 31, 2024, which would cover almost seven years of compliance trends. In order to determine GST compliance, the research estimates the monthly compliance percentages using Microsoft Excel which is based on the sum of GST-registered businesses that were supposed to submit returns versus those who submitted their returns before the due date. The methodology provides a logical and uniform evaluation of the behavior of compliance throughout time. Moreover, to analyze the in-debt analysis GST compliance patterns utilizing the institutional theory, all the Indian States and UTs have been classified into three separate groups in accordance to the size of population as per the last Population Census of India.

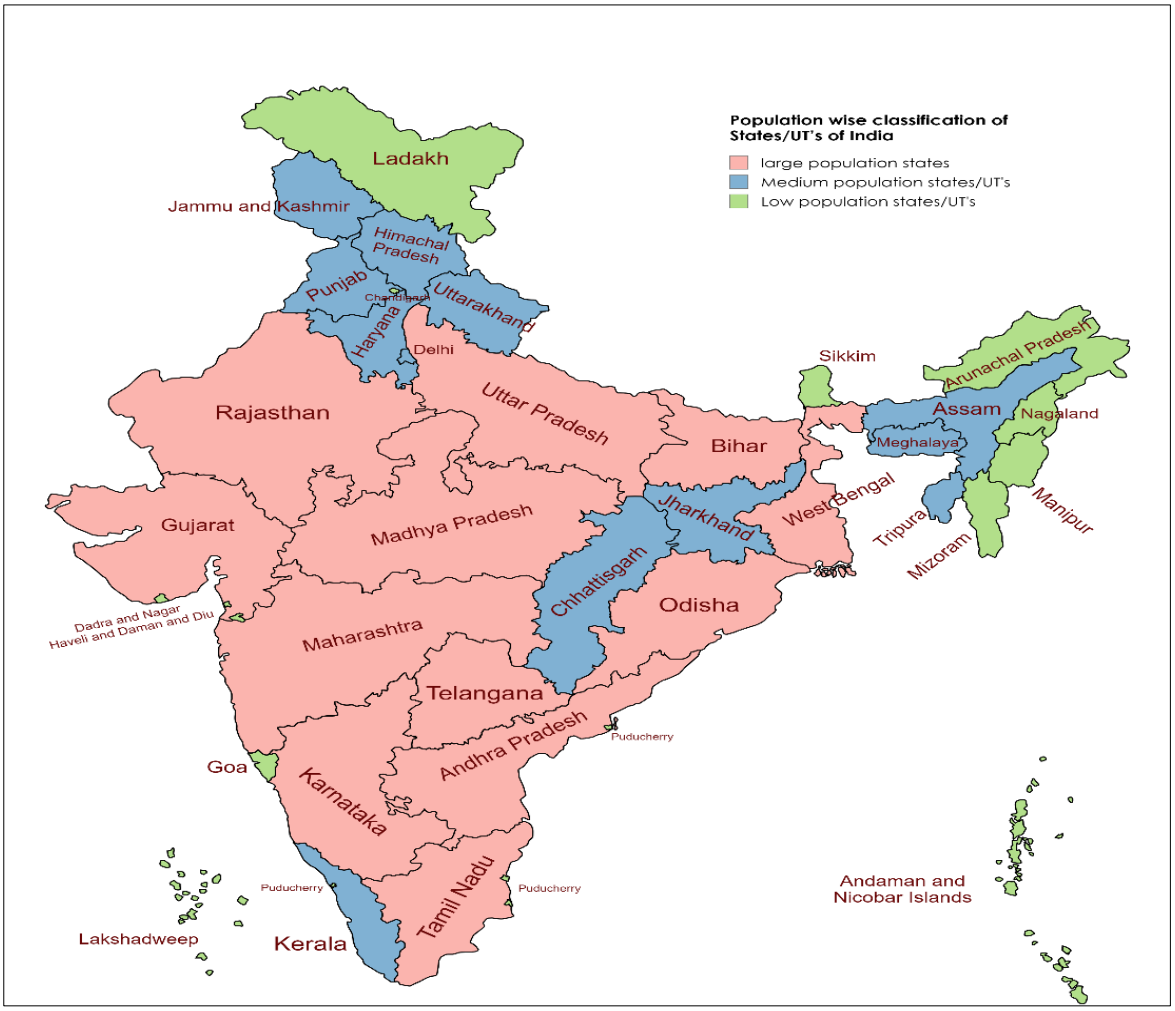
1. Large Population States (12 States): Uttar Pradesh, Maharashtra, Bihar, West Bengal, Madhya Pradesh, Tamil Nadu, Rajasthan, Karnataka, Gujarat, Andhra Pradesh, Odisha and Telangana. These states represent the largest proportion of GST-registered businesses.

2. Medium Population States/UTs (12 States/UTs): Kerala, Jharkhand, Assam, Punjab, Chhattisgarh, Haryana, Delhi (UT), Jammu and Kashmir (UT), Uttarakhand, Himachal Pradesh, Tripura and Meghalaya. These States/UTs have medium number of GST-registered businesses.

3. Low Population States/UTs (12 States/UTs): Manipur, Nagaland, Goa, Arunachal Pradesh, Puducherry (UT), Mizoram, Chandigarh (UT), Sikkim, Dadra and Nagar Haveli & Daman and Diu (UT), Andaman and Nicobar Islands (UT), Ladakh (UT) and Lakshadweep (UT). These States/UTs have a relatively lower number of GST-registered businesses.

This categorization enables a comparative study of patterns of compliance amongst the various population groups and as a result, a structured and regionally balanced study of GST compliance behaviour in India is achieved. The methodology followed in this study is coherent with that of a previous study done by Haldankar and Patkar (2024). Also, to increase the geographical representation, Figure 3.1 is created in the form of a map of India, which graphically shows how States/UTs are classified by their population sizes. The authors created the map with the MapChart

(https://www.mapchart.net).



Source: Created by authors

Figure 3.1: Map of population wise classification of States/UTs of India.

3.2.2 Data analysis procedure

In order to address the first research purpose and confirm the hypotheses developed, a set of statistical tests have been carried out with the help of Jamovi statistical software (Version 2.3.28). Those key steps include the following in the data analysis procedure:

1. Normality Assessment: The Shapiro-Wilk test was utilized to test whether the data of GST compliance is normally distributed. Moreover, the Q-Q plots were constructed in order to visually examine the data distribution. In case the normality assumptions are not met, non-parametric statistical tests were used rather than parameter statistical tests.

2. Hypothesis Testing Using Kruskal-Wallis Test: Due to the breach of assumption of normality of data, Kruskal-Wallis test, which is a non-parametric version of ANOVA, was employed to determine the significance of dissimilarity of GST compliance behaviour among and within the population-based States/UTs groups in India.

3. Post-Hoc Analysis Using DSCF Pairwise Comparisons: A post hoc analysis was done with the Dwass-Steel-Critchlow-Fligner (DSCF) post hoc analysis using the DSCF pairwise comparison after the Kruskal-Wallis test. This will enable the study to be done on inter-state GST compliance differences in details.

4. Descriptive review and Geographical Mapping of Compliance Trends: Descriptive analysis such as mean compliance rates, standard deviations, minimum and maximum compliance percentages were calculated to get an insight into the overall trends on compliance. The time series trend analysis of compliance behaviour was performed to determine seasonal differences in compliance in the long-term tax compliance patterns across the different States/UTs categories.

3.3 Research methodology for Objective 2 and 3

This paragraph presents the methodological basis that is used in studying the determinants of the GST compliance behaviour among GST-registered businesses in Goa. It outlines the application of a quantitative, cross-sectional and explanatory design, details the study population and unit of analysis and explains why 620 businesses were sampled in the current study using a multistage sampling process. It also explains that the data collection tool (structured questionnaire) and the process of measuring the constructs by using the validated Likert-scale items were used, as well as the steps involved in providing validity and reliability. Lastly, the section includes the data analysis plan, executed with the usage of PLS-SEM and the addition of mediation, IPMA and NCA techniques to gain a better understanding of the GST compliance behaviour.

3.3.1 Research Design

The research design is a systematic plan based on which the study will seek to answer its research questions, which gives the study some clarity and direction in the research process (Saunders et al., 2009). In for objective 2 and 3 where the research is aimed at investigating the determinants of Goods and Services Tax (GST) compliance behaviour among GST-registered businesses in Goa quantitative research design has been adopted. Moreover, a cross sectional and explanatory research approach that is most appropriate in the study has been utilized. A cross-sectional design refers to data gathering at one time among a sample of a more general population. It is appropriate to analyse the prevalence, behavioural relationship and variables among variables without controlling the research environment (Bryman, 2016). The cross-sectional approach would be good to achieve the objectives because the data used in this research was collected using a questionnaire survey of all GST-registered businesses in different geographical wards in Goa over a specific time interval. The design that is used in this study is an explanatory research design or a causal research design, which aims to establish whether variables correlate and to determine the strength and direction of correlation. It comes in handy when one wants to describe how a single variable affects another (Zikmund et al., 2010). Here, the design will be useful in exploring the influence of economic and behavioural variables on GST compliance behaviour.

3.2.2 Population of the study

According to Sekaran and Bougie (2016), a research population is the entire group of people, events or objects, which a study is about and on which information can be obtained. The current research focuses on exploring the determinants of Goods and Services Tax (GST) compliance behaviour among the businesses. A business in this work is any organisation or entrepreneurial organisation, which deals with commercial, industrial, or professional business, which generally involves the primary goal of profit-making (Investopedia, 2023) and is registered under the

Goods and Services Tax (GST) legislation. According to the Central Goods and Services Tax Act, 2017 (Section 22), the registration under GST is obligatory to any supplier who solely deals in the supply of goods in none special category States and has a total turnover of over ₹40 Lakhs in a financial year, subject to some government notifications. In such suppliers in special category States, the threshold will be as usually as ₹20 lakhs but ₹10 lakhs in some Northeastern and hilly states unless otherwise indicated by the government. By contrast, in the case of service suppliers, the limit is ₹20 lakhs in the majority of states and ₹10 lakhs in special category states (CGST Act, 2017, Sec. 22; Notification No. 10/2019, Central Tax). After registration, the businesses are expected to adhere to a number of provisions such as generating invoices, returns and paying taxes.

In India, there are various categories of businesses that are registered under GST and they have different compliance obligations. One is normal business taxpayers who are required to submit monthly or quarterly GST returns (GSTR-1, GSTR-3B) and a comprehensive documentation. The second is the Composition Scheme and can be availed to small taxpayers whose aggregate turnover does not exceed ₹1.5 crore (₹75 lakh in special category states). This plan offers the option to simplify compliance, such as the reduction of tax rates and returns filing requirements (CBIC, 2023). Moreover, under GST law, there are also the entities known as the Input Service Distributors (ISD) which are given the mandate to distribute the input tax credit to other branches or units that fall within the same PAN. Finally, we have other types of taxpayers that are classified as casual taxable persons and non-resident taxable persons these are taxpayers that have special provisions because of the nature or the location of business operations.

The geographical area of the research is Goa a State at the western coast of India. Goa boasts of a varied business environment that includes the small and medium-sized business enterprises, retailers, wholesalers, the service providers in the tourism industry and manufacturing facilities. Though it is a small state in size and population, its density of business that is registered to GST is quite high in both North Goa and South Goa district. As per the recent statistics there were 37,609 GST-registered normal

taxpayers in Goa on 31st March 2024 (Office of Commissioner of State tax, Goa). Such businesses are categorized as sole proprietorships, partnership, private limited and other business entities that are characterized by regular filing of returns and have operational business activities.

Thus, the sample of the current study will include all GST-registered companies that will be normal taxpayers in Goa and have to meet the standard compliance requirements according to the GST legislation. This is the most suitable population in order to study behavioural components of tax compliance since in such businesses more specifically detailed data points and real time information can be gained regarding the barriers and facilitators of compliance in India with the changing GST regime of India.

3.3.3 Unit of analysis

In empirical research, the unit of analysis is the main unit under study whose observation or measure is aimed at making conclusions about a given phenomenon (Babbie, 2020). It establishes the degree to which data is gathered and examined thus establishing scope and meaning of the research results. Units of analysis may be employed in a study, depending on the type of the investigation and these units may be individual, household, organisation, event or social group (Neuman, 2014). Within the framework of the current study, which examines the determinant of GST compliance behaviour in businesses, the unit of analysis will be the normal businesses tax payers who are registered under GST. These business organisations are formal organisations registered under the GST Act, 2017 and are subject to legal obligations of complying with the requirements of tax compliance, such as the filing of returns, records and audit requirements. As a business is a legal and operational unit and therefore is not able to answer survey tools, the process of data collection was done via the use of a proper and informed human representative of the business who was the owner-manager. They are perfectly placed to offer valid and reliable information on the behavioural and operational aspects of compliance on GST due to their in-depth involvement in compliance related activity. In addition, it is the owner-manager who will usually meet with the tax professionals (Chartered Accountants or tax consultants),

handle invoices, keep GST records and ensure they file GST returns in time (Lignier, 2009). Therefore, owner-managers have the knowledge and the power to report correctly on the compliance practices of the business. This is especially applicable to the Indian environment, where micro-enterprises comprising more than 90 percent of MSMEs are the majority of owner-managed enterprises and they constitute the greatest number of GST-registered in the market (Ministry of MSME, 2024). Therefore, despite the fact that the business is the unit of analysis, the owner-managers were used as the source of data because they are effective proxies to their respective business organisations. Such a method is consistent with the standard research in tax compliance and organizational behavior in which each of the respondents is a reflection of the overall actions and decision-making of the business (Kirchler, 2007; OECD, 2014).

3.3.4 Sample Size

In empirical studies, the calculation of a suitable sample is one of the key factors to guarantee both reliability and generalizability of research results (Memon et al., 2020). Sample size means the number of individual observations or responses that are taken representing the target population to help the researcher to make valid and generalisable inferences about the target population (Bartlett et al., 2001). A sufficiently powered sample enables the researcher to find statistically significant correlations between constructs and makes the structural model testing robust when using PLS-SEM (Hair et al., 2019).

In the current study, a number of established guidelines were taken into account to come up with a statistically acceptable sample size. To begin with, the minimum required sample size was determined using the G* Power software version, having a statistical power of 0.80, which is an acceptable level of power in research of behavioural and social sciences (Faul et al., 2009). The smallest sample size of 160 respondents was established to be significant in accordance to the level of significance of 5. Also, the researcher used the sample size determination guide suggested by Krejcie and Morgan (1970) table, which indicates that a population of about 40,000 units which is well representative of the GST-registered normal

taxpayers in Goa has a sample size of 380 as recommended. Besides, to follow the guideline suggested by Hair et al. (2019), the sample size must preferably be 10:1 ratio of respondents observed variables in structural equation modelling. Since the current study involves 49 observed variables, the sample size that can be recommended according to this rule would be 490 respondents. Also, the recent methodological development, the inverse square root method was also utilized in the purpose of determining the sample adequacy in PLS-SEM especially when the complexity of a model is high. As Kock and Hadaya (2018) explain, the method takes into consideration the minimum path coefficient this researcher desires to find. By taking the minimum path coefficient as 0.05-0.10 and the level of significance as 5%, the minimum sample size that was estimated through this technique was about 619 respondents. Based on all these methodological suggestions, the study was set with a final population of 620 respondents, which is much higher than the required minimum on various guidelines. This improves the statistical power and this makes the parameter estimates in the structural model stable.

3.3.5 Sampling Technique

However, based on the most recent reporting period, going by the official data obtained by the Office of the Commissioner of State Tax, Government of Goa, there are 37,609 active GST-registered normal taxpayers in the state. These taxpayers are geographically spread in eight major tax wards i.e. Mapusa, Pernem, Panjim, Vasco, Margao, Ponda, Bicholim and Curchorem. The sampling frame of the current study is based on this distribution in the ward.

In order to make sure that the sample is representative of the population in the various regions, multistage sampling method was adopted. Quota sampling method was used in the first stage, in which the administrative wards were separated into eight quota units. In a quota sampling, the population is divided into groups that are exclusive, followed by quota calculation of each group to have its representation and a group is not randomly sampled until the quota is met (Saunders et al., 2019). This assisted in the assurance of all the large areas of Goa, being proportionately

represented by the study. At the second stage, non-probability convenience sampling was followed, which presupposes the selection of participants according to their availability and readiness to participate (Creswell, 2014).

This approach was appropriate since the data collection involved the field and logistical issues of accessing various types of businesses that are located in urban and semi-urban areas. Notably, the selection of respondents in each ward was proportionate to the real distribution of registered normal taxpayers and thus was representative without making it too impractical. This is the two-tier sampling approach that allowed the gathering of a broad and regionally representative dataset, which further increased the reliability and generalisability of the findings of the study. The table below shows the proportional representation of the respondents in the eight wards.

Table 3.1: Proportional distribution of respondents

Administrative Ward	GST Registered Normal Taxpayers	Respondents Collected	Percentage (%)
Mapusa	8,818	153	25
Pernem	1,177	21	3
Panjim	7,701	122	20
Vasco	3,672	61	10
Margao	8,391	154	25
Ponda	4,188	51	8
Bicholim	2,227	38	6
Churchorem	1,435	20	3
Total	**37,609**	**620**	**100**

Source: Authors compilation from office of Commissioner of State tax of Goa

3.3.6 Data collection tool

In the empirical studies, a number of procedures are used to obtain the data of the target population, which relies on the type, purpose and size of the study. The methods of common data collection are interviews (structured or unstructured), focus groups discussions, observations and questionnaires (self-administered or interviewer-administered) (Creswell and Creswell, 2018). The methods have their own advantages and

disadvantages in terms of time, cost, scalability and accuracy.

In the current study, the most important data collection tool that was selected is a structured questionnaire. This approach is considered the most appropriate because the sample size is large and the respondents are geographically distributed. A questionnaire makes it possible to collect data in a standardised manner, allowing the consistency of the answer across the respondents, which is vital in the valid statistical analysis, in particular, Structural Equation Modelling (SEM) (Creswell and Creswell, 2018; Hair et al., 2019). A questionnaire will enable gathering of measurable data that can be analysed with the help of the statistical programs like SmartPLS in the systematic way (Hair et al., 2017). Moreover, self-administered questionnaire is the most inexpensive and time-saving as it allows the researcher to gather information about a high number of participants within a specific period (Creswell & Creswell, 2018). The approach also reduces the likelihood of bias on the part of the interviewer and gives greater level of anonymity, which can result in more truthful and true responses, especially in compliance-based behaviour (Bryman, 2016). With these strengths, the structured questionnaire was found to be the most suitable data collection instrument to be used in this study. The tool was created and adapted on the basis of previous literature scales that have been tested and then modified to the Indian GST environment thus, guaranteeing content validity and at the same time, contextual relevance.

3.3.7 Measurement of Variables

Measurement of variables can be defined as the procedure of providing values in the form of numerical values or categories to various attributes, behaviors, or phenomena in order to enable empirical analysis in a study (Hair et al., 2019). It helps the researchers to provide quantification of abstract concepts that makes it precise and objective in their studies. Measurement scales are a fundamental concept in social science and business studies to be able to convert the subjective perception into a measurable construct and to be able to statistically analyze the construct and test hypotheses (Zikmund et al., 2019). The reliability and validity of the research findings can only be guaranteed by accurately measuring the

variables (Sekaran & Bougie, 2019). Lack of a systematic method of measurement could result in inconsistency of data collection and this could result in errors in interpretation and poor theoretical conclusions. Proper design of the measurement procedure can assist in testing the hypotheses, making comparative analyses in the contexts of varying settings and enhancing the overall applicability of the results. Moreover, rigorous methods of measurement contribute to the increase in the credibility of the research and it becomes more acceptable in the academic and professional spheres (Bell et al., 2022). In order to ensure consistency and validity, this research has borrowed items of measurements used in previous studies that have been tested and validated in the literature. Constructs of the present research satisfy the scales developed in the past and make sure that the measurement items effectively reflect the target dimensions (Hair et al., 2019). Through the use of the existing measures, this study is based on a strong theoretical basis and follows best practice concerning empirical research. To measure the variables, 5-point Likert scale has been employed because it is one of the most popular scales of measurement in social science and business research. This scale offers respondents the well-organized set of answers: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4) and Strongly Agree (5) (Likert, 1932). The Likert scale is favored because it is easy to use, analyse and also because it can be used to measure the different levels of agreement or disagreement. Although Boone and Boone (2012) have not openly stated that the 5-point scale has the least response fatigue, the scale has been generally considered to have a balance between ease of use and sensitivity necessary to pick out changes in opinions. It comes in handy specially in behavioral studies where attitudes and perceptions must be measured in a quantitative way.

The next section involves measurement of all variables in the study stating constructs and measurement scales.

1. GST compliance

GST compliance means degree to which a normal GST registered business adheres to the rules and regulations prescribed under the GST system in India, including timely filing of GST returns, accurate calculation

and payment of GST tax liabilities, correct application of GST rates, ethical and honest handling of tax invoices and proper maintenance of GST related records. In this research, the GST compliance is measured on eight items, which are modified according to Zainan et al. (2017), Woodward and Tan (2015) who conducted another study on tax compliance behaviour in various situations associated with indirect taxation. Zainan et al. (2017) identified how SMEs comply with GST, which is based on procedural issues, including ensuring that returns are filed in time, that tax is correctly calculated, the use of the correct GST rates and that proper records are kept. In this regard, the initial five questions in the GST compliance scale related to the filing of returns on time, paying of the right amount of taxes, the correct offsetting of input and output tax, the use of the correct GST rates, and maintenance of records have been modified based on their study, as these factors form the core aspects of evaluation of procedural compliance on GST system in India. However, Woodward and Tan (2015) were concerned with the ethical aspects of compliance in the context of a GST, which included how the attitude of businesses to the manipulation of tax invoices and ineligible input credit claims is concerned. Therefore, the last three items that do not change invoices when requested by the customer, reject unethical behaviors regarding manipulation of tax invoices and resistance to the development of fake invoices were based on their work. These products represent the ethical aspect of compliance and they elicit the moral sense of businesses in following the rules of GST. Moreover, similar items were also used in previous research in order to measure the compliance with the indirect tax (Alshira'h and Abdul-Jabbar, 2020; Alshira'h and Abdul-Jabbar, 2021). Since, GST compliance is a complex phenomenon, it is necessary to combine both the procedural and ethical elements. A combination of the items of Zainan et al. (2017) and Woodward and Tan (2015) will enable evaluation of compliance behaviour comprehensively. This two-dimensional methodology is to make sure that compliance is not considered merely on the basis of technical adherence to the provisions of the statutes but also as a matter of ethical integrity in conducting business. In addition, the Indian GST system places a strong responsibility on companies to submit returns in due time, using

appropriate tax rates and balanced input output tax and requires proper documentation of such records and avoidance of fraud. Using the two studies, the current research comes up with a strong and complete structure to assess the compliance to GST by Indian businesses.

Table 3.2: GST Compliance Scale

Items of GST Compliance
1. The business files its GST returns on time
2. The business pays the right amount of GST on time
3. The business computes the correct amount of GST by offsetting the eligible input tax with output tax.
4. The business charges the correct GST rates according to goods and services that are listed under GST law on GST invoice
5. The business keeps records/documents relating to GST for future
6. If my customers request a tax invoice be altered for reducing GST, I will not do it for them.
7. I find it wrong to ask another GST-registered business to alter a tax invoice so that I can claim more GST input
8. I find it wrong in creating a fake invoice or altering an invoice, in order to claim higher GST input

Source: Adapted from Zainan et al. (2017) and Woodward and Tan (2015)

2. Tax Moral

Tax morale refers as the individual's intrinsic motivation and moral obligation to honestly declare and pay GST taxes, reflected in personal beliefs about the ethicality of GST compliance, rejection of tax evasion and willingness to follow GST laws irrespective of enforcement. This paper uses six items modified based on Taing and Chang (2020) to measure the tax morale. In their study they have looked at the morale of taxpayers on tax compliance by evaluating their moral commitment to tax compliance. In particular, they put a special emphasis on the effect of intrinsic values, moral beliefs and attitudes toward taxation on the readiness of businesses to obey tax regulations. The products of their research include such aspects of tax morale as readiness to report taxes accurately, the unethicality of tax evasion and the personal conviction that it is necessary to pay taxes. These products have been put in the context of the GST framework in the current study and they seek to be able to capture the ethical aspect of tax

compliance behaviour among the businesses.

Table 3.3: Tax Moral Scale

Items of Tax Moral
1. I think I should honestly declare all my business GST tax liability
2. I think businesses should not underreport GST tax liability
3. I will not evade paying business GST tax even I have a chance to evade
4. I think paying business GST tax is my obligation
5. I think evading business GST tax is wrong
6. I always obey and follow the GST tax law

Source: Adapted from Taing and Chang (2020)

3. Trust in Government

Trust in government means the perception of the taxpayers that the government and GST authorities are transparent, accountable and utilize GST revenues responsibly for public purposes. In this research, the concept of trust in government is measured according to Taing and Chang (2020), who investigated the effects of the perceptions of taxpayers on the trust in government transparency, revenue management and institutional integrity as factors that affect their readiness to pay taxes. In this respect, the current research paper is using three items to reflect the level of confidence of the respondents in the government and GST administration. These products are indicative of major elements of institutional trust such as transparency perceptions, responsible revenue use and ethical behaviour of the GST officials. The designed adapted scale is expected to be culturally sensitive to the Indian GST framework.

Table 3.4: Trust in Government Scale

Items of Trust in Government
1. I think the government uses government revenues properly
2. I think the GST department is transparent and all GST revenues are well used
3. I think that GST officials are transparent

Source: Adapted from (Taing and Chang, 2020)

4. Tax complexity

Tax complexity means the perceived difficulty, procedural burden

and time associated with understanding GST regulations, calculating GST tax liabilities and filing GST returns under the GST system. The measurement scale of tax complexity in the current research is based on Taing and Chang (2020) who examined the determinant of compliance behaviour associated with the perceived complexity of tax systems. Their validated instrument has been adopted using five items because these particularly appeal to the cognitive and procedural problems encountered by taxpayers. The items reflect major dimensions of tax complexity, such as difficulty in comprehending the contents of returns, difficulty in calculating the tax amount, complexities in procedures involved in payment, filing as well as overall time cost of compliance. These products fit well within the Indian GST system which has several tax brackets, type of returns and reconciliation. Through the use of this scale, the research also has a sound and theoretically informed measure of tax complexity both in the technical and administrative perceived burdens on businesses.

Table 3.5: Tax complexity Scale

Items of Tax complexity
1. The contents of GST returns are hard to understand.
2. The proper amount of GST that business have to pay is difficult to calculate
3. The procedures for GST return or GST payments are complicated.
4. The business spends a lot of time for calculating and paying GST
5. Generally, I think the GST tax system in India is complicated

Source: Adapted from Taing and Chang (2020)

5. Digital payment

Digital payment means the extent to which GST registered businesses receives payments through electronic platforms and the perceived impact of these payments on income transparency, financial recordkeeping and the administrative effort required to record business transactions. The scale used to measure digital payment in the current research is based on Al-Qudah et al. (2024) that utilized determinants of digital payment adoption empirically to analyze the determinants of digital payment adoption in Generation Z. Their scale, which was tested, defined different aspects of digital financial behaviour, with theoretical models of

Unified Theory of Acceptance and Use of Technology (UTAUT) and Technology Acceptance Model (TAM). Their instrument has been adapted into four items that are relevant to the business environment of the GST compliance in India. All these are an indicator of customer adoption of digital transactions, increased customer income transparency, increased customer financial documentation as well as the time challenge involved in recording digital transactions. The chosen items are particularly applicable to the Indian GST environment, where digital payment systems like Unified payment interface (UPI) and mobile wallets are actively encouraged, but the correct transaction documentation is also required to file the returns and reconcile the input and output. Through this scale, the current study will have a theoretically based, practically applicable and context-specific measure of using digital payments. The items are a combination of the balanced perspective of the advantages and compliance-related operational activities relating to digital transaction, as in the case of GST-registered businesses in India.

Table 3.6: Digital payment Scale

Items of Digital payment
1. Most of my customers make business payments through digital payment methods such as UPI
2. Digital payment by customers have reduced the chances of underreporting business income
3. Digital payments by customers have helped in maintaining proper financial records of business
4. Digital payments by customers have increased the time spent in recording business transactions by staff or tax professional

Source: Adapted from Al-Qudah et al. (2024)

6. Tax awareness

Tax awareness means the extent to which a GST registered business is aware about its GST obligations, including knowledge of applicable tax types, payment amounts, filing timelines, audit likelihood and penalties for non-compliance. The tax awareness scale used in the research is translated and modified after Taing and Chang (2020) studied the role of tax knowledge and awareness in enhancing tax compliance behaviour in

businesses. The present research uses five items of their work that, on the whole, represent the key aspects of tax awareness including knowledge of GST liabilities, filing schedules, audit risks, and penalties. These variables have been already tested and provide a good base to determine how well Indian businesses under GST system are aware of tax. The addition of these items enables the study to determine whether the greater the level of tax knowledge, the greater the compliance behaviour. This operationalisation guarantees that tax awareness is measured and structured in a way that is measurable as well as facilitates sound analysis of statistics.

Table 3.7: Tax awareness Scale

Items of Tax awareness
1. I know the amount of GST tax that my business has to pay.
2. I know the type of GST tax that my business has to pay.
3. I know when my business has to pay a particular type of GST tax and file the particular type of GST returns.
4. I know the chances of being audited by tax officials in case of my GST issues
5. I know what the penalties and fines are there for GST tax evasion

Source: Adapted from Taing and Chang (2020)

7. Financial Constraint

Financial constraint refers to as the degree to which businesses experience financial difficulties due to the pressure of making timely GST payments and existing financial burdens. The measure of financial constraint deployed in the study is based on Trifan et al. (2023), who have investigated the role of financial constraints on the tax compliance behaviour of the companies. Their research also spelt out that tax payments like the payment of the GST can be pushed to the background when businesses are operating under the strict financial constraints and more so when companies have to spend on other more urgent or revenue generating projects. The authors pointed out that financial distress, shortage of cash flows and the cost of statutory compliance can all have an effect on the ability of the business to meet its tax obligations at the right time. In line with this conceptualisation, three items have been modified to gauge the construct of financial constraint. These items represent the competing

financial priorities available to businesses, the perceived strain on the business by GST requirements and the resultant decrease in working capital that may impact on the profitability and sustainability of the business. With the inclusion of these proven items, the current study will be able to internalize the practical implications of financial pressure as a behaviour with regard to tax compliance among the GST registered businesses.

Table 3.8: Financial Constraint Scale

Items of Financial Constraint
1. My business financial burden takes priority over my GST tax payment
2. The timely payment of GST taxes causes a financial burden on my business
3. The GST tax burden reduces my available working capital, which affects my business's ability to generate profits.

Source: Adapted from Trifan et al. (2023)

8. Tax penalties and fines

Tax penalties and fines means the perceived severity and effectiveness of monetary sanctions such as penalties and interest charges applicable on late filing of returns and delayed payment of GST liabilities. The measurement scale of tax penalties and fines in this study is based on Muhwa and Omboi (2023) which examined how mechanisms of penalty, structure of interest and tax enforcement programs affect tax behaviour in taxpayers. Their study pointed out that the perceived justice and harshness of punishment and the administrative possibility of its application play an important role in the choices by the businesses to comply. In this research, four questions were borrowed off their validated scale to determine the perception of the businesses regarding the effectiveness of the existing GST-related penalty and interest system in India. These items measure behavioural responses of businesses to the fear of economic penalty, their views of the financial cost that a penalty imposes and how the penalty serves to guarantee compliance. With the integration of these dimensions, this paper will attempt to weigh the perceived adequacy of existing deterrent mechanisms as a way of facilitating compliance in the Indian GST regime.

Table 3.9: Tax penalties and fines Scale

Items of Tax penalties and fines
1. Our business files GST returns and pays GST taxes on time because we are concerned about penalties and interest payments
2. The current GST tax penalties charged for late filing are high
3. The interest charged on late payments of GST liability is high and does impact business
4. The current penalties and interest structure are effective in improving GST compliance

Source: Adapted from Muhwa & Omboi (2023)

9. Audit probability

Audit probability refers to as the likelihood of being subject to enforcement actions by GST authorities such as audits or inspections which in turn encourages accurate GST tax payment and compliance with GST laws. The three items audit probability measurement scale provided by Faridy et al. (2014) is adopted in the current study as they investigated the tax compliance in the framework of indirect taxation and paid attention to the perceptions of the risk of the enforcement and monitoring that businesses have. The scale enables the capture of the awareness of businesses about the intensity of enforcement, their behavioural reaction to the possible audits and the perceived frequency of inspections under the GST system. These perceptions have been found to be critical since the perceived cost of non-compliance is more likely to increase as a result of the perception of audit and motivates preventive compliance behaviour. Moreover, the items of the scale applied to it have been validated in further research, such as Alshira'h and Abdul-Jabbar (2020), which proves their reliability and relevance in various tax environments. The items in the current research are modified to suit the Indian GST context and they are designed to assess the existence of significant effects of perceived audit probability on the desire of business to adhere to GST rules.

Table 3.10: Audit probability Scale

Items of Audit probability

1. Businesses pays the correct amount of GST tax as there is great enforcement and monitoring inform of audits from GST tax department
2. The likelihood of audits encourages me to comply with the GST tax law
3. Businesses registered for GST law are often subject to tax authority audits and inspections

Source: Adapted from Faridy et al. (2014)

10. Tax rates

Tax rates mean the percentage of Goods and Services Tax (GST) levied on the supply of goods and services along with the perception towards the fairness and uniformity of the current GST rates implemented. In this paper, the calculation of tax rates will be based on the work of Alshira'h and Abdul-Jabbar (2020), who explored the role of perceived fairness in tax rates in sales tax compliance behaviour among the SMEs. The scale is based on three items, which are whether the businesses should have equal tax rates among business sizes, sectors and even the nature of goods or services. These resources are they especially applicable in the Indian context where different GST rates tend to induce a sense of unfairness and misunderstanding and this could potentially affect the choices of compliance. The items chosen will focus on how the businesses are inclined towards rate fairness and standardisation as a potential compliance enhancing mechanism. Through modification of these proven items, the present study could measure whether the perceived homogeneity and equity of GST rates could affect compliance behaviour among GST-registered businesses.

Table 3.11: Tax rates Scale

Items of Tax rates
1. The GST tax rate should be the same for every type of business size (small, medium or large businesses).
2. The GST tax rate should be the same for every type of goods or Services.
3. The GST tax rate should be the same for every type of business sector.

Source: Adapted from Alshira'h and Abdul-Jabbar (2020)

11. Tax Compliance cost

Tax compliance cost refers to as the financial and administrative burden incurred by businesses in meeting GST requirements including expenses related to staff time, tax professionals, external assistance and the complexity of GST procedures. The cost of tax compliance measured in this research is founded on five items associated with Hong (2022), who analyzed the contribution of complex tax structures to more costs of tax compliance and consequently to taxpayer behaviour. The items chosen reflect both direct monetary costs and indirect administrative costs such as the number of filings, the technical difficulty and the dependency on third-party knowledge. As GST in India is a multifaceted phenomenon due to regular returns filing, altering regulations and tiered tax rates, these items offer a legitimate and situationally adequately suitable indicator. The current research utilizes these items to determine how high the compliance costs are in terms of deterrence of businesses to comply with their GST obligations completely and in the correct manner.

Table 3.12: Tax Compliance Cost Scale

Items of Tax Compliance cost
1. The complexity of the GST tax system results in business incurring tax compliance cost
2. The Business spends high tax compliance costs to comply with GST
3. The complexity of business tax administration informs of multiple taxes, the requirement for multiple GST filing per year, etc increases tax compliance costs
4. I feel that high tax compliance costs discourage the businesses GST compliance
5. The burden of compliance costs in terms of employee/staff time, tax professional fees and external assistance are affecting business GST compliance

Source: Adapted from Hong (2022)

3.3.8 Research Questionnaire for data collection

In the current study, a structured questionnaire was used as the major data collection tool. As mentioned in the preceding section, this method is especially suitable to obtain standardised and measurable data of a high number of respondents in a population with a geographical spread, like

GST-registered businesses in Goa (Creswell and Creswell, 2018; Hair et al., 2019).

A careful design of the questionnaire was done to mean conformity to the goals of the research and capture information on the determinants of GST-compliance behaviour comprehensively. The instrument enabled the collection of data in a systematic way and more than one dimension but ensured that the responses were consistent. Its format and contents were designed in such a way that they were clear, relevant, and comprehensive (DeVellis, 2017).

The questionnaire was structured into three major parts after an informed consent statement. Section A was dedicated to the demographic response of the respondents and it included the necessary personal and background data. Section B collected information about the nature of the business such as the type, size and length of operation. Lastly, Section C focused on the compliance of GST and determinants and included items that were intended to determine the behavioural, structural and contextual determinants of GST compliance among businesses.

In order to guarantee the validity and reliability of the instrument, face validity and content validity processes were carried out before the full-scale data collection (Creswell and Creswell, 2018). Taxation, research methodology and behavioural compliance subject-matter experts were consulted to determine the clarity, relevance and suitability of every item (Bryman, 2016). In addition, pilot test was done to test the interpretability and functionality of questionnaire on a small sample of respondents (Malhotra, 2010). Feedbacks at this phase were used to make appropriate refinements in terms, order of arrangement and structure.

The information about the face validity, the content validity, pilot testing procedure and the data collection process along with their consequences on the reliability and refinement of the instrument is addressed in the next section of this chapter.

3.3.8.1 Face Validity

Face validity is the degree that a given instrument of measurement is believed to be conducting the intended measurement on an external

observation of the instrument, grounded on subjective opinion of the professionals or other people conversant with the area of measurement (Holden, 2010). It provides preliminary and intuit sense judgment as to whether the items in the instrument appear to be appropriate, relevant, and reflective of the construct under measurement. Face validity in the current research was developed at the initial stages of developing the instruments by the expert review. In particular, reviewing of the questionnaire was conducted by the research committee and the research supervisor to make sure that every question was presented to fit each of the constructs and was contextually relevant to the target population. Face validity was not statistically tested, but it was used as an initial quality assurance measure before other rigorous assessment of validation like content validity measures and pilot testing. According to Haynes et al. (1995) and Boateng et al. (2018), face validity is considered a precursor to content validity. While face validity is useful for initial evaluation it is insufficient on its own and should be followed by structured expert assessments to ensure comprehensive content coverage.

3.3.8.2 Content Validity

Content validity is the extent to which elements of an assessment instrument are considered representative and relevant to the construct that the given assessment is expected to measure (Haynes et al., 1995; Yusoff, 2019). It is highly significant type of validity, which makes sure that the instrument will measure all necessary dimensions of the conceptual domain. Considering the current study that focuses on the evaluation of antecedents of GST compliance behaviour among registered businesses in Goa, content validity was accepted with the help of the expert evaluation process. It was done by a panel of six subject matter experts in conformity with the suggestions of Polit and Beck (2006) and Lynn (1986) who recommend at least six experts to have excellent content validity.

The panel consisted of two scholarly experts in the area of taxation and four industry professionals who consisted of two experienced GST tax advisors, two practicing Chartered Accountants. These professionals have been chosen because they have specialised knowledge and experience in

the laws and compliance procedures of GST. After the process of content validation using the six steps proposed by Yusoff (2019) that includes the preparation of the content validation form, the selection of a panel of expert reviewers, the actual content validation process, the evaluation of the established domains and items and rating each item, the expert panel in this study was offered to complete a structured content validation form. In this form, there were well-defined constructs, matching items and well-specified rating scale in order to provide consistency and clarity of the expert evaluation. The items were rated on three features in a four-point Likert scale (1 = not relevant, 4 = very relevant) to consider the level of relevancy, clarity, and simplicity, which is in line with the model presented by Davis (1992).

The process of content validation was in the form of non-face-to-face, in which structured instructions and follow-ups were used to help assure that expert feedback was received on time (Yusoff, 2019). The Content validity index (CVI) was used to test the content validity and it consists of the Item-Level Content Validity Index (I-CVI) and the Scale-Level Content Validity Index (S-CVI). The Items-Level Content Validity Index (I-CVI) of each item was computed as the percentage of the experts who rated it as either 3 or 4. Besides, both the S-CVI/Ave and S-CVI/UA were used to compute Scale-Level Content Validity Index (S-CVI). The S-CVI/Ave is used to determine the average I-CVI of all items, whereas S-CVI/UA is used to identify the percentage of items considered to be rated as relevant by all the experts (Polit et al., 2007; Lynn, 1986). Although calculation of S-CVI/Ave is usually enough in determining content validity, it is recommended to include the value of S-CVI/UA with the calculation to give a more informative and effective assessment process (Almanasreh et al., 2006).

Upon professional assessments of conciseness and clarity, some items were amended in terms of wording and formulation to improve their understandability and guarantee their increased correspondence with the theoretical background as well as the practical facts of GST compliance. The I-CVI of all the items were more than the acceptable level of 0.83 and the overall S-CVI/Ave was above 0.90, which proved that the instrument

has a good content validity (Table 3.13). These findings are in line with the best practices in content validation, and they establish that the scale is a holistic representation of the constructs under measurement (Sirajudeen et al., 2012; Kazi, 2011; Yaghmaie, 2003). Such a methodological rigour will confirm that the instrument is conceptually and contextually based and applicable in the empirical use to measure GST compliance behaviour.

Table 3.13: Scale level S-CVI for the constructs

Construct	No. of items	S-CVI/UA	S-CVI/Avg
GST Compliance	8	1.00	1.00
Tax moral	6	0.97	0.80
Trust in Government	3	1.00	1.00
Tax complexity	5	0.97	0.80
Digital Payments	4	1.00	1.00
Tax awareness	5	0.97	0.80
Financial Constraint	3	1.00	1.00
Tax penalties and fines	4	1.00	1.00
Audit Probability	3	1.00	1.00
Tax Rate	3	1.00	1.00
Tax Compliance Cost	5	0.97	0.80

Source: Authors compilation

3.3.8.3 Pilot testing

After establishing face validity and content validity pilot study was done. Pilot testing is a key factor in perfecting a questionnaire and it allows the researcher to determine the clarity, structure and reliability of items before conducting the research on a large-scale basis (Lynn, 1986; Saunders et al. 2016). The pilot sample was conducted on a pilot sample of about 80 respondents, namely owner-managers of businesses registered under the GST, which were based in the Mapusa ward (Mapusa, Canca, Khorlim, Moira and Aldona). The main aim of pilot test was to identify ambiguity in questionnaire, determine initial reliability of the constructs and also, make sure that the data collection tool operated as expected in the actual field conditions (Malhotra, 2010). Data collected on the pilot testing were first analyzed under Jamovi statistical software in order to undertake certain basic procedures such as data coding and data cleaning. This

involved elimination of missing data, identification of unresponsive answers, identification of outliers and correction of erroneous codings. After this preliminary screening, 72 valid responses were then saved to be used in further analysis. These answers were then imported into SmartPLS 4 to make preliminary measurements model tests and checks on the internal consistency reliability and Indicator loading. The pilot study was therefore an initial step towards ensuring that the instrument was not only sound in technical aspects, but also easily comprehensible to the target respondents and therefore leading to massive data collection in other wards within Goa.

3.3.8.4 Data Collection Procedure for final study

After ensuring the successful completion of content validity, face validity and pilot testing of the final questionnaire, the validity was refined and standardised to be used in the collection of data. The reconstructed questionnaire consisted of reflective lower-order constructs (LOCs) containing 49 items in total, to gauge important aspects of the GST compliance behaviour. To overcome the possible problem of common method bias (CMB) assessment of biasness was carried out using VIF, Harman Single-Factor test and a marker variable fashion Consciousness, in which three items were adapted based on the findings of the existing literature, was included in the final tool as suggested by Simmersing et al. (2015). Consequently, the final questionnaire incorporated 12 constructs that had 53 items. Data collection was done in eight large commercial wards of Goa to make sure that there was representativeness and geographical coverage. These were Mapusa, Pernem, Panjim, Vasco, Margao, Ponda, Bicholim and Churchorem. The administration of the questionnaires was done through a physical, paper-based mode of distribution. A sample size of 992 GST registered businesses was contacted, i.e. normal taxpayers under GST regime, which is the majority category of complying business organizations in Goa. The researcher has personally delivered questionnaires, thus having a chance to have face-to-face communication and clarify any unclear issues, to guarantee a high level of response. This strategy was especially appropriate based on the diverse educational and technological skills of the respondents and most of

them were just more comfortable with face-to-face interaction than online survey (Bryman, 2016). The period of data collection was September 2024 and December 2024. It was also during this period that follow-up visits were conducted regularly to encourage the participation and clarify any problems with the questions and obtain completed responses. This preemptive interaction served to achieve a high response rate and quality and completeness of collected data.

3.3.9 Data analysis procedure

This section presents a description of the statistical methods used to look at the survey data and test the hypothesised relationships. It describes the application of Structural Equation Modelling Partial Least Squares Structural Equation Modelling (PLS-SEM) with SmartPLS 4 with the support of procedures that should ensure explanatory and predictive information on GST compliance behaviour measurement and structural model assessment, mediation testing, Importance-Performance Map Analysis (IPMA) and Necessary Condition Analysis (NCA).

3.3.9.1 Structural Equation Modelling (SEM)

Statistical analysis is an essential instrument in social science research, but in its early years of existence, the analysis was limited to univariate and bivariate analysis to investigate data and associations, however as the complexity of the research increased, the introduction of multivariate analysis became available, allowing the investigation of multiple variables simultaneously and they can be classified into the first-generation and second-generation methods (Hair et al., 2022). The most common first-generation methods involve multiple regression, logistic regression, analysis of variance, exploratory and confirmatory factor analysis, cluster analysis and multidimensional scaling, are common in any research; but their weakness lies in the fact that the techniques assume a simple model structure (in particular, in regression-based methods), all the variables are directly measurable, and measurements are error-free and therefore may constrain their application in some research settings (Haenlein and Kaplan, 2004). To overcome these shortcomings, scholars

have turned to second-generation methods, especially structural equation modeling (SEM), which enables modeling and estimating of complex relationships among multiple dependent and independent variables at once, which is a more holistic approach to data analysis (Hair et al., 2022).

In SEM, the constructs under analysis are often latent variables, that is, they cannot be observed but measured using numerous indicator variables, and the approach also takes into consideration measurement error in the observed variables to guarantee a more precise estimation of relations (Hair et al., 2022). There are two broad categories of structural equation modeling (SEM) covariance-based structural equation modeling (CB-SEM) and partial least squares structural equation modeling (PLS-SEM), which is also known as PLS path modeling (Hair et al., 2022). CB-SEM is mainly applied to confirm or disprove theoretical models through assessing the ability of a suggested model to reproduce the covariance matrix of a sample dataset, thus, making it possible to test the systematic relationships between multiple variables empirically (Hair et al., 2022). On the other hand, PLS-SEM is referred to as a variance-based method as it employs the sum of the total variance of data and uses it to predict the parameters of the model, not aiming to approximate a theoretical covariance matrix (Hair et al., 2017). Moreover, PLS-SEM is a causal-predictive SEM and it focuses on prediction as well as causal explanation of statistics in modeling (Joreskog and Wold, 1982). The fact that the PLS-SEM method can be used to estimate complex models with many constructs, indicator variables and structural relationships and does not impose specific requirements with regards to data distribution, makes this method of data analysis especially appealing to the researcher (Hair et al., 2019). The covariance-based structural equation modeling (CB-SEM) was the main approach that was used to study intricate associations between observed and latent variables. As a matter of fact, until approximately 2010, CB-SEM was much more common in social science studies than partial least squares structural equation modeling (PLS-SEM) (Hair et al., 2019). Nevertheless, over the past few years, the amount of research that utilizes PLS-SEM has increased significantly compared to CB-SEM (Hair et al., 2017). Regardless of the improvement in the approaches in SEM, scholars still struggle with the task

of choosing the best methodology to use in their research.

Hair et al. (2019) offer certain rules of selecting PLS-SEM as compared to CB-SEM. According to these principles, PLS-SEM is used in the current study rather than CB-SEM because it is in line with the essential reasons that apply to our research. The reasons behind the choice in particular are as follows:

1. Our GST compliance study focuses on testing a theoretical framework from a predictive perspective.
2. The structural model in our GST compliance study is complex, encompassing multiple constructs, indicators and interrelated relationships.
3. The research objective is to enhance understanding of growing complexity by investigating theoretical advancements and extensions of established frameworks.
4. The study necessitates latent variable scores for subsequent analyses to further examine relationships for follow up analysis.

For conducting the PLS-SEM analysis, the present study utilizes Smart PLS Version 4.0, a widely recognized software specifically designed for partial least squares structural equation modeling (PLS-SEM).

Specifying the measurement model

PLS-SEM has two basic steps namely: Measurement Model (also known as the outer model) and Structural Model (also known as the inner model). It is important to state the nature of measurement model being used before evaluating the model because the choice determines the evaluation and validation process (Hair et al., 2022). With regards to SEM, the latent constructs can be measured with the help of reflective or formative measurement models based on different theoretical premises and statistical implications (Hair et al., 2019). Formative measurement models have their models rooted on which indicators cause or shape the construct. In these models, every indicator describes a distinct aspect of the construct and the absence of any indicator can change the meaning of the latent variable greatly. Moreover, the level of correlation between formative indicators does not have to be very high (Diamantopoulos and Winklhofer, 2001).

This method is especially suitable when the object of investigation is to embody a multidimensional concept of different elements. On the other hand, models of reflective measurement frameworks have a classical test theoretical background where it is assumed that the measures are products or a result of a latent construct. Under this model causality moves in the direction of the construct to its indicators, therefore assuming that all indicators ought to be covarying and interchangeable (Nunnally and Bernstein, 1994). Reflective indicators are based on the same concept domain, so, when one of them is omitted, the meaning of the construct does not substantially differ, as long as internal consistency is maintained (Diamantopoulos and Riefler, 2011). Reflective models are particularly appropriate in the assessment of psychological, behavioural and perceptual forms of constructs and the reason why they are largely adopted is their high reliability and validity standards. Reflective measurement models in the current study are utilized in measuring all latent constructs. This method is aligned with theoretical backgrounds and it is congruent to the conceptualisation followed in earlier studies. The scales utilized in this research have been customized after earlier researches that have established previously, each construct was created as a reflective stand-alone construct.

In this study, therefore, all constructs are considered Lower Order Constructs (LOCs) that is, there are individual constructs which are not elements of a higher-order model. Such specification makes sure that the constructs are measured directly and their measurement characteristics are tested separately in the structural framework. The choice of reflective LOCs improves the level of theoretical consistency as well as empirical strength of the research. With reflective models, construct validity is enhanced and measurement error can be identified and remedied and this enhances the reliability and predictive validity of the SEM analysis. In addition, the potential of reflective LOCs usage is specifically suitable to this research work since the aim is to test the existing theoretical relations instead of creating formative indices or general conceptual frames.

3.3.9.2 Measurement model assessment

As outlined in the previous sections, the present study employs a reflective measurement model assessment for evaluating the constructs. The assessment follows a systematic approach as per Hair et al., (2022) to ensure the reliability and validity of the measurement model before proceeding to the structural model evaluation.

1. Indicator Reliability: The reliability of individual indicators is assessed using outer factor loadings, ensuring that each indicator contributes significantly to its respective construct.

2. Internal Consistency Reliability: At the construct level, internal consistency is examined using Cronbach's alpha (α), Composite Reliability (ρA) and Composite Reliability (ρC) to confirm the reliability of the constructs.

3. Convergent Validity: The study verifies convergent validity by assessing the Average Variance Extracted (AVE), ensuring that the indicators within a construct share a high proportion of common variance.

4. Discriminant Validity: To establish discriminant validity, multiple criteria are applied, including Cross Loadings, Fornell-Larcker's Criterion, and the Heterotrait-Monotrait (HTMT) Ratio. These tests ensure that the constructs are conceptually and statistically distinct from one another.

Upon successfully meeting all the criteria for the reflective measurement model assessment the study proceeds with the structural model assessment to evaluate the relationships among the constructs.

3.3.9.3 Structural model assessment

Following the measurement model assessment, the next step in the Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis was to evaluate the structural model, which examined the hypothesized relationships between the constructs. This assessment ensured that the relationships among the variables were statistically significant and meaningful, providing insights into the explanatory and predictive power of

the model. As per Hair et al., (2022) the structural model assessment was conducted in the following steps:

1. Multicollinearity Test (Variance Inflation Factor - VIF): As part of the structural model assessment, multicollinearity among the predictor constructs was examined to ensure the reliability of path coefficient estimates. The Variance Inflation Factor (VIF) was used as a diagnostic measure to identify potential redundancy among independent variables. Based on the VIF values, the model was evaluated for any critical levels of collinearity. Since no significant multicollinearity issues were observed, no further corrective measures, such as merging constructs, eliminating predictors or constructing higher-order constructs, were undertaken.

2. Coefficient of Determination (R^2) – Explanatory Power: The R^2 value was calculated to measure the explanatory power of the structural model, indicating the proportion of variance in the endogenous variables that could be explained by the exogenous variables. A higher R^2 value signified stronger explanatory power, although acceptable thresholds depended on the research context.

3. Hypothesis Testing – Assessing Path Coefficients (β) and Statistical Significance: The path coefficients (β) were evaluated to determine the strength and direction of the relationships between constructs. A bootstrapping procedure was used to generate standard errors and confidence intervals, allowing the statistical significance of the path coefficients to be assessed. The t-values and p-values were examined to determine whether each hypothesized relationship was statistically significant.

4. Effect Size (f^2) – Measuring the Impact of Predictors: The effect size (f^2) was calculated to determine the relative contribution of each independent variable in explaining the variance in the dependent variable. This was assessed by measuring the change in R^2 when a specific predictor variable was removed from the model.

5. Model Fit (SRMR) – Evaluating Overall Model Fit: The Standardized Root Mean Square Residual (SRMR) was used to assess the model fit. This measure evaluated the difference between the observed correlations and the model-implied correlations, providing an indication of how well the model represented the data.

6. Predictive Relevance (Q^2 predict): The predictive relevance (Q^2 predict) was examined using the blindfolding procedure to determine the out-of-sample predictive ability of the model. A positive Q^2 value indicated that the model had predictive relevance for the endogenous variables.

Additionally, after measurement model assessment and structural model assessment, Mediation, IPMA and NCA analysis were conducted

3.3.9.4 Mediation analysis procedure

The mediated analysis that was used in the current study was that of determining whether the effect of an exogenous variable on an endogenous variable is mediated by a mediating variable. Mediation occurs when a third construct called mediator is utilized as a transmitting agent, which is a correlation between the changes in the exogenous construct to the changes in the endogenous one under the context of Partial Least Squares Structural Equation Modelling (PLS-SEM). This type of analysis enables the researcher to investigate the not only existence but also the size and direction of the indirect effects of complex structural models as put across by Hair et al. (2022). The presence of the mediator in this study has a theoretical basis and is backed by the previous empirical literature that proves the applicability and possible impact of the mediating construct in the study being examined. A significant analysis of the mediation effects, as suggested by Hair et al. (2022), requires a high a priori theoretical foundation to explain the hypothesised indirect relationships. In this regard, the present study follows this methodological rule by incorporating a theoretically informed mediator to investigate its role in mediating the impacts between the constructs of the model.

It analyses with the help of the bootstrapping method 10,000 resamples and the SmartPLS 4 software whereby this software will help to

give a strong estimation of the indirect effects confidence intervals without the need to make assumptions about normality. The framework presented by Zhao et al. (2010) assists in classifying the types of mediation according to the importance and direction of direct and indirect effects, the types of mediation include: complementary mediation, competitive mediation both of which represent the forms of partial mediation, and indirect-only (full) mediation, direct-only non-mediation and no-effect non-mediation. Moreover, the present research also uses multiple mediation analysis in order to directly estimate the strength and importance of several mediating relationships between an exogenous and an endogenous variable. The latter method is especially beneficial because it enables discovering individual indirect effect using individual mediators alongside the overall indirect effect, which is the sum of all the mediators. In accordance with the procedure suggested by Hair et al. (2022), the multiple mediation analysis can be performed in a number of critical steps:

1. Specification of the Structural Model: All hypothesised mediators are incorporated into a single, comprehensive structural model, allowing for the estimation of each indirect path while accounting for their simultaneous inclusion.

2. Estimation of Specific Indirect Effects: Path coefficients for each mediating path (e.g., $X \rightarrow M_1 \rightarrow Y$, $X \rightarrow M_2 \rightarrow Y$) are estimated to evaluate the individual contribution of each mediator in transmitting the effect of the independent variable on the dependent variable.

3. Estimation of the Total Indirect Effect: The total indirect effect is computed by summing all specific indirect effects, providing an overall measure of the mediating influence.

4. Significance Testing via Bootstrapping: The significance of both specific and total indirect effects is tested using 10,000 bootstrap subsamples, with percentile-based confidence intervals used to determine the robustness and reliability of mediation effects.

5. Assessment of Mediation Type: Based on the significance and direction of the direct and indirect effects, the nature of mediation is identified following the classification by Zhao et al. (2010), including no mediation, partial mediation or indirect-only (full) mediation.

This approach allows the study to uncover the unique mediating role of each construct in explaining the mechanism through which the independent variables influence GST compliance, while also recognising their collective contributions in a statistically rigorous manner.

3.3.9.5 Importance-Performance Map Analysis (IPMA)

In order to get more managerial information than the traditional PLS-SEM path coefficient analysis, the present research involves Importance-Performance Map Analysis (IPMA) that has been suggested by Ringle and Sarstedt (2016). IPMA builds on the work of traditional PLS-SEM because it takes into account the significance (total effects) as well as the performance (average scores of the latent variables) of every construct in context of a given target construct in this case, GST compliance. The technique will be used to uncover constructs that, despite a strong impact, perform poorly, hence, indicating areas that the organisation can improve. High importance low performance constructs are strategic intervention opportunities. On the other hand, high importance and high-performance constructs are those that depict the presence of strengths that are to be nurtured. The SmartPLS 4 was used to conduct IPMA in this study. The scores on the latent variables were rescaled to a score of between 0 and 100 so that the performance could be compared. The output map shows which antecedents to GST compliance should be given priority consideration by the policy makers and administrators in order to improve tax compliance behaviour among business. The implications of having IPMA are rich in terms of the fact that it is not only the dimension of path coefficients but it also has an action-focused aspect, which is especially advantageous to the practical and policy-centered decision-making.

3.3.9.6 Necessary Condition analysis (NCA) procedure

The current study analyzed the necessary condition Analysis (NCA) to determine the key factors that need to be in place in order to make businesses realize a given degree of compliance to the Goods and Services Tax (GST) regulations. According to Dul (2016), this method of analysis would allow the researcher to conclude that specific variables are necessary but not sufficient to influence the desired outcome. The process comprised estimating the effect size of each of the variables and determining by which degrees these variables restrict or allow higher occurrence of GST compliance behaviour. The study could identify minimum threshold values of every condition by calculating the bottleneck levels and this provided clarity on the key constraints that are to be met. This approach offered a lot of insight into the underlying components which affect compliance so as to have a more holistic view on what is not negotiable to businesses with the aim of meeting the requirements of GST. It is in this light that the study goes beyond the conventional analyses in pointing out not only what leads to compliance, but what is actually needed to enable such occurrence of compliance.

Chapter 4
Data analysis and results

4.1 Introduction

In this chapter the author offers empirical findings of the research in form of a systematic study of the secondary and primary data to address the stated goals. The first object is concerned with the compliance behaviour with GST by the Indian States and UTs whether there is a considerable difference between the large, medium as well as low population groups. Empirical data did not meet the normality conditions and therefore non-parametric tests such as Kruskal-Wallis test followed by pair-wises comparison was applied (Shapiro and Wilk, 1965; Kruskal and Wallis, 1952; Critchlow and Fligner, 1991). This provides a macro-level understanding of the difference in the compliance in the various federal environment of India.

In the second part, the focus is changed to primary data collected from GST-registered businesses in Goa to identify the role of both economic and non-economic factors in the development of compliance behaviour. It employs the Partial Least Squares Structural Equation Modelling (PLS-SEM), which is suitable to examine any sophisticated theoretical hypothesis with many constructs, mediators and non-normal data (Chin, 1998; Hair et al., 2021). This will entail reliability testing and validity testing of the measurement model, structural model testing will follow to test the direct effects, the indirect (mediation) effects and the total effects.

Finally, some more complex approaches such as Importance-Performance Map Analysis (IPMA) and Necessary Condition Analysis (NCA) are also applied to provide a more detailed information. The constructs developed by IPMA are of high importance but are not working well, so they inform policy-makers about the aspects that should be

improved (Ringle and Sarstedt, 2016). NCA, though, states the necessary conditions that restricts or enabled increased compliance (Dul, 2016).

Overall, this chapter discusses Objective 1, by exploring the GST compliance behaviour between Indian States and UTs and Objective 2 by testing the influence of economic and non-economic variables in Goa and Objective 3 by analyzing the mediating role of the chosen constructs. A combination of these results can give the complete picture of the GST compliance in the Indian environment.

4.2 Data analysis and results of objective 1

This section represents the analysis and findings associated with Objective 1 that intends to determine the behaviour of Goods and Services Tax (GST) compliance among businesses in all States and UTs of India. The analysis will be designed in such a way that it can evaluate the existence of significant differences in the GST compliance levels among large, medium and low population states/UTs, which will address Research Question 1 (RQ1).

To achieve this, the study is divided into four key sub-objectives:

- To investigate GST compliance behaviour among large population States in India.
- To study GST compliance behaviour among medium population States and UTs in India.
- To analyze GST compliance behaviour among low population States and UTs in India.
- To compare GST compliance patterns among large, medium, and low population States and UTs in India.

4.2.1 GST compliance behaviour among large population States

This part discusses compliance behaviour of GST by large population States in India. To find out whether there are significant differences exists, statistical analysis is used to test hypothesis Ha1. Prior to this the association between variables is first checked on whether they adhere to the

normality test. According to the findings, the different compliance differences across these states are evaluated and compared using relevant statistical techniques. This is accompanied by review and trend analysis which is descriptive in nature to understand patterns of compliance further.

1. Normality Test

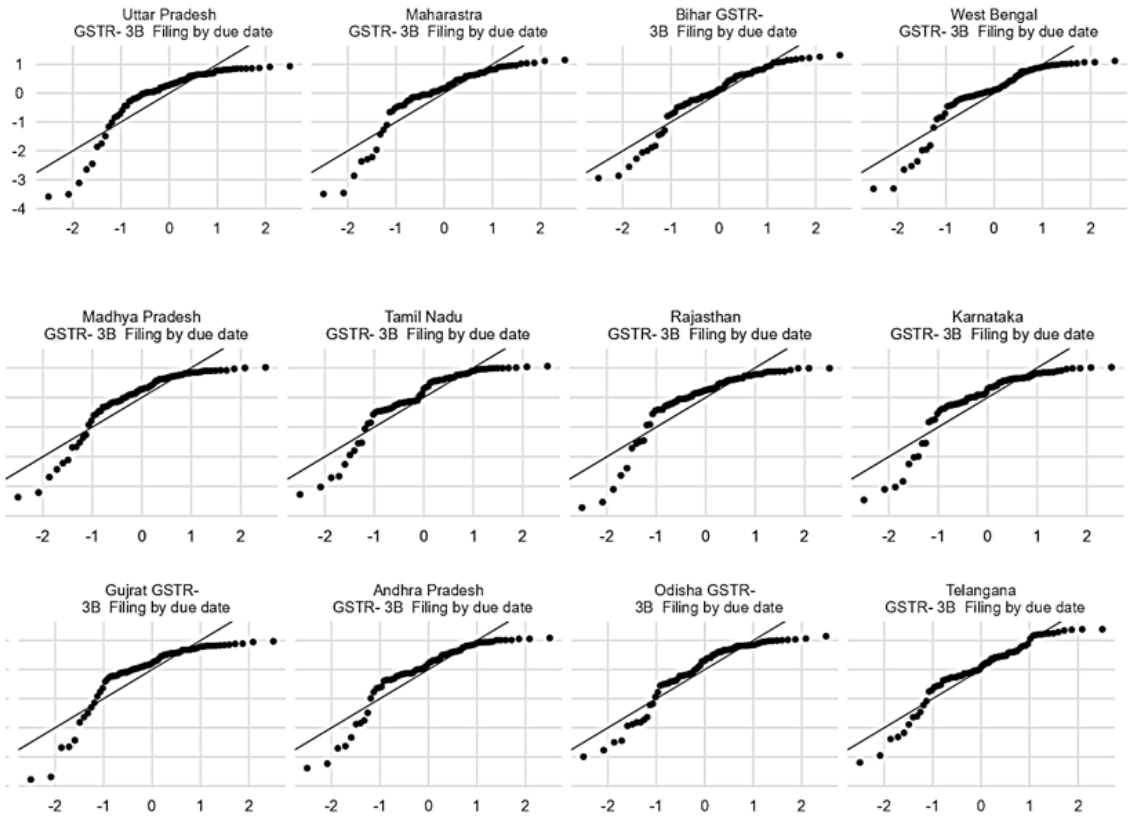
Table 4.1 shows that the Shapiro-Wilk test was used to test the normality of the dataset. Shapiro-wilk is another test that is borrowed to establish the normality of data set when the data set is small (Shapiro and Wilk, 1965). The test outcome shows that there is the violation of the assumption of the normality in GST compliance behaviour in all states of big population in India. All the p-values are lower than the 1% level of significance ($p < 0.001$), which proves that the data is not normally distributed. The values of Shapiro-Wilk test statistics (0.759 to 0.912) support the rejection of the normality.

Q-Q plots (quantile-quantile plots) were also created in Figure 4.1 in order to test the assumption of normality further. Q-Q plots are used when the actual quantiles of the GST compliance data are compared with the anticipated quantiles of a normal distribution (Marden, 2004). Under normal data, the points of the Q-Q plot would be close to the 45-degree reference line. In this instance though, skewness and kurtosis are manifested in the data since there are large disparities to the reference line especially at the tails. This graphic description gives further support to the fact that the dataset is not normally distributed. Since normality was violated, the parametric tests like ANOVA (Analysis of Variance) which assume the data distribution to be normal are not suitable to use in this analysis. In lieu, Kruskal-Wallis test is a non-parametric test that was used to test variation in GST compliance behaviour between the large population states.

Table 4.1: Normality Test among Large Population States

Large population States in India	Statistic	P Value
Uttar Pradesh	0.759	< .001**
Maharashtra	0.813	< .001**
Bihar	0.896	< .001**
West Bengal	0.831	< .001**
Madhya Pradesh	0.817	< .001**
Tamil Nadu	0.840	< .001**
Rajasthan	0.772	< .001**
Karnataka	0.792	< .001**
Gujarat	0.764	< .001**
Andhra Pradesh	0.831	< .001**
Odisha	0.862	< .001**
Telangana	0.912	< .001**

Note: **denotes significance at 1% levels
Source: Author's compilation



Source: Author's compilation

Figure 4.1: Q-Q plot among Large Population States

2. Kruskal-Wallis Test

The fact that the data does not concur with the use of normality tests led to the adoption of Kruskal-Wallis test to establish whether there are any significant differences in GST compliance behaviour among high population states. The Kruskal-Wallis test (Kruskal and Wallis, 1952) which is applicable to assess the difference between two or more independent groups when the data do not follow normal distribution demonstrated the statistically significant difference in the level of GST compliance across the states as indicated in Table 4.2. The Kruskal-Wallis statistic ($\chi^2 = 103$, df = 11, $p < 0.001$) indicates that there is at least one state that has a difference in patterns of compliance with the rest. The p-value (< 0.001 at 1% level of significance) gives significant statistical support, and it proves that compliance behaviour with GST is different among the large population states. This finding confirms Hypothesis H1a, which means that there are significant variations in the compliance levels between these large population States. Even though the Kruskal-Wallis test does confirm that the significant differences exist across the States, it does not specify which states were different across. A post-hoc pairwise testing with Dwass-Steel-Critchlow-Fligner (DSCF) test was done to detect the particular state-wise variation.

3. DSCF Pairwise Comparisons test

To explore more on the differences in the compliance behaviour of the States in regard to GST, the DSCF (Dwass-Steel-Critchlow-Fligner) pairwise comparison test (Critchlow and Fligner, 1991) was carried out. As shown in Table 4.3, the outcomes of the analysis show that there are a number of States pairs in which the difference in the level of compliance with GST is statistically significant.

The main results of the pair wise comparisons:

- A number of important pairwise differences were found, which proves that the behaviour of large population states with the compliance to GST is different.
- Gujarat displays significant difference with several other large

population States, such as Uttar Pradesh, Bihar, Maharashtra, West Bengal, Tamil Nadu, Rajasthan, Karnataka, Andhra Pradesh, Odisha, and Telangana ($p < 0.05$ or $p < 0.001$). This implies that the compliance behaviour of GST in Gujarat is statistically different as compared to most other states.

- Bihar also has a significant disparity with several States such as West Bengal, Tamil Nadu, Rajasthan, Karnataka, and Gujarat ($p < 0.001$), which once again confirms the differences in compliance patterns.
- The compliance behaviour of Telangana differs as compared to a number of States such as Uttar Pradesh, West Bengal, Madhya Pradesh, Tamil Nadu, Rajasthan, Karnataka and Gujarat ($p < 0.001$).
- Odisha shows statistically significant differences on compliance behaviour between itself and Uttar Pradesh, Rajasthan, Gujarat and Andhra Pradesh.

These pairwise comparisons confirm the findings of Kruskal-Wallis test to ensure that there is a significant difference in GST compliance behaviour across large population states in India. Moreover, DSCF test helps to detect the statistically significant pairs of States but does not tell us whether one state has greater compliance than another one. Thus, another descriptive review and trend analysis has been carried out in order to have further insights.

Table 4.2: Kruskal-Wallis test among Large Population States

	χ^2	Df	P Value
GST compliance amongst large population States in India	103	11	< .001**

Note: ** denotes significance at 1% levels
Source: Author's compilation

Table 4.3: DSCF Pairwise comparisons test among Large Population States

Large population States in India	Large population States in India	W	P Value
Uttar Pradesh	Bihar	-6.812	< .001**
Uttar Pradesh	Gujrat	4.661	0.046*
Uttar Pradesh	Odisha	-4.863	0.029*
Uttar Pradesh	Telangana	-7.357	< .001**
Maharashtra	Gujrat	7.189	< .001**
Bihar	West Bengal	5.194	0.013*

Bihar	Tamil Nadu	5.481	0.006**
Bihar	Rajasthan	6.729	< .001**
Bihar	Karnataka	5.621	0.004**
Bihar	Gujrat	9.084	< .001**
West Bengal	Gujrat	5.479	0.006**
West Bengal	Telangana	-5.881	0.002**
Madhya Pradesh	Gujrat	6.466	< .001**
Madhya Pradesh	Telangana	-4.768	0.036*
Tamil Nadu	Gujrat	4.654	0.047*
Tamil Nadu	Telangana	-5.656	0.004**
Rajasthan	Gujrat	4.723	0.04*
Rajasthan	Odisha	-4.695	0.043*
Rajasthan	Telangana	-7.253	< .001**
Karnataka	Gujrat	5.557	0.005**
Karnataka	Telangana	-6.137	< .001**
Gujrat	Andhra Pradesh	-7.265	< .001**
Gujrat	Odisha	-7.665	< .001**
Gujrat	Telangana	-9.377	< .001**

Note: * and ** denotes significance at 5% and 1% levels, respectively
Source: Author's compilation

4. Descriptive Review of Compliance behaviour

Table 4.4 shows the descriptive statistics of the GST compliance behaviour expressed in the form of percentage of businesses that have submitted GSTR-3B returns by the due date in the large population states in India between July 2017 and March 2024. The table contains the mean, SD, minimum and maximum values providing the understanding of the overall distribution of the compliance rates across the states and pointing out the changes in filing behaviour with time passing.

1. Mean GST Compliance Rates Across States

Mean compliance rate shows the average percentage of businesses that submit GST filings in time, however, there is a significant difference among states. Gujarat had the highest mean compliance rate of 72.1% meaning that on average three-quarters of businesses in the state met the filing deadline of the GST returns. The Uttar Pradesh (67.3 %) and the Rajasthan (67.2 %) also posted relatively high rates implying that there was a strong compliance with the tax filing requirements. On the other hand, the lowest compliance rates were recorded in Bihar (57.4%) and Telangana (57.6%), which implies that the business in these states was relatively less regular when it comes to submitting their GST returns in time. Maharashtra

(62.8%), Madhya Pradesh (63.3%), Tamil Nadu (65.5%) and Karnataka (65.6%) were also in the middle with compliance levels varying over the years between 60 % and 65 %.

2. Standard Deviation (SD) and Compliance Variability

The standard deviation (SD) gives a clue on the level of changes in the GST compliance rates between periods. An increased SD indicates variability in terms of filing behaviour and therefore a lower SD indicates consistency in the trends of compliance. Gujarat (SD = 18.4%) and Tamil Nadu (SD = 18.3%) were the States with the greatest variability, i.e. the compliance rates were varying greatly over time. This may be explained by the periodical changes of business activities, seasonality of tax filling or external factors of the changes of filing behaviour. There was also high variance in compliance rates in West Bengal (SD = 17.6%), Madhya Pradesh (SD = 17.5%) and Rajasthan (SD = 17.0%). Conversely, other states such as Telangana (SD = 15.5%), Andhra Pradesh (SD = 16.1%) registered the lowest standard deviations, which is an indicator of less fluctuating behaviour over time in compliance. This indicates that in such States, businesses had a comparatively consistent filing trend and there were only minor extremities.

3. Minimum and Maximum Compliance Rates

The minimum and the maximum compliance rate are the lowest and the highest percentage of businesses that file GST returns on time during the research period, respectively. Ethical compliance has been the lowest in the period of March-April 2020, when Gujarat (2.59%), Rajasthan (4.13%), and Madhya Pradesh (4.37%) identified major decreases. This period is also consistent with the minimum in Bihar (7.10%), Uttar Pradesh (7.04%), and Maharashtra (4.65%). The severe drop in compliance is an indication that tax filing behaviour was largely affected by external interferences like Covid 19 pandemic in this period. By comparison, the most significant compliance rates have occurred in the last few years (2023-2024), with the highest compliance rate at Gujarat (90 %) among all the states. Other states that had high compliance rates of over 80% included West Bengal (85.1%),

Tamil Nadu (84.8%) and Maharashtra (82.0%). The general tendency depicts that the GST compliance taking is on the rise with most States recording the highest compliance percentages during the final years of the study.

5. Trend Analysis of Compliance Behaviour

Figure 4.2 of this chapter is the trend analysis of the percentage change in GSTR-3B filing between big population States in India in July 2017 and March 2024. The trends indicate the changing pattern of compliance behaviour with the passage of time, including the changes in adherence to the deadlines of filing GST returns by the taxpayers. The analysis is separated into major stages of various patterns of compliance rates.

1. Initial Phase (2017-2018)

The initial year after the introduction of GST (July 2017 - December 2018) was associated with low and unstable rates of compliance in different States. The overall rate of compliance in most of the states was below 60 % with the lowest filling rates always being registered in Bihar, Odisha, and Telangana. Compliance rates at this time show how difficult the initial adjustment of businesses to the new GST filing system proved to be. The compliance rates were steadily rising throughout 2018 and the majority of States reached levels of greater than 60 %. Nevertheless, instances of compliance decreases were noticed towards the end of the financial year especially in March-April 2018, which indicated that the businesses experienced seasonal difficulties in the filing of tax.

2. Stabilization Phase (2019-2020)

The compliance levels remained steady between 2019 and early 2020, with the majority of the states reporting the timely filing percentages between 65-75. The statistics show that the business was now more used to the GST process of filling in returns which resulted into a more formal and predictable compliance trend. Nevertheless, it was possible to see a sharp decrease in compliance in March-April 2020 and the lowest values of

several states were registered within this timeframe. In a few states the compliance level dropped to less than 10% and that corresponds to the lowest minimum values in Table 4.4.

3. Post-Pandemic Recovery (2021-2022)

Since mid-2020, the compliance rates with GST started to increase and by the beginning of 2021, they returned to the pre-pandemic level. Although compliance declined slightly in April-May 2021, which was also seen in several states, at the end of 2021, compliance had stabilised at approximately 70-80 % in most areas. In 2022, businesses were found to be more consistent in their filing of GST returns and the levels of compliance in most states fell in the 75-80% range. According to the trend analysis, it is possible to point out that, by this time, large business and MSMEs had completely incorporated GST compliance into their financial and operations and were able to better observe the filing deadline.

4. Recent Trends (2023-2024)

The latest findings (2023- 2024) show that the compliance rates have slightly improved, still, these ratings are not stable across States. Some States have been found more compliant like Gujarat and Maharashtra but still some States are still experiencing fluctuations which indicates that proper consistency cannot be attained in terms of filing GST returns. Whereas other states like Gujarat, Maharashtra and Andhra Pradesh registered compliance rates of over 80%, some other States such as Tamil Nadu, Odisha and West Beng have reported moderate to low levels of compliance. Some minor fluctuations in March 2024 indicate that seasonality trends and structural issues with the GST compliance still occur, especially in the Uttar Pradesh, Odisha and Bihar where compliance scores experienced some small drawbacks. Even though the compliance rates now tend to stabilise, the current differences between States show that not all businesses manage to file the GST regularly and correctly. Therefore, though the trend implies that GST compliance is becoming more and more popular, it does not imply that the level of compliance has attained the desired standard.

5. State-Level Observations on Compliance Trends

A further scrutiny of compliance trends of various states classifies them into three broad categories:

- Relatively High Compliance States (Above 70%) - Gujarat, Uttar Pradesh and Rajasthan have recorded higher than average compliance rates with Gujarat registering the highest compliance level of 90%. Nonetheless, even within such states the compliance is not identical throughout the time and fluctuations are also a problem.
- Moderate Compliance States (60% to 70%) - Maharashtra, Madhya Pradesh, Karnataka, and Tamil Nadu are states that have a consistent compliance trend but are yet to achieve significantly high compliance levels.
- Lower Compliance States (Below 60%) - Bihar, Odisha and Telangana have also registered the lowest rates of compliance but in recent years have shown an upward pattern. Nevertheless, even moderate compliance levels still remain problematic in such states, as it indicates even more systemic problems.

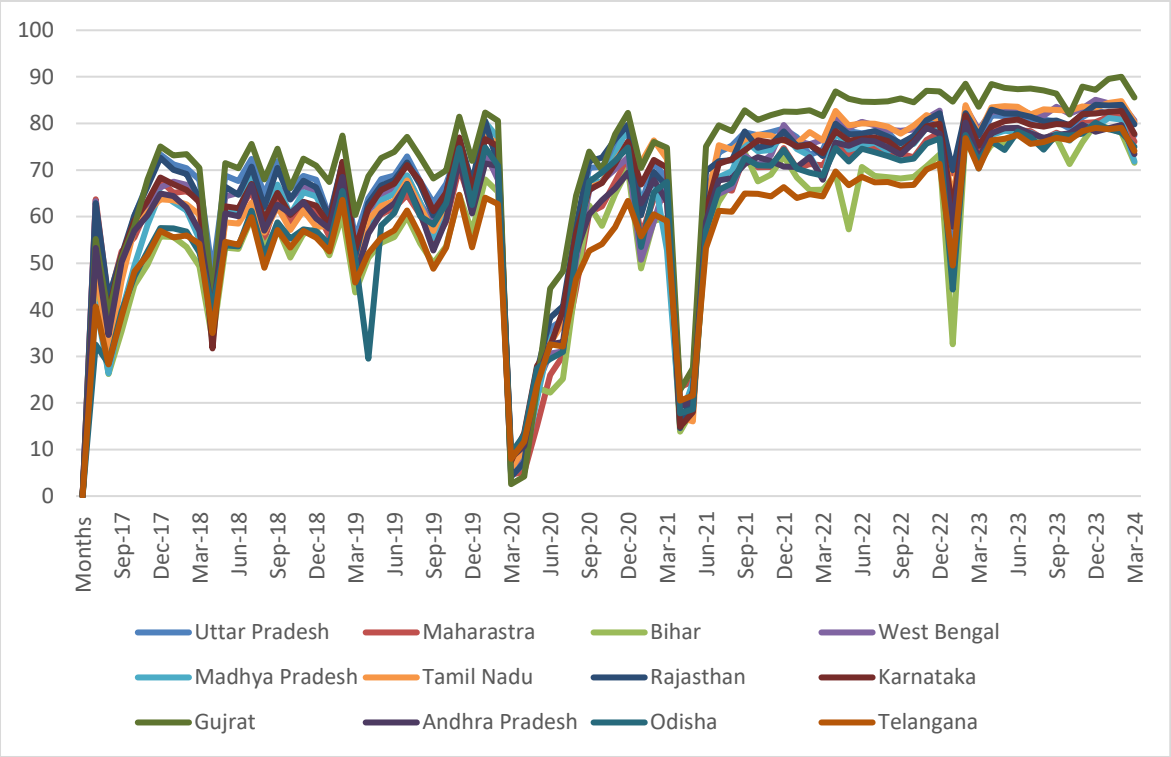
This classification points to the fact that compliance rates have increased over the years but they are very unequal among the states. This supports the Kruskal-Wallis test results and the DSCF pairwise comparisons results which proved that there are statistically significant differences in compliance rates between large population States.

Table 4.4: Descriptive Review of Compliance behaviour among Large Population States

Large population States in India	N	Mean	SD	Minimum	Maximum
Uttar Pradesh	81	67.3	16.8	7.04	83.0
Maharashtra	81	62.8	16.7	4.65	82.0
Bihar	81	57.4	17.1	7.10	79.9
West Bengal	81	65.4	17.6	7.13	85.1
Madhya Pradesh	81	63.3	17.5	4.37	81.2
Tamil Nadu	81	65.5	18.3	5.74	84.8
Rajasthan	81	67.2	17.0	4.13	84.0
Karnataka	81	65.6	16.8	7.54	82.7
Gujarat	81	72.1	18.4	2.59	90.0
Andhra Pradesh	81	62.7	16.1	8.28	80.2
Odisha	81	60.5	17.1	9.26	80.2

Telangana	81	57.6	15.5	7.97	79.1

Source: Author's compilation



Source: Author's compilation

Figure 4.2: Trend of GST compliance behaviour among Large Population States

4.2.2 GST compliance behaviour among medium population States/UTs

This part investigates the GST compliance behaviour of the medium population States and UTs in India in understanding whether there are any considerable difference. Hypothesis H1b is statistically tested and the test starts with analysis of normality of data. According to the findings, relevant statistical techniques are used to evaluate and compare the differences in compliance across these States/UTs. A descriptive review and trend analysis come next to further examine the compliance trends.

1. Normality Test

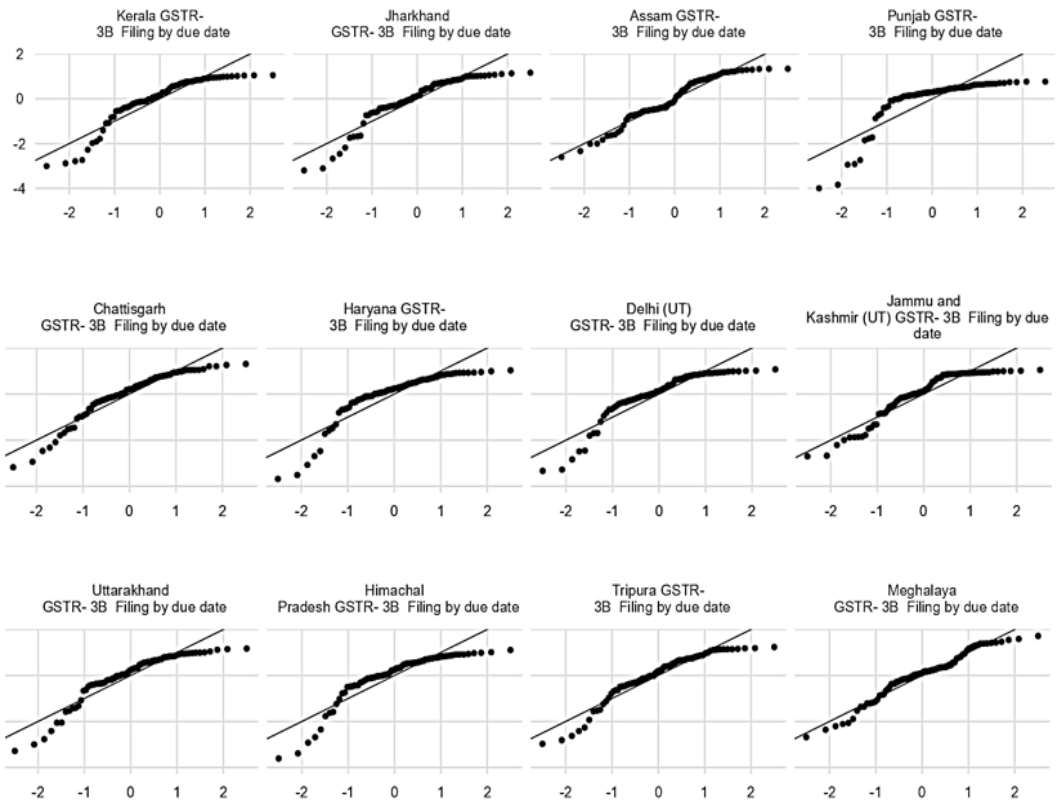
Table 4.5 below indicated the evaluation of the normality of the dataset through the Shapiro-Wilk test (Shapiro and Wilk, 1965). The test outcomes show a breach of the normality assumption to GST compliance

behaviour in all medium population states and UTs in India. All the states have p-values that are lower than the 1% level of significance ($p < 0.001$), which proves that the data do not have a normal distribution. The values of the Shapiro-Wilk test statistic ranges from 0.635 to 0.958 strengthen the rejection of normality. Additional analysis of the normality assumption was done by creating Q-Q plots (quantile-quantile plots) figure 4.3. Q-Q plots are used to compare the observed quantiles of the data of GST compliance to the expected quantiles of a normal distribution. Had the data been normally distributed, the points in the Q-Q plot would have followed closely the 45-degree reference line. Nonetheless, in this scenario, the positions of the data relative to the reference line, especially at the tails are quite deviated and hence, the data have skewness and kurtosis. Such graphical evidence also confirms the rejection of normality. Due to the fact that the dataset does not satisfy the normal assumption, the parametric statistical test like ANOVA (Analysis of Variance) cannot be applied. Rather, a non-parametric test, Kruskal-Wallis, was used to compare the difference in GST compliance behaviour among medium population states.

Table 4.5: Normality Test among Medium Population States/UTs

Medium population States/UT's in India	Statistic	P Value
Kerala	0.844	< .001**
Jharkhand	0.867	< .001**
Assam	0.937	< .001**
Punjab	0.635	< .001**
Chhattisgarh	0.898	< .001**
Haryana	0.778	< .001**
Delhi (UT)	0.832	< .001**
Jammu and Kashmir (UT)	0.865	< .001**
Uttarakhand	0.859	< .001**
Himachal Pradesh	0.804	< .001**
Tripura	0.896	< .001**
Meghalaya	0.958	< .009**

Note: ** Denotes significance at 1% levels
Source: Author's compilation



Source: Author's compilation

Figure 4.3: Q-Q plot among Medium Population States/UTs

2. Kruskal-Wallis Test

Since the data does not follow the normality assumption, Kruskal-Wallis test (Kruskal and Wallis, 1952) has been used to test the hypothesis whether GST compliance behaviour is significantly different between the medium population States and UTs. Table 4.6 gives the results of the test. The value of Kruskal-Wallis test (χ^2 = 158, df = 11, p = less than 0.001) shows that the differences in levels of GST compliance between medium population states are statistically significant. The value of p (< 0.001 at 1 % level of significance) is a good indication that there is a State with a notably different compliance pattern as compared to the rest. This finding confirms Hypothesis H1b, which means that there are significant variations in the compliance levels between these medium population States/UTs. The Kruskal-Wallis test, though it proves the existence of significant differences between the States/UTs, does not specify which states are not similar to each other. In order to determine some State-wise differences, a post-hoc

pair-wise test was applied with Dwass-Steel-Critchlow-Fligner (DSCF) test.

3. DSCF Pairwise Comparisons test

To explore further on the differences in GST compliance behaviour in a given State, the DSCF (Dwass-Steel-Critchlow-Fligner) pair wise comparison test (Critchlow and Fligner, 1991) was used. The outcome, shown in Table 4.7, shows that several pairs of States/UTs are statistically different in terms of the level of GST compliance.

The major findings of the pairwise comparisons:

- A number of important pairwise differences were determined, which confirmed the fact that GST compliance behaviour differs across medium population states.
- Punjab has a large disparity with several states with medium population such as Kerala, Assam, Jharkhand, Uttarakhand, Chhattisgarh, Himachal Pradesh, Haryana, Delhi (UT), Jammu and Kashmir (UT), Tripura, and Meghalaya ($p < 0.05$ or $p < 0.001$). This implies that its GST compliance trend is not similar to that of these states.
- Assam has a significant difference with several states such as Jharkhand, Uttarakhand, Himachal Pradesh, Haryana, Delhi (UT), Jammu and Kashmir (UT) and Tripura which support the fact that patterns of compliance in Assam are statistically different to these States.
- There are great differences in the compliance behaviour in Jharkhand than in Chhattisgarh and Meggalaya ($p < 0.05$ or $p < 0.001$).
- Chhattisgarh shows a considerable disparity, in comparison to Himachal Pradesh, Haryana, and Delhi (UT) ($p < 0.001$), this means that there is a substantial divergence in the compliance patterns.
- Comparing Meghalaya with other states, such as Himachal Pradesh, Haryana, Delhi (UT), Jammu and Kashmir (UT) and Uttarakhand ($p < 0.05$ or $p < 0.001$), it can be said that it has significant differences in compliance behaviour.

These pairwise comparisons confirm the outcomes of the Kruskal-Wallis test according to which the GST compliance behaviour differs considerably across medium population states in India. Moreover, the DSCF test reveals the statistically significant differences between the States/UTs but failed to show whether one state is more or less compliant than another one. Thus, another descriptive review and trend analysis has been carried out in order to gain some further insights.

Table 4.6: Kruskal-Wallis test among Medium Population States/UTs

	χ^2	Df	P Value
GST compliance amongst medium population States/UT's in India	158	11	< .001**

Note: ** denotes significance at 1% levels
Source: Author's compilation

Table 4.7: DSCF Pairwise comparisons test among Medium Population States/UTs

Medium population State/UT's in India	Medium population States/UT's in India	W	P Value
Punjab	Kerala	-8.686	< .001**
Punjab	Assam	-11.912	< .001**
Punjab	Jharkhand	-7.153	< .001**
Punjab	Uttarakhand	-8.437	< .001**
Punjab	Chhattisgarh	-11.315	< .001**
Punjab	Himachal Pradesh	-4.633	0.049*
Punjab	Haryana	-5.363	0.008**
Punjab	Delhi (UT)	-5.552	0.005**
Punjab	Jammu and Kashmir (UT)	-5.711	0.003**
Punjab	Tripura	-8.001	< .001**
Punjab	Meghalaya	-10.699	< .001**
Kerala	Assam	-5.604	0.004**
Assam	Jharkhand	6.67	< .001**
Assam	Uttarakhand	6.213	< .001**
Assam	Himachal Pradesh	8.852	< .001**
Assam	Haryana	9.062	< .001**
Assam	Delhi (UT)	7.426	< .001**
Assam	Jammu and Kashmir (UT)	5.91	0.002**
Assam	Tripura	5.659	0.004**
Jharkhand	Chhattisgarh	-4.981	0.022*
Jharkhand	Meghalaya	-5.72	0.003**
Uttarakhand	Meghalaya	-5.261	0.011*
Chhattisgarh	Himachal Pradesh	7.689	< .001**
Chhattisgarh	Haryana	7.904	< .001**
Chhattisgarh	Delhi (UT)	6.042	0.001**
Himachal Pradesh	Meghalaya	-8.12	< .001**
Haryana	Meghalaya	-8.217	< .001**

Delhi (UT)	Meghalaya	-7.006	< .001**
Jammu and Kashmir (UT)	Meghalaya	-5.033	0.019*

Note: * and ** denotes significance at 5% and 1% levels, respectively
Source: Author's compilation

4. Descriptive Review of Compliance behaviour

Table 4.8 shows descriptive statistics of GST compliance behaviour, which is the percentage of businesses that submit GSTR-3B returns at the due date, among medium population States/UTs in India compared in July 2017 to March 2024. The table contains such important statistical marks as the mean, the standard deviation (SD), minimum, maximum values, which gives the picture of the distribution and variation of compliance rates in various states and UTs.

1. Mean GST Compliance Rates Across States/UTs.

The average compliance rate is used to show the average percentage of businesses that meet GST filing deadlines and a lot of differences occur among the States. Punjab was the State with the largest average rate of compliance, at 72.4%, among the medium population States/UTs and therefore, it can be assured that the businesses in this state have displayed comparably high rates of compliance with the GST filing deadlines. Haryana (67.2%) and Himachal Pradesh (67.2%) also showed very high levels of compliance, so it appears that there is a consistency in the filing behaviour. Conversely, the least compliance rates were seen in Assam (50.6%) and Meghalaya (54.4%) which showed that the business firms in these States were less compliant with the deadline of GST filing. Other States such as Chhattisgarh (55.9%), Tripura (61.1%), and Kerala (60.1%) continued to have moderate levels of compliance over the years, with 60%-65% levels of compliance.

2. Standard Deviation (SD) and Compliance Variability

Standard deviation (SD) offers an understanding of the degree of variation in the compliance rates over time. An increased SD indicates more variability and a reduced SD indicates more stable trends in compliance. Jammu and Kashmir (SD = 19.9%) and Kerala (SD = 18.8%)

turned out to be the most variable among all the States/UTs, meaning that the compliance rates vary considerably between time. This indicates that the GST returns filings in these areas fluctuate considerably over the study period maybe because of administrative, seasonal or other external influences. Other States/UTs such as Assam (SD = 17.5%) and the National capital Delhi (UT) (SD = 17.7%), Tripura (SD = 17.6%) presented a considerable variability in the compliance rates, but at the same time Chhattisgarh (SD = 15.9%) showed comparatively more consistent patterns.

3. Minimum and Maximum Compliance Rates

Minimum compliance rate is the lowest percentage of businesses that file GST returns in time whereas the maximum compliance rate indicates the highest percentage that was recorded during the period of study. The compliance rates were lowest in March-April 2020 with states like Meghalaya (11.97%), Kerala (3.71%) and Punjab (4.26%) registering the lowest filing percentages in this period. This is the Covid 19 time when the number of GST return filings is declining in various states drastically. The minimum values were also obtained during this phase in other states like Jharkhand (8.57%) and Chhattisgarh (5.25%). Recent years (2023-2024) have registered the highest compliance rates (85.4% in Punjab, 85.9% in Himachal Pradesh, 84.2% in Haryana) which shows that compliance behaviour is on an increase. Other states such as Jharkhand (82.9%), Delhi (83.8%), Jammu and Kashmir (82.6%) had highest compliance values of above 80 which means there was an improvement in tax filing discipline with time.

5. Trend Analysis of GST Compliance Behaviour

Figure 4.4 outlines the trend of changes of GSTR-3B filing percentage on an annual basis between medium population states and UTs in India between July 2017 and March 2024. This discussion shows the change in compliance behaviour over the years, which requires variation in the behaviour whether to adhere to the deadline of filling the GST returns. The trends have been categorized into major stages of various compliance

trends over the years.

1. Initial Phase (2017-2018)

During the first period of the GST implementation (July 2017 - December 2018), the rate of compliance was rather low and unstable among the states. In most states, the compliance rate was averaged at less than 60% and the highest states, including Assam, Meghalaya, and Tripura, had the lowest percentages of filing. The trend implies that companies in such states had trouble with the filing of GST returns on time. In the year 2018, there was a gradual increase in the compliance rates out of which majority of the states registered over 60% compliance. Nonetheless, the seasonal changes remained as in March-April 2018 where a temporary decrease was recorded, which was probably caused by tax filing difficulties in the season.

2. Stabilisation Phase (2019-2020)

The GST compliance rates have stabilised between 2019 and the beginning of 2020, with a majority of States experiencing percentages of timely filing in the range of 65%-75%. The compliance was also more stable than in previous years, which means that companies got used to the GST filing system. Nevertheless, the level of compliance sharply decreased in the period of March-April 2020, as several States registered the minimum values. Most States recorded low compliance levels of less than 10-20%, which concurs with the minimum values of Table 4.8, which implies a major disturbance in filing behaviour.

3. Post-Pandemic Recovery (2021-2022)

Since the middle of 2020, the compliance rates started to improve, slowly restoring to the previous levels before the pandemic. Nevertheless, not every state was completely recovered and some of the regions still saw a decline in the filing rates. There was a short-lived decreasing trend in April-May 2021, which was overwhelmed by a slow rise in compliance conditions to moderate levels with the majority of states being in the 65%-75% range instead of developing a stable high level of compliance. As of

2022, although the levels of consistency in GST returns were higher in a great number of States/UTs, the fact that variability still persisted indicates that a number of areas still struggled to comply with the requirement. Though there are some states with the compliance of 75% or more, it does not automatically mean that this is the ideal compliance rate or even that there is the same rate of adherence to GST filing requirements.

4. Recent Trends (2023-2024)

The most recent statistics of 2023-early 2024 will show mixed results of GST compliance behaviour among medium population States/UTs. Some of the states like Punjab, Haryana and Himachal Pradesh, registered a compliance rate of above 80%, but others such as Assam, Meghalaya and Tripura remained in the lower and volatile compliance percentages. The presence of the differences among the States/UTs indicates that despite the overall positive trend in the compliance rates, there is still a significant disparity in the attainment of a high level of sustained compliance with the GST regulations. Also, there were slight variations in March 2024 which underscores continued implication of seasonal changes and structural issues especially in Assam, Meghalaya and Chhattisgarh the states where marginal decreases in the compliance rates were recorded. This indicates that even though the behaviour of filing GST has been enhancing over the years, there are still inconsistencies in the behaviour and some businesses still might encounter an obstacle to frequent and on time compliance.

5. State-Level Observations on Compliance Trends

Further examination of the compliance trends in various states and UTs puts them into three broad categories, demonstrating that there have been chronic differences in terms of compliance behaviour, despite the general improvement in behaviour:

- Relatively Higher Compliance States (Above 70%) - Punjab, Haryana and Himachal Pradesh had relatively high-than-average rates of compliance, with Punjab recording a high of 85.4%. Nevertheless, even with these larger numbers, seasonal variation, and periodic fluctuation are also an issue, meaning that all time periods

are not the same in regard to compliance.

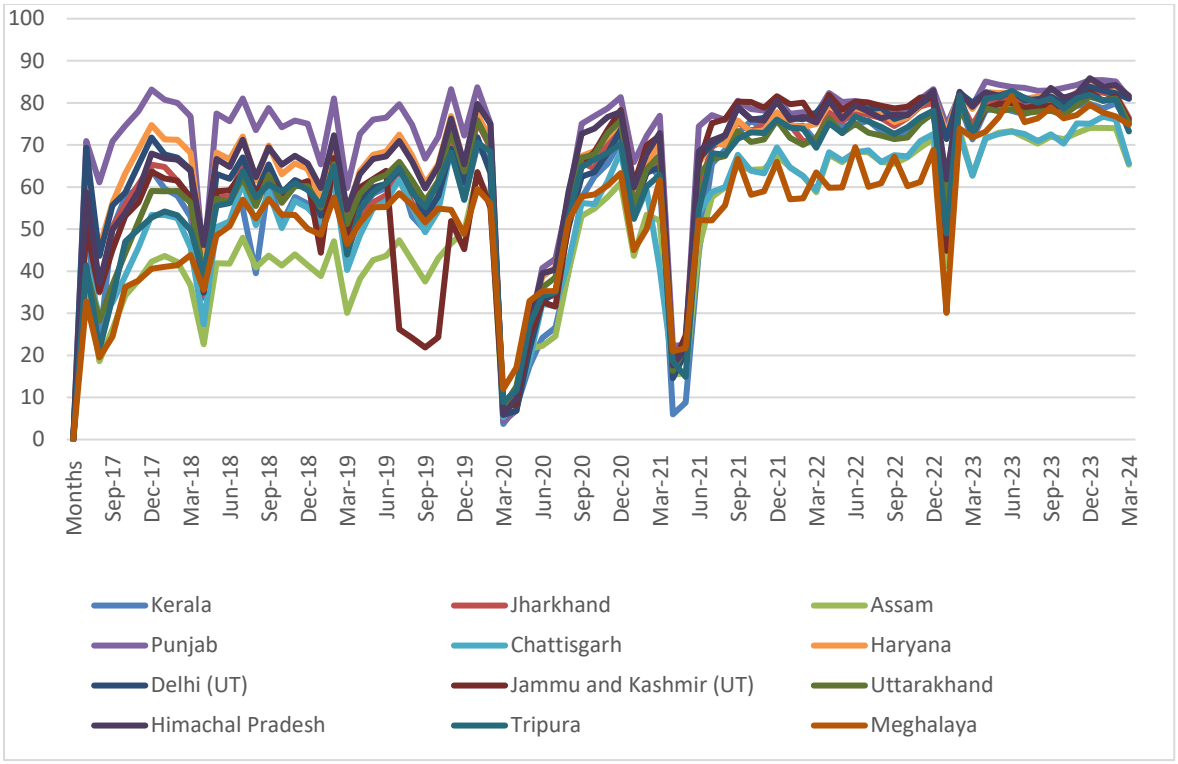
- Moderate Compliance States (60%-70%) - Kerala, Jharkhand, Delhi (UT) and Uttarakhand show swerving but moderate compliance rates whereby the filing rates have become stable. Nevertheless, these States/UTs have not been able to measure up to steady and high compliance in all financial periods.
- Lower Compliance States (Below 60%) - The lowest levels of compliance were noted in Assam, Meghalaya and Tripura although there was a growing trend in the last few years. Although the situation is gradually improving, businesses in such areas still have a lot of compliance problems, which may be either structural, complexities in tax administration, or gaps in awareness.

This trend analysis supports the statistical results of the Kruskal-Wallis and the DSCF pair-tests of comparison, proving that the GST compliance behaviour in medium population States/UTs is highly diverse. Although there is an overall improvement in the compliance rates over the years, these rates are still irregular as numerous states still cannot reach the desired levels of compliance with meeting deadlines when it comes to filing.

Table 4.8: Descriptive Review of Compliance behaviour among Medium Population States/UTs

Medium population States/UTs in India	N	Mean	SD	Minimum	Maximum
Kerala	81	60.1	18.8	3.71	79.9
Jharkhand	81	63.1	17.1	8.57	82.9
Assam	81	50.6	17.5	5.12	74.0
Punjab	81	72.4	17.1	4.26	85.4
Chhattisgarh	81	55.9	15.9	5.25	76.7
Haryana	81	67.2	16.5	6.32	84.2
Delhi (UT)	81	64.8	17.7	5.82	83.8
Jammu and Kashmir (UT)	81	61.6	19.9	7.77	82.6
Uttarakhand	81	62.1	16.5	7.87	81.4
Himachal Pradesh	81	67.2	16.9	6.0	85.9
Tripura	81	61.1	17.6	8.84	82.8
Meghalaya	81	54.4	15.8	11.97	81.6

Source: Author's compilation



Source: Author's compilation

Figure 4.4: Trend of GST compliance behaviour among Medium Population States/UTs

4.2.3 GST compliance behaviour among low population States/UTs

This part is an analysis of compliance behaviour of low population States and UTs in India to establish whether there are any major differences. Testing Hypothesis H1c is done through the use of a statistical test which starts with a normality test of the data. Depending on the findings, relevant statistical approaches are used to evaluate and compare the differences in compliance between these States/UTs. The descriptive review and trend analysis subsequently follow in order to dig into compliance patterns further.

1. Normality Test

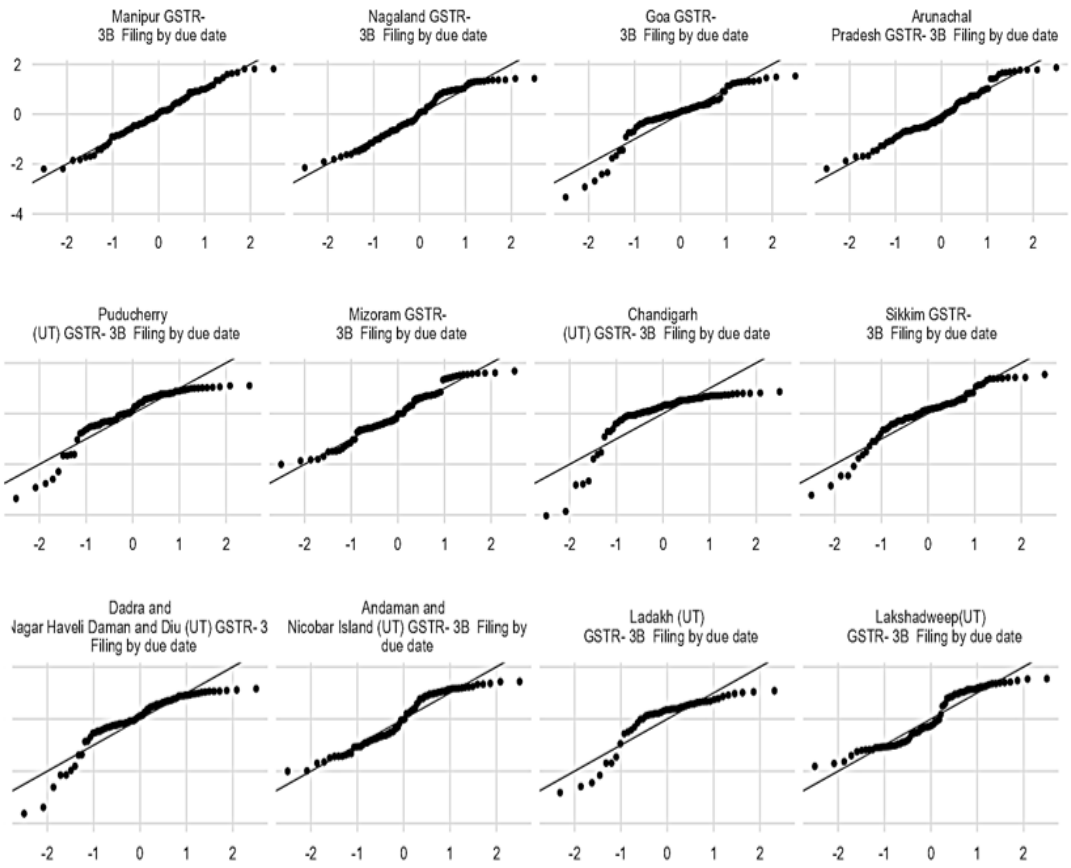
Table 4.9 shows that the normality of the dataset was evaluated with the help of the Shapiro-Wilk test (Shapiro and Wilk, 1965). The findings suggest that the assumption of normality is not met when the population size is low (in the majority of the States and UTs) and the p-values of most states are lower than the 1% level of significance ($p = 0.001$). Nevertheless,

the departure of normality is not statistically significant in some States, including Manipur (p = 0.325) and Arunachal Pradesh (p = 0.076), meaning that the data sets of the GST compliance in these states can be normally distributed. The values of the Shapiro-Wilk test statistic are 0.694 (Chandigarh UT) to 0.982 (Manipur), which proves the non-normality in the majority of states. The p-values less than 0.001 of Goa, Puducherry (UT), Chandigarh (UT), Sikkim, Dadra and Nagar Haveli Daman and Diu (UT), Andaman and Nicobar Islands (UT), Ladakh (UT) and Lakshadweep (UT) indicate that the compliance behaviour of the GST in the mentioned States/UTs is not normally distributed. In addition to the test of normality, Figure 4.5 made Q-Q plots (quantile-quantile plots). These plots are comparison of the quantiles of GST compliance data observed with the quantiles of a normal distribution. Had the data been normally distributed, the points of the Q-Q plot would be close to the 45-degree reference line. Nonetheless, in this instance, there are great deviations along the reference line especially at the tails, which implies skewness and kurtosis of the data, which supports the nullification of the normality. Parametric statistical tests like ANOVA (Analysis of Variance) cannot be used because the assumption of normal distribution is not satisfied using the dataset. Rather, the Kruskal-Wallis test, another non-parametric test, was used to examine the differences in the GST compliance behaviour across low population states.

Table 4.9 Normality Test among low population States/UTs

Low population States/UT's in India	Statistic	P Value
Manipur	0.982	0.325
Nagaland	0.946	0.002**
Goa	0.893	< .001**
Arunachal Pradesh	0.972	0.076
Puducherry (UT)	0.856	< .001**
Mizoram	0.962	0.016*
Chandigarh (UT)	0.694	< .001**
Sikkim	0.921	< .001**
Dadra and Nagar Haveli Daman and Diu (UT)	0.852	< .001**
Andaman and Nicobar Islands (UT)	0.927	< .001**
Ladakh (UT)	0.804	< .001**
Lakshadweep (UT)	0.911	< .001**

Note: * and ** denotes significance at 5% and 1% levels, respectively
Source: Author's compilation



Source: Author's compilation

Figure 4.5: Q-Q plot among low population States/UTs

2. Kruskal-Wallis Test

Since the data does not obey the normality, Kruskal-Wallis test (Kruskal and Wallis, 1952) was used to test the hypothesis that there is a significant difference in GST compliance behaviour between low population states and UTs. Table 4.10 displays the results of the test. The statistic of Kruskal-Wallis ($\chi^2 = 267$, df = 11, $p < 0.001$) shows that the level of GST compliance among low population states is statistically significant. The p-value (0.001 at a 1% level of significance) is a solid indication that at least one State/UTs has a radically different pattern in terms of compliance as it is in the rest. This finding confirms Hypothesis H1c, which means that there are significant variations in the compliance levels between these low population States/UTs. Though Kruskal-Wallis test does confirm the existence of significant differences between the states/UTs, it does not indicate the States/UTs, which differ between each

other. Post-hoc pairwise analysis was done on the basis of Dwass-Steel-Critchlow-Fligner (DSCF) test in order to identify specific variations by States/UTs.

3. DSCF Pairwise Comparisons Test

In order to examine more closely the state-specific variations of the GST compliance behaviour, the DSCF (Dwass-Steel-Critchlow-Fligner) pairwise comparison test (Critchlow and Fligner, 1991) was applied. As the results shown in Table 4.11 suggest, there are several States/UTs pairs which have statistically significant differences in terms of the compliance levels with GST.

The most important findings in the pairwise comparison:

- A number of notable pair wise differences were determined, which affirms that the GST compliance behaviour differs across low population states.
- Manipar is highly differentiated with several low population States such as Goa, Puducherry (UT), Mizoram, Chandigarh (UT), Sikkim, Dadra and Nagar Haveli Daman and Diu(UT) and Ladakh (UT) ($p < 0.05$ or $p < 0.001$) meaning that GST compliance in Manipar is different when compared to these states.
- Nagaland also shows that there are great differences with other States/UTs especially Puducherry (UT), Chandigarh (UT), Dadra and Nagar Haveli Daman and Diu (UT) and Ladakh (UT) ($p < 0.05$ or $p < 0.001$) which further substantiates that compliance patterns in Nagaland are statistically dissimilar.
- Goa has also large differences with Arunachal Pradesh, Puducherry (UT), Chandigarh (UT), Dadra and Nagar Haveli Daman and Diu (UT), Andaman and Nicobar Islands (UT), and Ladakh (UT) ($p < 0.05$ or $p < 0.001$) which imply that compliance behaviour is variable.
- Chandigarh (UT) is significantly different in comparison to all low population states, such as Manipur, Nagaland, Goa, Arunachal Pradesh, Puducherry (UT), Mizoram, Sikkim, Dadra and Nagar Haveli Daman and Diu (UT), Andaman and Nicobar Islands (UT),

Ladakh (UT), and Lakshadweep (UT) ($p < 0.001$). This supports the fact that the GST compliance in Chandigarh (UT) is largely different compared to the rest of the states with low population.

- Puducherry (UT) has very different results with Mizoram, Chandigarh (UT), Sikkim, Andaman and Nicobar Islands (UT), and Lakshadweep (UT) ($p < 0.05$ or $p < 0.001$), which also indicate even greater variation in compliance behaviour.

DSCF test reveals the statistically significant differences of state pairs, but does not show high or low compliance of a States/UTs in relation to another. These pair-wise comparisons support the results of Kruskal-Wallis test that prove that GST compliance behaviour is not consistent across low population states in India.

Table 4.10: Kruskal-Wallis test among low population States/UTs

	χ^2	Df	P Value
GST compliance amongst low population States in India	267	11	< .001**

Note: ** denotes significance at 1% levels
Source: Author's compilation

Table 4.11: DSCF Pairwise comparisons among low population States/UTs

Low population States/UT's in India	Low population States/UT's in India	W	P Value
Manipur	Goa	8.83	< .001**
Manipur	Puducherry (UT)	11.009	< .001**
Manipur	Mizoram	5.758	0.003**
Manipur	Chandigarh (UT)	13.248	< .001**
Manipur	Sikkim	8.861	< .001**
Manipur	Dadra and Nagar Haveli Daman and Diu (UT)	11.497	< .001**
Manipur	Ladakh (UT)	9.626	< .001**
Nagaland	Puducherry (UT)	7.063	< .001**
Nagaland	Chandigarh (UT)	11.817	< .001**
Nagaland	Dadra and Nagar Haveli Daman and Diu (UT)	7.591	< .001**
Nagaland	Ladakh (UT)	6.047	0.001**
Goa	Arunachal Pradesh	-8.068	< .001**
Goa	Puducherry (UT)	4.941	0.024*
Goa	Chandigarh (UT)	10.803	< .001**
Goa	Dadra and Nagar Haveli Daman and Diu (UT)	6.265	< .001**
Goa	Andaman and Nicobar	-4.946	0.024*

	Island (UT)		
Goa	Ladakh (UT)	4.834	0.031*
Arunachal Pradesh	Puducherry (UT)	10.37	< .001**
Arunachal Pradesh	Mizoram	5.237	0.012*
Arunachal Pradesh	Chandigarh (UT)	13.013	< .001**
Arunachal Pradesh	Sikkim	8.098	< .001**
Arunachal Pradesh	Dadra and Nagar Haveli Daman and Diu (UT)	10.758	< .001**
Arunachal Pradesh	Ladakh (UT)	8.855	< .001**
Puducherry (UT)	Mizoram	-6.203	< .001**
Puducherry (UT)	Chandigarh (UT)	8.087	< .001**
Puducherry (UT)	Sikkim	-4.754	0.037*
Puducherry (UT)	Andaman and Nicobar Island (UT)	-8.506	< .001**
Puducherry (UT)	Lakshadweep (UT)	-6.147	< .001**
Mizoram	Chandigarh (UT)	10.957	< .001**
Mizoram	Dadra and Nagar Haveli Daman and Diu (UT)	6.987	< .001**
Mizoram	Ladakh (UT)	5.437	0.007**
Chandigarh (UT)	Sikkim	-10.879	< .001**
Chandigarh (UT)	Dadra and Nagar Haveli Daman and Diu (UT)	-7.201	< .001**
Chandigarh (UT)	Andaman and Nicobar Island (UT)	-12.75	< .001**
Chandigarh (UT)	Ladakh (UT)	-7.938	< .001**
Chandigarh (UT)	Lakshadweep (UT)	-11.159	< .001**
Sikkim	Dadra and Nagar Haveli Daman and Diu (UT)	6.087	0.001**
Sikkim	Andaman and Nicobar Island (UT)	-5.147	0.014*
Sikkim	Ladakh (UT)	4.844	0.03*
Dadra and Nagar Haveli Daman and Diu (UT)	Andaman and Nicobar Island (UT)	-9.046	< .001**
Dadra and Nagar Haveli Daman and Diu (UT)	Lakshadweep (UT)	-6.843	< .001**
Andaman and Nicobar Island (UT)	Ladakh (UT)	8.062	< .001**
Ladakh (UT)	Lakshadweep (UT)	-4.975	0.022*

Note: * and ** denotes significance at 5% and 1% levels, respectively
Source: Author's compilation

4. Descriptive Review of Compliance behaviour

Table 4.12 gives descriptive statistics of GST compliance behaviour, which is the percentage of businesses submitting GSTR-3B returns by the due date, in low population states and UTs in India at July 2017 to March 2024. The table shows important statistical indicators such as the mean, SD,

minimum, and maximum to evaluate how the distribution and spread of the GST compliance rates across these states/UTs can be.

1. Mean GST Compliance Rates Across Low Population States/UTs

Mean compliance rate means the average percentage of businesses that comply with GST filing deadlines although there is a very high difference between States. Chandigarh (72.8 %), Dadra and Nagar Haveli and Daman and Diu (63.9 %) and Puducherry (62.2%) had the highest mean compliance rate among low populated States/UTs. This implies that the adherence to GST filing deadline has always been high in these UTs by businesses. Conversely, Manipur (40.1%) and Arunachal Pradesh (41.1%) recorded the lowest mean compliance rates implying that there were major delays in filing GST returns. Lakshadweep (46.9%) and Nagaland (48.0%) registered low compliance as well, which means that there are still problems with filing GST in time in these territories.

2. Standard Deviation (SD) and Compliance Variability

The standard deviation (SD) is used to determine the difference in the GST compliance rates across time. The greater the SD values, the higher the fluctuations, and the lower the SD values, the higher the stability of the compliance trends. Lakshadweep (SD = 21.4%) and Andaman and Nicobar Islands (SD = 19.7%) had the largest fluctuations which implies that taxes filing behaviour varied considerably during the period of study. High variability was also exhibited in Nagaland (SD = 18.8%) and Mizoram (SD = 16.3%). On the other hand, Goa (SD = 15.0%) and Sikkim (SD = 14.4) had smaller fluctuations indicating a very stable trend in GST returns filings over the years.

3. Minimum and Maximum Compliance Rates

Minimum compliance rate is the lowest rate of percentage of businesses that make GST returns in time and the maximum compliance rate is the highest rate amongst the businesses that made GST returns during the study period. The lowest compliance was reported in March-April 2020 with Andaman and Nicobar Islands (3.59%), Dadra and Nagar

Haveli and Daman and Diu (4.38%) and Manipur (6.87%) registering the lowest percentages. It was the time when compliance rates in various states and UTs changed the most negative. The last years (2023-2024) have the highest compliance rates where Chandigarh (87.1%), Puducherry (80.3%), and Goa (78.7%) have the highest compliance rates, which indicates that the better adherence to GST is observed over time.

4. Trend Analysis of GST Compliance Behaviour

Figure 4.6 trend analysis review of the annual changes in the percentage of GSTR-3B filing in the low population States and UTs in India between July 2017 and March 2024. The trends provide an understanding on how the compliance behaviour changed over time, which captures the significant change in compliance with the return filing deadlines of GST.

1. Initial Phase (2017-2018)

During the initial months of the post-GST period (July 2017 - December 2018), the compliance rates were low and were extremely uneven even within States and UTs. The majority of regions except Chandigarh and Puducherry registered the rates of compliance with GST as less than 60%. Some states like Manipur, Arunachal Pradesh and Nagaland had very low levels of compliance and the percentages of filing were generally lower than 40%. Goa and Mizoram were moderately compliant and nevertheless varied widely. Such discrepancy in the filing behaviour in this period is an indication of challenges in adjusting to the GST system amongst firms in these regions.

2. Stabilisation Phase (2019-2020)

During 2019-early 2020, compliance rates started stabilising and the majority of the States/UTs reported filing rates of between 50%-70%. Chandigarh and Puducherry always had high compliance (more than 70%), and Nagaland, Mizoram and Goa did have an increasing pattern. Nevertheless, a sharp decrease of March-April 2020 was observed when several States/UTs registered their lowest levels of compliance. The decline

in tax filing is very clear in Manipur, Lakshadweep, Andaman and Nicobar Islands and Arunachal Pradesh where compliance was below 10%.

3. Post-Pandemic Recovery (2021-2022)

Since mid-2020, compliance rates started to improve, gradually returning to the level before the pandemic by the beginning of 2021. Nevertheless, this recovery had not been consistent between all low population states and UTs, with some still struggling with the issue of consistent GST return filing. It has shown a temporary decrease in April-May 2021, which distorts the exogenous factors that have an impact on compliance behaviour. Most UTs including Chandigarh, Puducherry and Dadra and Nagar Haveli had over 70% compliance rates by 2022 with other states such as Nagaland, Mizoram and Goa stabilising between 60 and 70. Yet, other states like Manipur, Arunachal Pradesh and Andaman & Nicobar Islands still had lower levels of compliance, which suggests that they still possessed some structural or administrative obstacles.

4. Recent Trends (2023-2024)

Recent statistics indicate that there is a moderate increase in GST compliance in most low population states and UTs through 2023 to the beginning of 2024. Even though there are examples of areas where the trend towards compliance proved to be high (Chandigarh 87.1%, Dadra and Nagar Haveli 82.9% and Puducherry 80.3%), some States/UTs are yet to achieve consistent filing rates. In Manipur, Arunachal Pradesh and Andaman and Nicobar Islands compliance is still patchy although of late this has improved. The island of Lakshadweep, which had the greatest variability (SD = 21.4), retains erratic compliance behaviour indicating that it has periodic swings in compliance with taxpayers.

5. State-Level Observations on Compliance Trends

Further analysis of the trends of compliance classifies States and UTs into three general groups:

- Relatively Higher Compliance Regions (Above 70%) - Chandigarh, Dadra and Nagar Haveli, Puducherry, and Goa recorded better

compliance trends with Chandigarh recording the highest of 87.1%. Yet, time period compliance does not increase uniformly and there are fluctuations and this shows how efforts should be sustained to assure high compliance.

- Moderate Compliance Regions (60%-70%) - Nagaland, Mizoram and Sikkim exhibited some improvement with the compliance rates remaining within the mid-60% bracket. The consistency of these levels of compliance however is a question, as the declines were observed periodically.
- Lower Compliance Regions (Below 60%) - Manipur, Arunachal Pradesh and Andaman & Nicobar Islands still have the lowest compliance rates although it has been improving in the past few years. The compliance rates fluctuate over time implying that companies located in such states continue to experience significant administrative, financial, or awareness-related difficulties in meeting GST filing requirements.

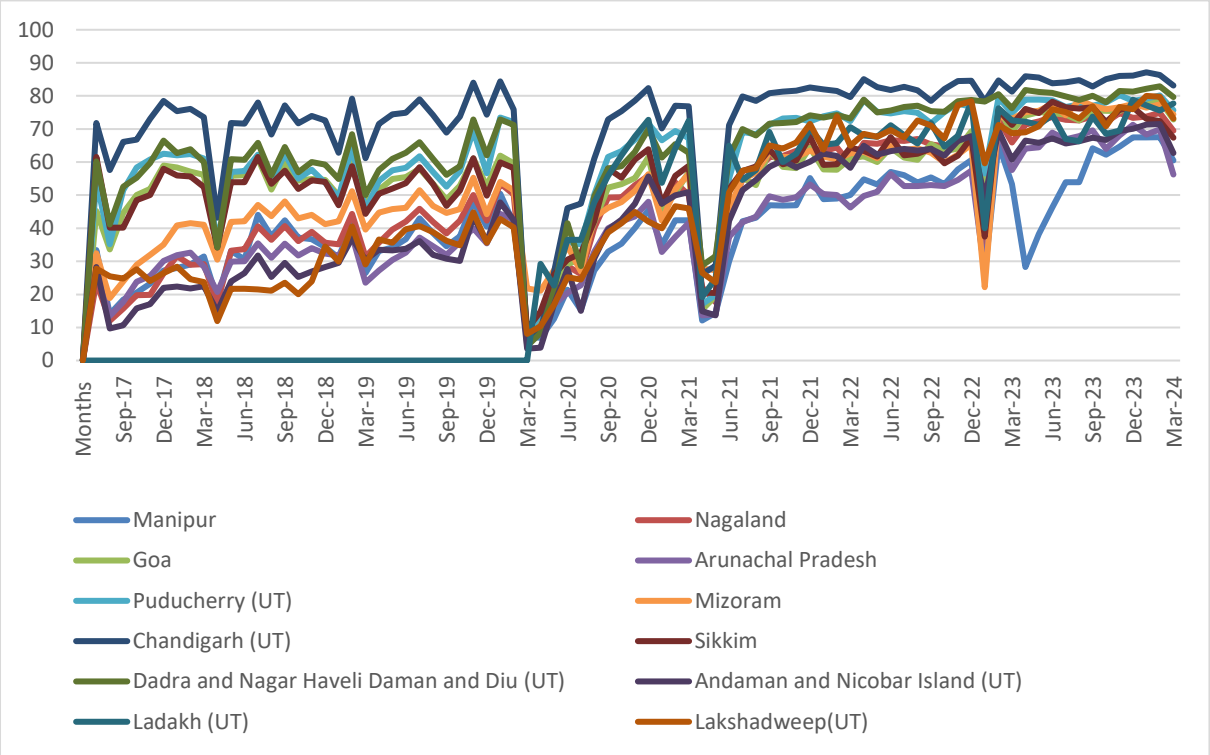
The validation of the Kruskal-Wallis and DSCF pairwise comparison tests is substantiated by the trend analysis as it showed that there are significant differences in compliance behaviour among low population States and UTs. Although some parts have enhanced their GST returns filing rates, there is still unequal performance in complying with the expected standards in some states.

Table 4.12: Descriptive Review of Compliance behaviour among low population States/UTs

Low population States/UTs in India	N	Mean	SD	Minimum	Maximum
Manipur	81	40.1	15.1	6.87	67.5
Nagaland	81	48.0	18.8	7.47	74.9
Goa	81	55.7	15.0	5.60	78.7
Arunachal Pradesh	81	41.1	16.2	5.61	71.3
Puducherry (UT)	81	62.2	16.4	7.33	80.3
Mizoram	81	51.4	16.3	18.88	78.8
Chandigarh (UT)	81	72.8	16.6	5.95	87.1
Sikkim	81	55.9	14.4	9.46	78.2
Dadra and Nagar Haveli Daman	81	63.9	16.4	4.38	82.9

and Diu (UT)					
Andaman and Nicobar Islands (UT)	81	43.1	19.7	3.59	71.5
Ladakh (UT)	48	62.3	15.3	19.13	78.8
Lakshadweep (UT)	81	46.9	21.4	8.05	80.0

Source: Author's compilation



Source: Author's compilation

Figure 4.6: Trend of GST compliance behaviour among Low Population States/UTs

4.2.4 GST compliance behaviour among large, medium and low population States/UTs

This part of the analysis reviews GST compliance behaviour among Large, medium and low population States/UTs in India to determine the existence of major differences. The statistical analysis is used to test hypothesis H1d, starting with analysis of normality in the data. Depending on the findings, the necessary statistical tools are used to compare the differences in compliance of the three population-based groups. This will be followed by a descriptive review to delve further on compliance patterns and determine the variations among these categories.

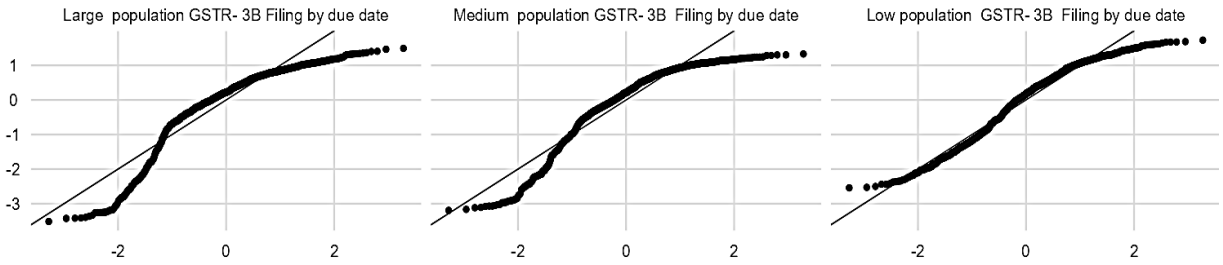
1. Normality Test

The table of normativity of the data was measured with the ShapiroWilk test (Shapiro and Wilk, 1965) which is shown in Table 4.13. The findings also show that GST compliance behaviour in all three groups of large, medium, and small population states/UTs in India does not follow the normality assumption since the p-values of all groups are less than 1 % significance level ($p < 0.001$). The amount of the Shapiro-Wilk test statistics is between 0.864 (high population states) and 0.960 (low state population), which confirms that the numbers do not take the normal distribution across all three populations. This observation is the reason to employ non-parametric statistical tools to conduct additional analysis. In order to complement these results, Q-Q plots (quantile-quantile plots) were created in Figure 4.7 to observe visually GST compliance data distribution. Had the data been normally distributed then the points on the Q-Q plot would be close to the 45-degree reference line. Nevertheless, the significant values that are out of this reference line especially at the tails would indicate skewness and kurtosis in the data and would once again indicate non-rejection of normality. Since the data used is not normal, the use of parametric statistics, which includes ANOVA (Analysis of Variance), would not be suitable. Instead, a Kruskal-Wallis test was done to find out whether there are significant differences between GST compliance behaviour among large, medium and low populated States/UTs.

Table 4.13: Normality Test among large, medium and low population States/UTs

States/UTs in India	Statistic	P Value
Large population states	0.864	< .001**
Medium population states/UT's	0.892	< .001**
Low population states/UT's	0.960	< .001**

Note: ** denotes significance at 1% levels
Source: Author's compilation



Source: Author's compilation

Figure 4.7: Q-Q plot among large, medium and low population States/UTs

2. Kruskal-Wallis Test

As this dataset does not meet the assumption of normality, the Kruskal-Wallis test (Kruskal and Wallis, 1952) was used to determine whether the level of GST compliance behaviour is significantly different among the three population-based categories of States /UTs (large, medium, and low). Table 4.14 shows the results of the test. The Kruskal-Wallis test value (χ^2 = 183.7, df = 2, p. 0.001) demonstrates that there is a statistically significant difference of the GST compliance levels in the three groups of states/UTs. The p-value (< 0.001 at 1% level of significance) presents a substantial evidence that one of the three groups is significantly different as compared to the other groups in compliance behaviour. This finding confirms Hypothesis H1d, which means that there are significant variations in the compliance levels among large, medium and low population States/UTs. Even though the Krushal-Wallis test indicates the existence of significant differences, it does not indicate the specific population groups that have significant differences between them. In order to dig further into a pair-wise difference, a post-hoc DSCF (Dwass-Steel-Critchlow-Fligner) test was employed.

3. DSCF Pairwise Comparisons Test

In order to identify the statistically significant differences among the population-based groups, DSCF pairwise comparisons (Critchlow and Fligner, 1991) were used, which are presented in Table 4.15. The findings reveal that the three groups are all not the same and thus support the claim that GST compliance behaviour among the various States/UTs of varying population sizes is not uniform.

The most important findings of the pairwise comparisons:

- Large population states vs. medium population states - The difference was statistically significant (W = -4.03, p = 0.012) and this implies that there is no complete similarity between the GST compliance patterns of these two states.
- Large population states vs. Low population states - The difference between these two groups is very significant (W = -18.23, p < 0.001) which supports that low population states show different behaviour in terms of compliance behaviour than large population states.
- Medium population states vs. Low population states - The statistically significant difference was found (W = -14.33, p = 0.001) and it was found that medium population states do not differ significantly with low population States/Uts in terms of GST compliance.

The DSCF test only reveals the statistically significant differences in the population groups, but not the higher or the lower compliance levels within the two groups. These DSCF Pairwise Comparisons Test confirm the findings of the Kruksal-Wallis test as they prove that there are significant differences in GST compliance in the various groups of people.

Table 4.14: Kruskal-Wallis test among large, medium and low population States/UTs

	χ^2	Df	P Value
GST compliance amongst large, medium and low population States/UT's in India	183.7	2	< .001**

Note: ** denotes significance at 1% levels
Source: Author's compilation

Table 4.15: DSCF Pairwise comparisons among large, medium and low population States/UTs

States/UT's in India	States/UT's in India	W	P Value
Large population States	Medium population states/UT's	-4.03	0 .012*
Large population States	Low population states/UT's	-18.23	< .001**
Medium population states/UT's	Low population states/UT's	-14.33	< .001**

Note: * and ** denotes significance at 5% and 1% levels, respectively
Source: Author's compilation

4. Descriptive Review of Compliance behaviour

Table 4.16 provides descriptive statistics for behaviour in terms of percentage of businesses filing GSTR-3B returns by the due date for large, medium and low population States and UTs in India between July 2017 and March 2024. The table presents important statistical indicators such as the mean, standard deviation (SD), minimum and maximum values to assess an average level of compliance and the variability in filing behaviour for each population group. This descriptive overview provides some insights on the relative performance, stability and range of compliance rates, thus highlighting the differences in the behaviour of GST return filing across three categories of States/UTs.

1. Mean GST Compliance Rate Across Different Population Groups

The mean compliance rate of GST in the large population States is 64% which is the highest of the three groups. Medium population States/UTs have a little bit lower mean compliance rate of 61.7% and the low population States/UTs have the lowest mean compliance rate of 53.3%. This suggests that businesses in larger states do tend to have better compliance behaviour than medium and low populations states. The lower compliance in low population states implies more difficulties in complying with the GST filing deadline in these regions.

2. Variability in GST Compliance (Standard Deviation - SD)

The standard deviation (SD) quantifies the variation in the rate of compliance with the GST in the past. Large population states have an SD of 17.5% which indicates moderate variability in compliance behaviour. Medium population States/UTs have a slightly higher SD of 18.2, which reflects slightly greater fluctuations in compliance trends over time. Low population States/UTs have the highest SD of 19.6 %, indicating more inconsistency and volatility in GST filing behaviour. These findings suggest that low population States/UTs experience more unstable compliance trends whereas large states exhibit relatively stable compliance trends.

3. Minimum and Maximum Compliance Rates

The minimum compliance rate in all the groups represents the lowest recorded GST return filing percentage whereas the maximum compliance rate represents the highest percentage achieved during the study period. Large population states recorded between 2.59% and 90 % minimum and maximum compliance rate respectively, which shows a wide range of variation in compliance rate over time. Medium population States/UTs had a minimum rate of compliance 3.71% and maximum of 85.9%, which shows similar fluctuations but a little lower peak as compared to large states. Low population States/UTs had the minimum compliance rate of 3.59% and maximum of 87.1% indicating low compliance rate of these three groups, but there are some cases of high compliance rate in certain months. These variations indicate that although there was improvement in compliance from year to year, some States/UTs showed extreme variations in tax return filing behaviour.

4. Overall Compliance Pattern Across Population Groups

The descriptive statistics shows a clear trend where the large population states have the highest rates of compliance with GST followed by the medium and low population States/UTs. The increased instability and average compliance among States/UTs with low population sizes imply that these areas have more difficulties in meeting GST return filing deadlines. The large spread in minimum and maximum values across all the groups emphasises periodic variations in compliance trends.

Table 4.16: Descriptive statistics of Compliance behaviour among large, medium and low population States/UTs

States/UT's in India	N	Mean	SD	Minimum	Maximum
Large population States	972	64.0	17.5	2.59	90.0
Medium population states/UT's	972	61.7	18.2	3.71	85.9
Low population states/UT's	939	53.3	19.6	3.59	87.1

Source: Author's compilation

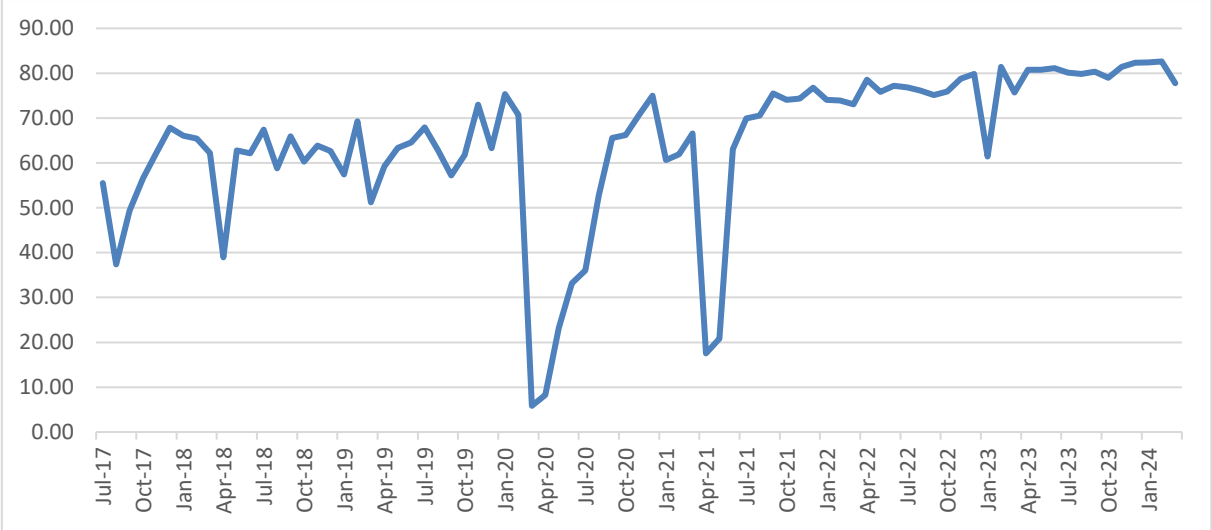
4.2.5 Overall GST Compliance behaviour among businesses across India.

The descriptive review of compliance behaviour in India is presented in Table 4.17 that gives an aggregate view of GST compliance behaviour in all 28 states and 8 UTs in India. The average compliance rate of 64.6% shows that on average, two-thirds of the businesses comply and file their GSTR-3B returns promptly. However, the wide range of 16.9 for the standard deviation (SD) indicates large variations in compliance rates across different regions and business segments. The minimum compliance rate of 5.84% indicates that some regions have consistently had very low compliance, while the maximum compliance rate of 82.6% indicates that some areas have had relatively higher compliance with tax filings. These fluctuations reflect inconsistencies in compliance patterns from the country. The trend analysis presented in Figure 4.8 shows that the level of compliance with GST has not been uniform over time. The trend analysis points out that the compliance levels have not reached an optimal level since there are still fluctuations in varying time periods. While compliance rates have fluctuated over the years, there are still many businesses that have not been able to get their taxes returned consistently, which suggests that tax compliance is yet to fully stabilize in all states and UTs.

Table 4.17: Descriptive review of compliance behaviour in India

States/UT's in India	N	Mean	SD	Minimum	Maximum
GST Compliance of businesses in India	81	64.6	16.9	5.84	82.6

Source: Author's compilation



Source: Author's compilation

Figure 4.8: Trend of GST compliance behaviour in India

4.2.6 Summary of Hypothesis Testing Results of Objective 1

The results, as summarised in Table 4.18 confirm that all four hypotheses (H1a-H1d) are supported. H1a is supported which indicates that there are significant differences in compliance behaviour of large population States with respect to the compliance with GST. H1b is supported to which medium population States and UTs also have a notable difference in compliance patterns. H1c receives support and there is considerable variation in compliance behaviour in terms of low population States and UTs. H1d is supported and thus reveals that when comparison amongst large, medium and low population categories is taken together, there are significant differences in GST compliance behaviour across these categories. These results form a clear basis for further analysis of the factors contributing to the observed variations in compliance behaviour.

Table 4.18: Summary of Hypothesis Testing (Objective 1)

Hypothesis	χ^2	Df	P Value	Significance?	Remark
H1a	103	11	<0.001**	**Yes**	Supported
H1b	158	11	<0.001**	**Yes**	Supported
H1c	267	11	<0.001**	**Yes**	Supported
H1d	183.7	2	<0.001**	**Yes**	Supported

Note: ** denotes significance at 1% levels
Source: Author's compilation

4.3 Data analysis and results of objective 2 and 3

This section brings forth the analysis and results associated with Objective 2 and Objective 3 which is focused on the analysis of factors affecting GST compliance behaviour among businesses in the state of Goa. The analysis is aimed at Research Question 2 (RQ2) which seeks to examine the economic and non-economic factors that influence tax compliance, and Research Question 3 (RQ3) which seeks to examine the mediating role of selected constructs in explaining compliance behaviour.
To achieve this the study is guided by following objectives:

- Objective 2 (RO2): To examine the influence of economic and non-economic factors on tax compliance behaviour among GST-registered businesses in Goa.
- Objective 3 (RO3): To explore the mediating role of tax morale, trust in government, tax compliance cost and tax complexity on tax compliance behaviour among GST-registered businesses in Goa.

Accordingly, the analysis is organized into two major parts. The first part examines the direct impacts of economic and non-economic variables such as tax rates, financial constraints, adoption of digital payments, audit probability, penalties and fines, tax awareness, etc., on adhering to GST complying behavior. The second part examines the mediating effects of tax morality, trust in government, tax compliance cost and tax complexity, therefore it tries to examine if the above variables account for the underlying mechanisms linking the independent variables with GST compliance behaviour.

4.3.1 Preliminary analysis of the data

Before moving to the main statistical analyses, a preliminary look at the data set was carried out to check its quality, completeness and appropriateness for the analyses. This is a crucial step in quantitative research because it helps to identify and address potential data quality issues that could potentially compromise the validity and reliability of results (Hair et al., 2022). The process started by determining the response rate by comparing the number of questionnaires distributed and those

returned and retained after data cleaning. Next a data coding scheme was implemented in which short descriptive codes were assigned to each construct to allow efficient handling in SmartPLS. The dataset was then imported into Jamovi statistical software for preliminary data screening which included checking for missing values, duplicate entries and checking for response consistency. Specific checks were carried out to deal with missing data by identifying the proportion and pattern of missing data followed by the methods of treatment. In addition, the data set was analysed for unengaged responses such as straight-lining or unrealistically short completion times which were removed to ensure only thoughtful and valid responses were included. The normality of the data was assessed using skewness and excess kurtosis values of each of the measurement items and confirmed that they were within acceptable limits (Kline, 2016). Although such an assessment is not necessary for the use of PLS-SEM, this marker proved useful to check the appropriateness of the data for descriptive and supplementary analyses. Finally, the common method bias (CMB) was checked with the help of both procedural and statistical methods for the dataset. Procedural safeguards, e.g. respondent anonymity and randomisation of question order, were coupled with statistical tests including the marker variable technique, inner model VIF checks and Harman's single factor test (Podsakoff et al., 2003; Kock, 2015; Simmering et al., 2015). These analyses supported that CMB was not an important concern in the study. Through these systematic steps, the preliminary analysis made sure that the final dataset that was used in the next modelling and hypothesis testing steps was accurate, complete and free from overall major data quality issues, which is considered to enhance the robustness of the study's findings.

4.3.1.1 Response Rate

A total of 992 questionnaires were distributed to the target respondents using the multistage sampling technique. Of these, 638 questionnaires were returned, yielding an initial response rate of 64.31%. The returned questionnaires were then carefully screened for completeness and internal consistency. During this process, 18 questionnaires were found

to be incomplete or contained inconsistent responses such as missing answers, unengaged responses, multiple selections in single-response questions or contradictory information and were therefore excluded from the dataset. After this data cleaning stage, 620 valid questionnaires remained, representing an effective response rate of 62.50%. This response rate is considered adequate for survey-based research in the social sciences, as it exceeds the generally acceptable threshold of 50% for self-administered questionnaires (Baruch & Holtom, 2008). The relatively high participation level also suggests a satisfactory level of respondent engagement and interest in the research topic, which enhances the reliability of the findings.

4.3.1.2 Data coding

In order to ensure clarity, consistency and efficiency during statistical analysis in SmartPLS each construct was given a short and descriptive code. The use of short codes is a common practice in structural equation modeling (SEM) to make it easier to identify constructs in path models, algorithm outputs and bootstrap reports (Hair et al., 2022). In this study the constructs were coded as follows: GST Compliance (GSTC), Tax Morale (TM), Trust in Government (TG), Tax Complexity (TC), Digital Payment (DP), Tax Awareness (TA), Financial Constraint (FC), Tax Penalties and Fines (TPF), Audit Probability (AP), Tax Rates (TR) and Tax Compliance Cost (TCC). These codes were consistently used in all SmartPLS model diagrams and statistical outputs and tables so that there are uniformity and no ambiguity. Adopting a systematic coding approach not only streamlines the analysis process, but also increases the replicability of the study so that future researchers can easily trace constructs throughout the study.

4.3.1.3 Initial Data screening

The dataset obtained was initially transferred to Jamovi statistical software where preliminary screening and quality check were performed. The screening process consisted of three major steps: (i) identifying and correcting any missing values, (ii) identifying and deleting duplicate entries, and (iii) evaluating the consistency of the responses to ensure

logical and coherent responses to related questions. This first verification was necessary to make sure that the dataset was complete, accurate and adequate for further statistical analyses. Any anomalies or inconsistencies that were found in this stage were rectified before moving further into additional data processing and hypothesis testing to improve the validity and reliability of the results (Hair et al., 2022).

4.3.1.4 Missing data

The dataset was imported in Jamovi statistical software for the initial screening. This included checking for missing values, duplicate entries and consistency of responses. The dataset was checked for missing values before performing statistical analyses as missing data may cause biased parameter estimates, less statistical power and less validity of results (Tabachnick & Fidell, 2019). A frequency check in Jamovi showed that the percentage of missing values in all variables was negligible and was much lower than the threshold of 5% per variable that is commonly accepted (Hair et al., 2022; Schafer, 1999). Given the minimum extent of missingness, listwise deletion was performed in which the cases with missing values were removed from the data. This method is deemed suitable when the percentage of missing data is low and missingness pattern is random (Little & Rubin, 2019). The cleaning process ensured that the final data set used for analysis was only complete responses thus contributing to the reliability and robustness of the following statistical procedures.

4.3.1.5 Unengaged responses

In addition to the check for missing data, the dataset was also verified for unengaged responses, which are responses made without enough attention and effort, and that can compromise the quality of data (Curran, 2016). Some of the signs of a non-engaged response are identical ratings on all the items (straight-lining), very short completion times, and repetitive or illogical answer patterns (Johnson, 2005). Each of the questionnaires was reviewed manually and an assessment of response patterns was collected in Jamovi to identify such anomalies. Responses that showed consistent

patterns with no variance or completed within unrealistically short periods of time were considered unengaged and removed from the data set. Eliminating these cases ensured that only real and sincere responses were retained for analysis and thus improved the reliability and validity of the study's findings (Meade and Craig, 2012).

4.3.1.6 Normal Distribution of Data

The normality of the data set was investigated by the value of the skewness and excess kurtosis for all the measurement items. The skewness measures the symmetry of the data distribution, with values close to zero representing symmetry and, the kurtosis measures the tailedness or peakedness of the data distribution curve. According to Kline (2016), the values of skewness ranging from -2 to +2 and kurtosis ranging from -3 to +3 are usually acceptable to determine the approximate normality of the data in the social science research.

The results in Table 4.19 show that all the items are in acceptable ranges both for skewness and kurtosis. Skewness values varied from -1.732 (TM6) to +1.178 (FC1), and excess kurtosis values varied from -1.455 (TC2) to +2.981 (TM6). Since none of the items were significantly above the recommended cut-off values the dataset can be considered to be approximately normally distributed. This suggests that the data does not display problematic deviations from normality thus supporting the validity of subsequent parametric as well as non-parametric analyses. While PLS-SEM does not need multivariate normality, an analysis of skewness and kurtosis confirms that the data meet the assumptions for descriptive analysis and some supplementary statistical procedures (Hair et al., 2022).

Table 4.19: Item-wise Normality Test Results

Item	Excess kurtosis	Skewness
GSTC1	2.221	-1.545
GSTC2	2.622	-1.684
GSTC3	1.039	-1.162
GSTC4	2.169	-1.526
GSTC5	2.115	-1.409
GSTC6	-0.358	-0.74
GSTC7	-0.66	-0.675
GSTC8	-0.482	-0.85

TC1	-1.312	-0.15
TC2	-1.455	-0.041
TC3	-1.411	-0.084
TC4	-1.439	-0.289
TC5	-1.428	-0.156
TCC1	-1.312	-0.288
TCC2	-1.429	-0.268
TCC3	-1.214	-0.47
TCC4	-1.288	-0.348
TCC5	-1.389	-0.229
TR1	-0.865	-0.553
TR2	-0.847	-0.813
TR3	-0.885	-0.763
FC1	-0.108	1.178
FC2	-0.812	0.749
FC3	-0.993	0.787
DP1	1.129	-1.334
DP2	-0.131	-0.972
DP3	0.88	-1.229
DP4	0.442	-1.163
TG1	-1.204	-0.18
TG2	-1.14	-0.381
TG3	-0.929	-0.288
AP1	0.525	-0.983
AP2	0.609	-1.168
AP3	0.251	-1.03
TPF1	1.676	-1.208
TPF2	1.585	-1.441
TPF3	1.814	-1.539
TPF4	1.208	-1.344
TA1	1.95	-1.127
TA2	1.816	-1.366
TA3	2.364	-1.258
TA4	-0.212	-0.732
TA5	-0.405	-0.566
TM1	1.169	-1.144
TM2	2.032	-1.576
TM3	1.137	-1.232
TM4	1.305	-1.332
TM5	1.434	-1.362
TM6	2.981	-1.732
FCC1	-0.339	-0.717
FCC2	-1.144	-0.113
FCC3	-0.03	-0.982

Source: Author's compilation

4.3.1.7 Common method biased

To make sure that common method bias (CMB) did not affect the study's results, both procedural and statistical approaches were used. Procedurally, respondent anonymity was ensured to minimise social desirability bias and the order of questions was randomised to minimise the possibility of patterned responses, as suggested by Podsakoff et al. (2003). Statistically CMB was determined considering the marker variable technique (Simmering et al., 2015), inner model Variance Inflation Factor (VIF) values and Harman's single factor test (Podsakoff et al., 2003). The inner VIF assessment had a dual function of identifying potential common method bias and detecting multicollinearity between predictor constructs in the structural model (Kock, 2015). A theoretically unrelated construct Fashion Consciousness was included as a marker variable which gave negligible change in the R^2 value indicating little influence of CMB. The VIF values of the inner model were all lower than the recommended threshold of 3.3 as suggested by Kock (2015) and this implies the absence of common method bias as can be seen in Table 4.20. Furthermore, results from Harman's single-factor test using unrotated Principal Component Analysis showed that the first factor explained only 17.1% of the variance well below the 50% threshold thus confirming that CMB is unlikely to be an important problem in this study (Table 4.20). These results taken together imply that the relationships that are found between the constructs are good and are not significantly influenced by measurement bias.

Table 4.20: Harman's single-factor test for common method bias

Component	SS Loadings	% of Variance	Cumulative %
1	8.36	17.1	17.1

Source: Author's compilation

4.3.2 Demographic and Business Profile of Respondents

The demographic and business characteristics of respondents give important context to the behaviour towards the GST compliance. According to Hair et al. (2021) profiling respondents can help researchers better understand the socio-economic and structural context that can influence the

attitude and practices regarding tax. In behavioural tax research, demographic characteristics such as gender, age, education as well as business-related characteristics such as ownership form, size and years of establishment are recognised as critical determinant factors that influence compliance decisions (Alabede et al., 2011).

In this study the profile of 620 GST Registered business owners in Goa is studied to capture the diversity of the sample. The analysis includes following key variables: Gender, age, education level, mode of business ownership, constitution of business, nature of business activity, responsibility for GST compliance, age of business and number of employees. Each of these dimensions gives the valuable insights of the socio-economic environment in which GST Compliance is embedded.

By analysing these demographic and business factors this section sets the stage for an interpretation of how differences in respondent profiles may influence compliance behaviour. The results are presented in a set of tables and figures providing both statistical accuracy and visual clarity for supporting subsequent analysis.

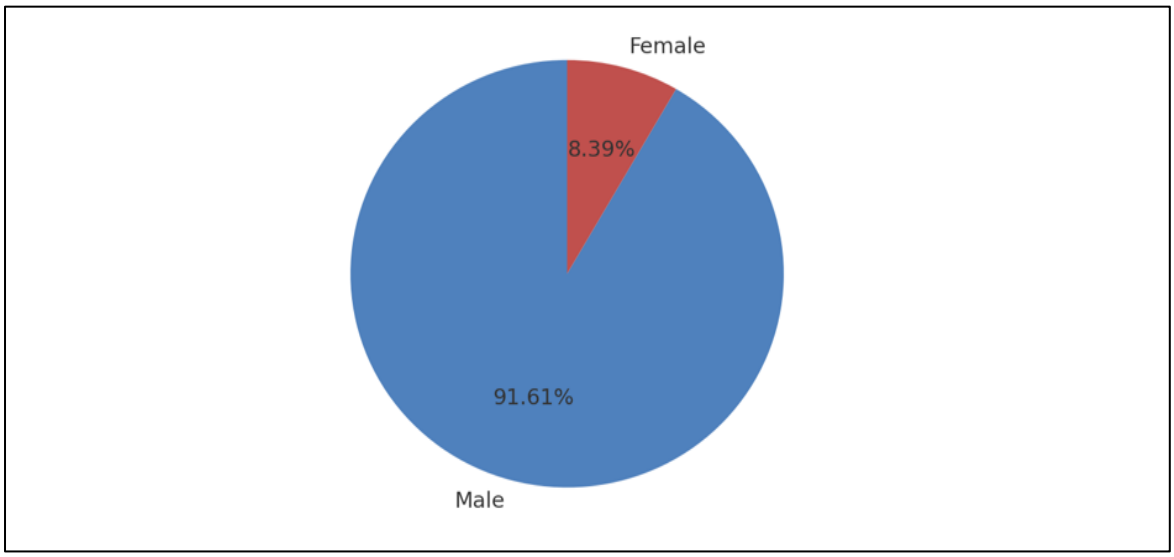
1. Gender of the respondents

Table 4.21 shows the gender distribution of the respondents while figure 4.9 is a graphical representation of the same through a pie chart. Out of the total sample size of 620 respondents a vast majority 568 respondents (91.61%) are male whereas only 52 respondents (8.39%) are female. The pie chart also further highlights this disproportion with the male respondents taking up a dominant share of the circle leaving only a small segment to represent the female respondents. This clearly indicates that the representation of the male respondents is substantially found to be higher in comparison with the females within the surveyed population. Overall, the gender profile of the respondents shows that men play a dominant role in business operations and GST compliance of the business within the State whereas women are a much smaller but recognized part of the business community.

Table 4.21: Gender of the respondents

Gender	Frequency	Percentage
Male	568	91.61
Female	52	8.39
Total	**620**	**100**

Source: Author's compilation



Source: Author's compilation

Figure 4.9: Gender of the respondents

2. Age group of the respondents

The age profile of the respondents is shown in Table 4.22 and in Figure 4.10 which together show the distribution of GST registered business owners by different age categories. The data shows a broad coverage of the age groups of the respondents and the majority is within the core working age groups.

The single largest segment is the 26-35 years segment with 148 respondents (23.87%). This is closely followed with the 36-45 years group with 145 respondents (23.39%) and the 46-55 years group with 142 respondents (22.90%). Collectively these three categories represent 435 respondents which account for 70.16% of the total sample. This shows that a huge percentage of the responsibility of complying with GST in Goa falls on people who are in the peak of their entrepreneurial and managerial prowess.

The category of 56-65 years comprises of 110 respondents (17.74%) which is pointing to the involvement of mature and experienced business

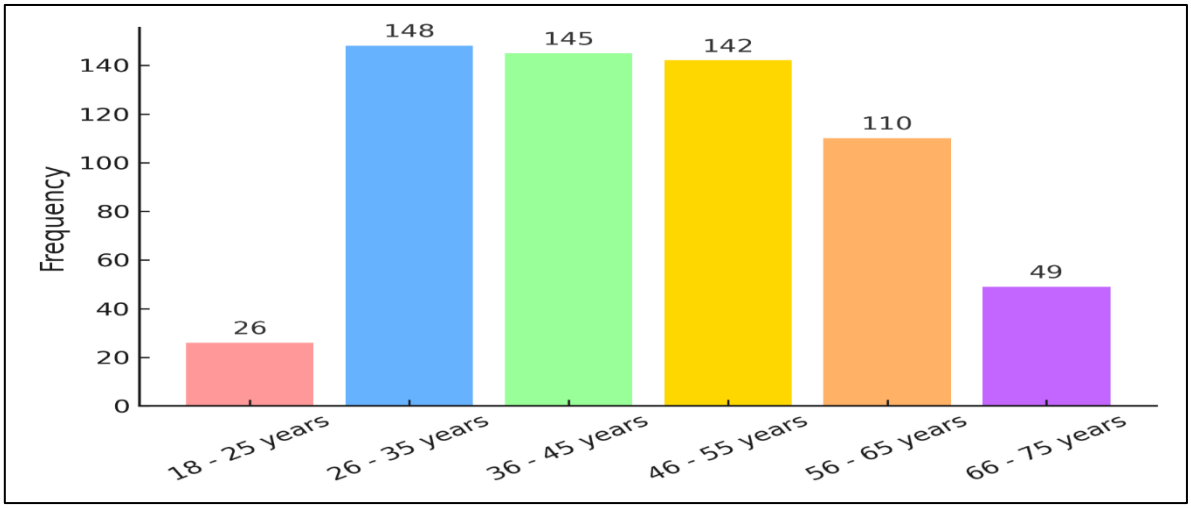
owners in the business operations and tax compliance continuously. The youngest group at age 18-25 years is the one least represented with only 26 respondents (4.19%). This implies that business ownership and GST compliance at this age is rather rare. The oldest category, 66-75 years includes 49 respondents (7.90%) indicating that while a smaller proportion of senior entrepreneurs are still able to maintain their involvement in business activities and are still loyal to GST obligations.

Overall, the age distribution has a reflection of the fact that the bulk of the GST compliance is done by the middle-aged respondents who form the backbone of the business community in Goa. The representation of younger and older categories though smaller is an example of GST compliance across generations with varying levels of participation.

Table 4.22: Age group of the respondents

Age group	Frequency	Percentage
18 - 25 years	26	4.19
26 - 35 years	148	23.87
36 - 45 years	145	23.39
46 - 55 years	142	22.9
56 - 65 years	110	17.74
66 - 75 years	49	7.9
Total	**620**	**100**

Source: Author's compilation



Source: Author's compilation

Figure 4.10: Age group of the respondents

3. Education level of the respondents

The educational profile of respondents summarised in Table 4.23 and illustrated in Figure 4.11 reflect a broad mix of qualifications though with a clear concentration in the higher education categories. The one group of respondents that were biggest in number (252 individuals, or 40.65%) was comprised of graduates suggesting that there is a significant proportion of GST-registered business owners in Goa who have formal academic training of at least degree level. This means that a strong base in the higher education is more or less common among entrepreneurs and business managers who deal in the responsibilities of GST compliance.

A significant proportion of the sample is people with advanced qualifications. Specifically, 80 of them (12.9%) have professional degree and 57 (9.19%) have postgraduate study. Together these categories account for more than a 50% of the overall sample pointing towards the presence of highly educated business owners who may be better equipped to interpret rules, adapt to regulatory changes and make use of digital compliance systems.

On the other hand, a significant proportion of respondents are from relatively lower education levels. A total of 95 respondent (15.32%) has education till 10th standard whereas 89 respondent (14.35%) have education till 12th standard. In addition, 47 (7.58%) of the respondents had diploma qualifications. This indicates that though the majority of business owners have taken advantage of greater education a significant cohort depend on secondary education or technical diplomas perhaps with other practical business experience, family tradition or external professional support in overseeing tax obligations.

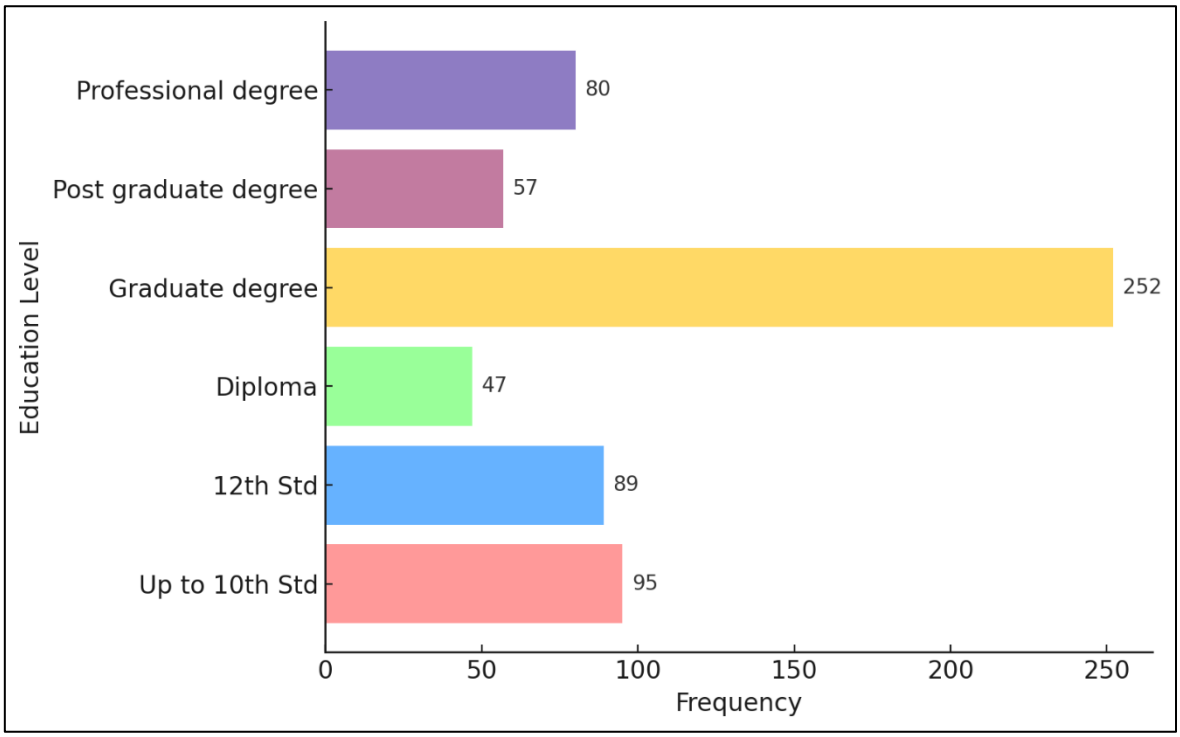
The distribution as a whole point out two things. Firstly, the major drivers of GST compliance in Goa are individuals with at least a graduate degree, which can be considered to be an enabling factor for smoother navigation of financial and regulatory processes. Second the presence of less educated respondents demonstrates that GST responsibilities are not restricted to the highly educated alone rather a small business operators with modest formal schooling are also actively participating in compliance.

This mix emphasizes the importance of making sure that the GST systems are easy to use and that there is professional tax support for those that may lack advanced educational training.

Table 4.23: Education level of the respondents

Education level	Frequency	Percentage
Up to 10th Std	95	15.32
12th Std	89	14.35
Diploma	47	7.58
Graduate degree	252	40.65
Post graduate degree	57	9.19
Professional degree	80	12.9
Total	**620**	**100**

Source: Author's compilation



Source: Author's compilation

Figure 4.11: Education level of the respondents

4. Constitution of Business

The pattern of distribution of business ownership presented in Table 4.24 and Figure 4.12 shows a highly skewed pattern in favour of sole proprietorship. Out of the total 620 businesses surveyed a substantial majority representing 84.84% (526 businesses) reported to be operating in the form of sole proprietorship. This concentration indicates the fact that business activities in Goa are organised mostly under the simplest and most

common legal form under which the ownership and managerial authority are vested with a single person. Within this structure, decision-making, operational control and compliance obligations including relating to GST are for most part centralised in the hands of the owner. Such dominance of sole proprietorships is also a reflection of the ease of setting up and sustaining this kind of business which demands comparatively less formalities when compared to more complicated legal entities.

The second most common form of ownership identified in the sample was the partnership firm which accounted for 12.90% (80 businesses). Although this proportion is relatively small compared to sole proprietorships it nonetheless constitutes a visible segment of enterprises in which responsibilities and resources are shared among two or more individuals. In such firms the burden of GST compliance may be distributed among partners potentially enables greater co-ordination and joint decision-making in matters pertaining to taxation. Despite this the overall representation of partnerships is still limited in the sample suggesting that shared ownership structures are less prominent in Goa's business environment.

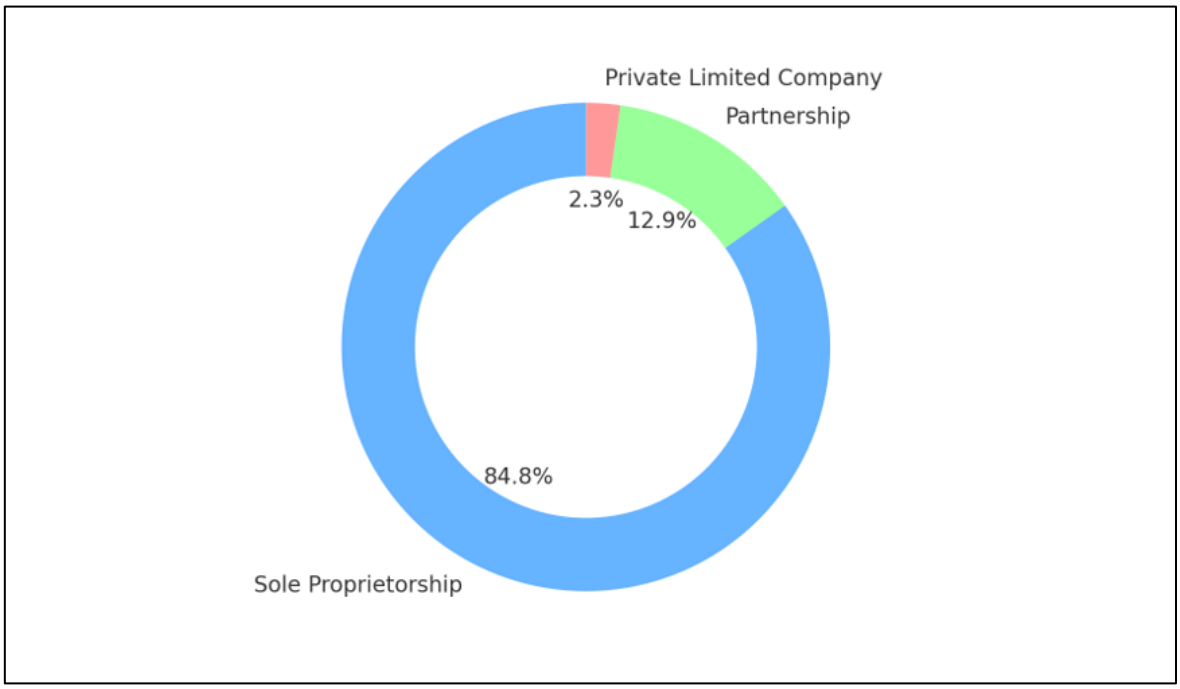
In contrast private limited companies had the lowest representation as a form of ownership making up only 2.26% of the surveyed enterprises (14 businesses). This very small proportion underlies the small amount of formalised corporate structures in the business landscape of Goa. Unlike sole proprietorship or partnerships, private limited companies are subject to more stringent statutory and regulatory requirements such as increased levels of financial disclosure reporting obligations and demanding compliance frameworks. Their low representation in the sample underscores the marginal contribution that such entities have in the overall composition of businesses in the state.

Taken together the data clearly show that by far the most dominant form of business ownership in Goa is that of individually owned businesses with partnerships and private limited companies occupying secondary and peripheral positions respectively. From a GST compliance point of view this means that the onus of complying with the tax regulations is entirely on micro and small business proprietors working as sole proprietors.

Table 4.24: Constitution of Business

Constitution of Business	Frequency	Percentage
Sole Proprietorship	526	84.84
Partnership	80	12.9
Private limited Company	14	2.26
Total	**620**	**100**

Source: Author's compilation



Source: Author's compilation

Figure 4.12: Constitution of Business

5. Nature of Business

The distribution of respondents as per the type of business is presented in Table 4.25 and it is evident from Figure 4.13 that the majority of enterprises in Goa are engaged in retail trade. Retail businesses have the largest share of 67.74% of the total sample (420 respondents) indicating the predominance of small-scale and consumer-oriented activities in the economic structure of the State. This is the reflection of the high prevalence of local shops, outlets and trading units that directly cater to the end consumers which form the backbone of the commercial base of Goa.

The second largest segment is made up of service providers that are 15.65% (97 respondents). This means that in addition to retail, there is a growing base of businesses that are engaged in consultancy, professional services and other service-oriented activities. Wholesale businesses account

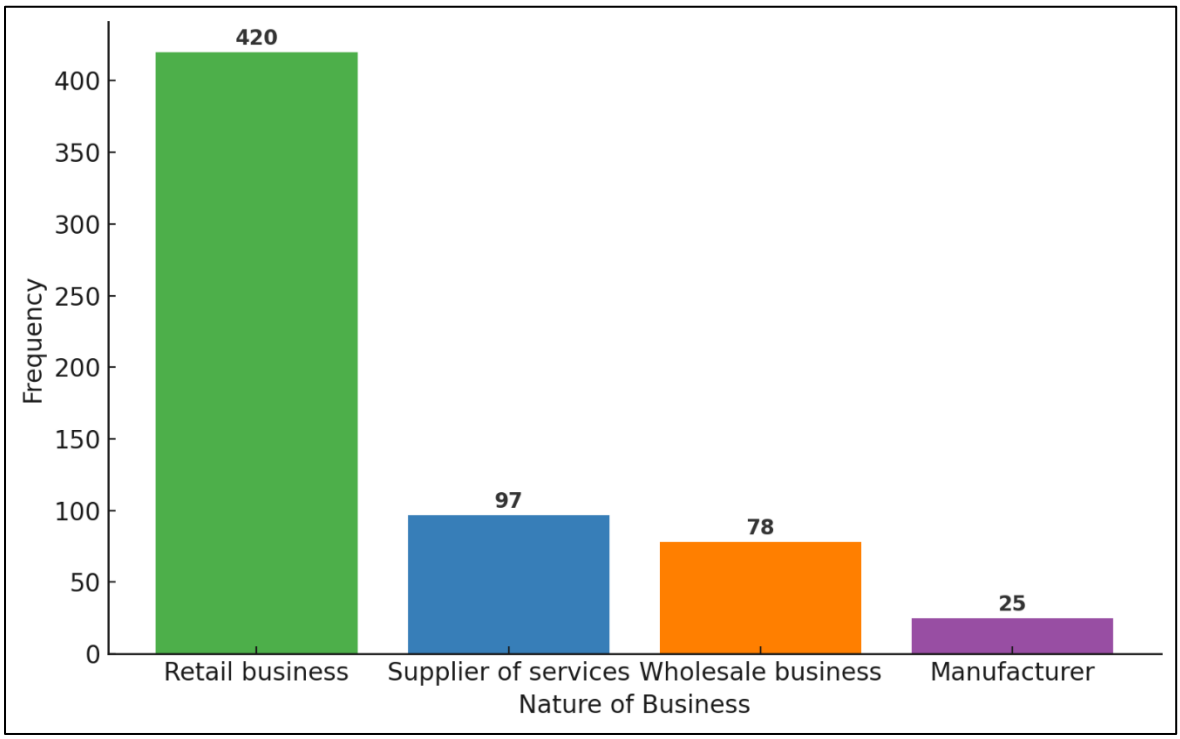
for 12.58% (78 respondents) indicating the role of wholesalers in supply chains especially in linking manufacturers and retailers. Finally, the contribution of manufacturers is only 4.03% (25 respondents) which reflects the comparatively low level of the presence of large scale industrial or production units within the State when compared to trading and service based enterprises.

Overall, the analysis shows that the business environment in Goa is overwhelmingly trade-driven with a significant focus on retail and services and a relatively low level of manufacturing activity. This distribution allows useful information about the behaviour of GST compliance as the compliance challenges and cost structures of retail traders may be quite different to the manufacturers or wholesalers.

Table 4.25: Nature of Business

Nature of Business	Frequency	Percentage
Retail business	420	67.74
Supplier of services	97	15.65
Wholesale business	78	12.58
Manufacturer	25	4.03
Total	**620**	**100**

Source: Author's compilation



Source: Author's compilation

Figure 4.13: Nature of Business

6. Responsibility of GST Compliance

The data reported in Table 4.26 and shown in Figure 4.14 gives insights into who mainly handles the GST compliance of the businesses surveyed. The results show that most businesses (60.8%) delegate their GST related duties to Chartered Accountants. This means that most businesses would rather take the help of qualified professionals with specialised knowledge on taxation issues.

Tax consultants are the second most preferred one with 21.0% of businesses depending on them for compliance. Together Chartered Accountants and Tax Consultants account for more than four-fifths of the sample pointing to a high dependence on external professionals to ensure timely and accurate GST filing.

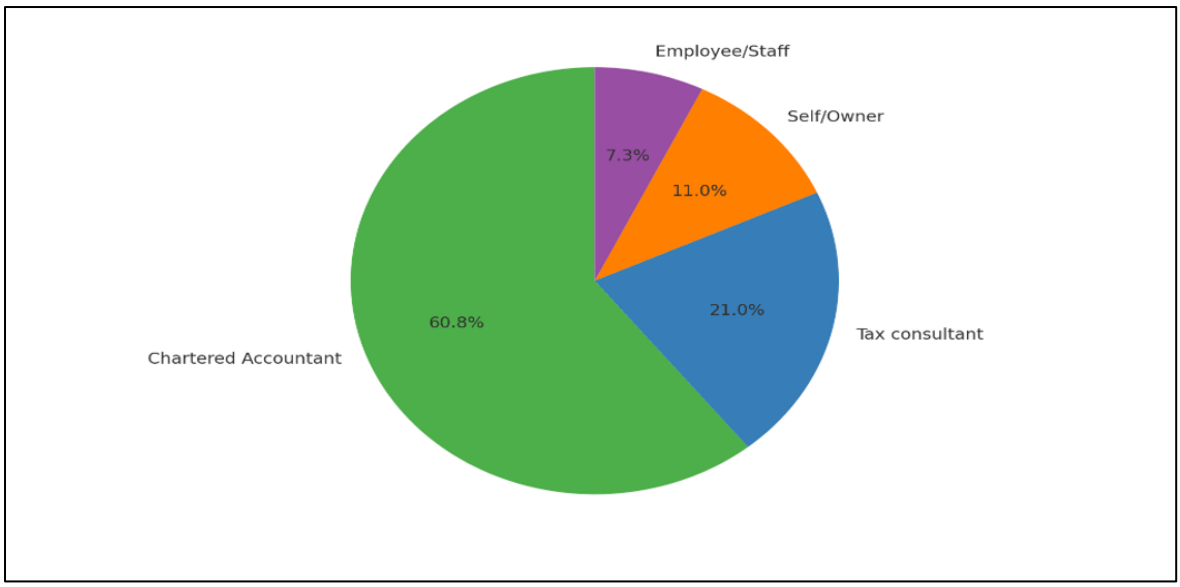
A lesser percentage of businesses want to do GST compliance in-house. Around 11.0% of business owners personally take care of the compliance process while 7.3% delegate this job to their employees or staff members. This suggests that only the minority of firms are confident for managing GST procedures without the external support.

Overall, the analysis indicates that external professionals, specifically Chartered Accountants, plays a pivotal role in the GST compliance among the businesses based in Goa. This dependence is the reflection of the complexity of the GST framework and the trust placed by the businesses in the professional expertise to mitigate the compliance risks under the GST.

Table 4.26: Responsibility of GST Compliance

Responsibility of GST Compliance	Frequency	Percentage
Chartered Accountant	377	60.81
Tax consultant	130	20.97
Self/Owner	68	10.97
Employee/Staff	45	7.26
Total	**620**	**100**

Source: Author's compilation



Source: Author's compilation

Figure 4.14: Responsibility of GST Compliance

7. Business Age (Years of Establishment)

The age distribution of businesses as given in Table 4.27 and Figure 4.15 brings out the fact that a great percentage of the respondents are engaged in running old-established businesses. Nearly half of the businesses (43.55%) have been in operation for over 21 years indicating a strong presence of experienced and stable firms that have maintained operations through changing regulatory and market environments. This is a long-standing business base, suggesting that this is a mature segment which is well-versed in compliance practices and of course, GST.

The second largest group is of businesses with 11-20 years of experience (22.26%) followed by those with 6-10 years (18.39%). Together these categories account for over 40% of the sample representing a significant amount of businesses within the middle age bracket of operations. These companies are likely to have both the flexibility and resources to effectively deal with changing tax systems.

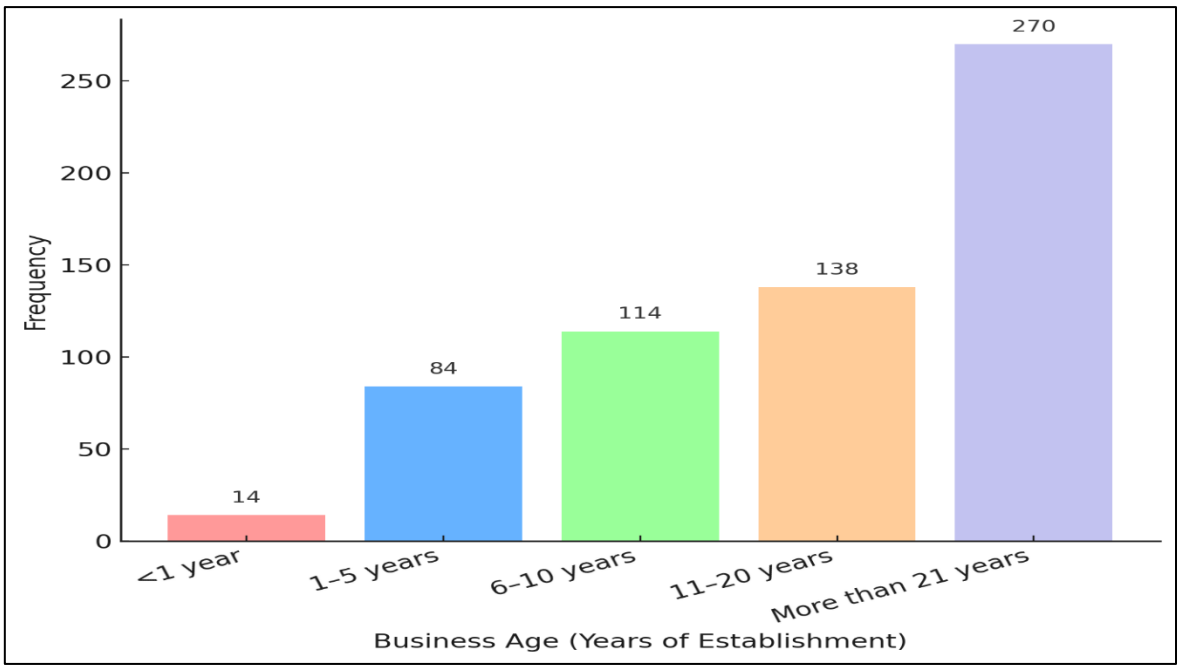
Relatively newer businesses are less in number. Only 13.55% respondents said that they operated between 1-5 years while the proportion of less than a year old businesses stood at just 2.26%. This suggests that while new entrepreneurial ventures are emerging the overall business landscape in Goa still remains dominated by the older more established enterprises.

In summary the distribution reveals that the major driving force for GST compliance in Goa is from mature and long-established businesses with relatively low participation rates from younger businesses. This composition indicates that experience and continuity are a critical factor in influencing compliance behaviour as more established businesses are likely to have structured systems in place and professional support in managing tax obligations.

Table 4.27: Business Age

Responsibility of GST Compliance	Frequency	Percentage
Less than 1 year	14	2.26
1-5 years	84	13.55
6-10 years	114	18.39
11-20 years	138	22.26
More than 21 years	270	43.55
Total	**620**	**100**

Source: Author's compilation



Source: Author's compilation

Figure 4.15: Business Age

8. Number of Employees in the Business

The distribution of employees across the different businesses as presented in Table 4.28 and Figure 4.16 easily establishes the fact that the majority of the enterprises in Goa are in the nature of small-scale

enterprises. An overwhelming 82.74% of the businesses function with mere 1-5 employees pointing to a prevalence of micro and very small businesses in the state's economic scenario. This concentration implies that GST compliance in Goa is highly carried out by firms that have limited human resources where compliance of GST duty is either handled by the owner himself or assisted by small teams.

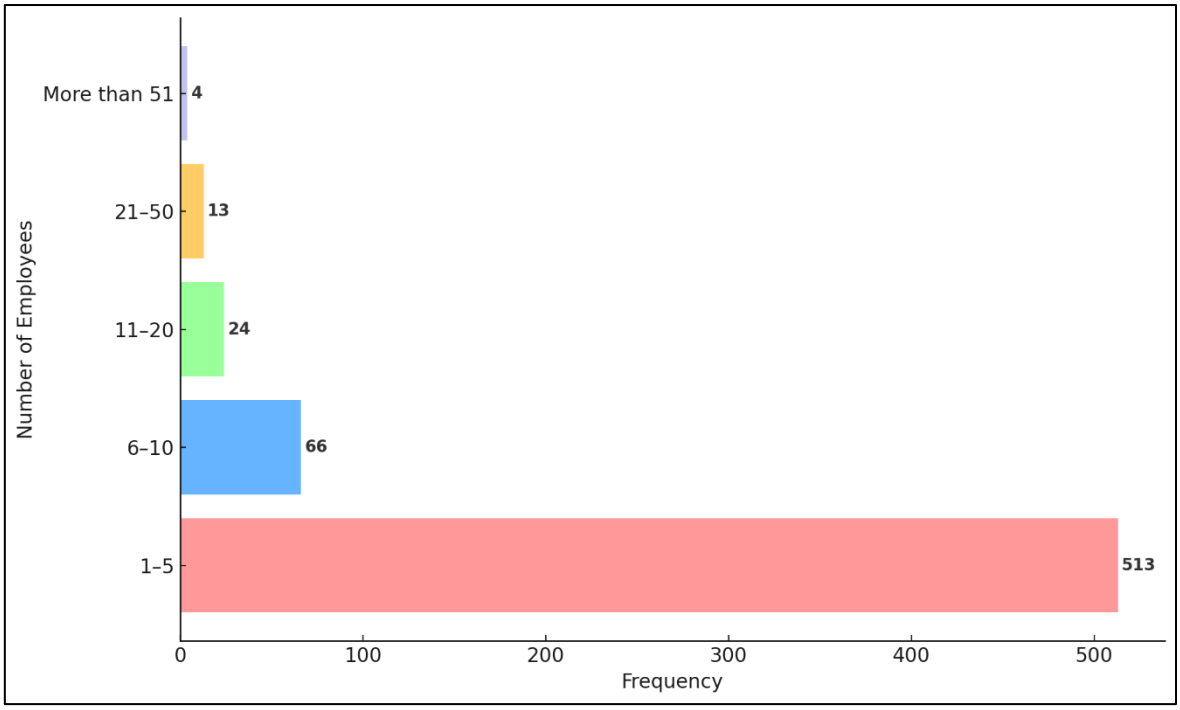
Businesses with 6-10 employees make up 10.65% of the sampling percentage whereas those with 11-20 employees account for 3.87%. Firms with 21-50 employees are a very small segment (2.1%) and only 0.65% of businesses said that they had more than 51 employees. This distribution underlies the fact that the medium and large enterprises constitute a very small share of the respondent base with the local economy being heavily dependent on small establishments.

The findings highlight the micro and small business dominance in the GST-registered enterprises in Goa in resonance with the economic structure of the state where small traders, retailers and service providers play an important role. From a compliance perspective this composition suggests that businesses may have a harder time meeting requirements of the GST regime due to lower capacity in terms of administrative and financial resources thereby making it more common for businesses to rely on external support such as accountants or consultants.

Table 4.28: Number of Employees in the Business

Number of Employees	Frequency	Percentage
1-5	513	82.74
6-10	66	10.65
11-20	24	3.87
21-50	13	2.1
More than 51 years	4	0.65
Total	**620**	**100**

Source: Author’s compilation



Source: Author's compilation

Figure 4.16: Number of Employees in the Business

9. Type of Business Ownership

The distribution of types of business ownership as given in Table 4.29 and Figure 4.17 reflects the multiplicity of entrepreneurial activities of the GST-registered entities in Goa. The information revealed that a good number of the respondents are working in the retail sector with other retail businesses (9.03%) and clothing/garment stores (7.42%) ranking highest. Together with electronics shops (6.29%), home appliance outlets (6.13%) and hardware stores (5%) these sectors are the dominating business ownership landscape. This concentration states that retail and consumer-driven businesses form the backbone of the GST-registered businesses in Goa.

In addition to retail several specialized service and professional businesses are represented including chartered accountants (3.71%), jewellry shops/manufacturers (3.71%), pharmacies (3.55%) and other service providers (3.55%). These businesses emphasize the role of professional and service-oriented businesses which support both the consumer and the business world more generally. Meanwhile manufacturing-oriented enterprises like automotive spare parts dealers/manufacturers (3.39%), spare parts shops (3.39%) and other small-

scale producers though smaller in share show the existence of industrial and production-based activity in the sample. Similarly niche businesses like cashew nut processing units, food processing units and handicrafts stores reflect Goa's traditional and regionally distinctive industries.

At the lower end of the spectrum a wide variety of micro and niche enterprises including art galleries, event management businesses, tailoring shops and cosmetic businesses are each less than 1% of the total. While individually these small segments add to the entrepreneurial diversity and underline the mixed business environment of Goa which includes both necessity-driven and opportunity-driven enterprises.

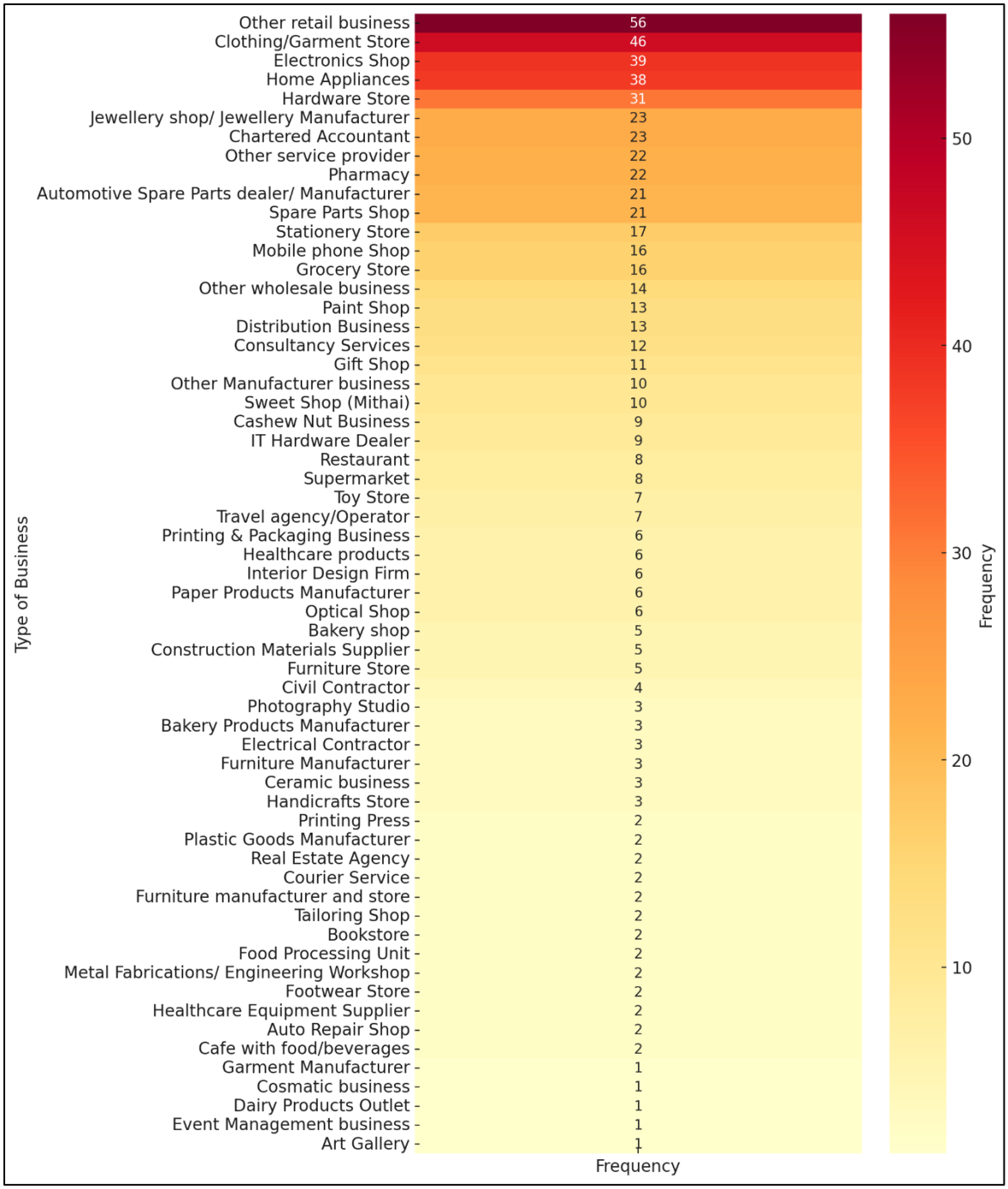
Overall, the distribution omits the possibility of non-compliance by large businesses with many employees and pertains more to small and medium-sized businesses operating in the consumer-facing sector, especially in retail and essential services. This dominance indicates the economic structure of the state with micro-entrepreneurs and traders playing a central role. The presence of diverse but smaller segments also suggests a fragmented business ecosystem which could affect compliance behaviour in different ways depending on the specific challenges facing particular sectors (e.g. tax complexity, costs of compliance, availability of professional assistance).

Table 4.29: Type of Business Ownership

Type of Business	Frequency	Percentage
Art Gallery	1	0.16
Auto Repair Shop	2	0.32
Automotive Spare Parts dealer/ Manufacturer	21	3.39
Bakery Products Manufacturer	3	0.48
Bakery shop	5	0.81
Bookstore	2	0.32
Cafe with food/beverages	2	0.32
Cashew Nut Business	9	1.45
Ceramic business	3	0.48
Chartered Accountant	23	3.71
Civil Contractor	4	0.65
Clothing/Garment Store	46	7.42
Construction Materials Supplier	5	0.81
Consultancy Services	12	1.94
Cosmatic business	1	0.16
Courier Service	2	0.32
Dairy Products Outlet	1	0.16

Distribution Business	13	2.1
Electrical Contractor	3	0.48
Electronics Shop	39	6.29
Event Management business	1	0.16
Food Processing Unit	2	0.32
Footwear Store	2	0.32
Furniture Manufacturer	3	0.48
Furniture Store	5	0.81
Furniture manufacturer and store	2	0.32
Garment Manufacturer	1	0.16
Gift Shop	11	1.77
Grocery Store	16	2.58
Handicrafts Store	3	0.48
Hardware Store	31	5.0
Healthcare Equipment Supplier	2	0.32
Healthcare products	6	0.97
Home Appliances	38	6.13
IT Hardware Dealer	9	1.45
Interior Design Firm	6	0.97
Jewellery shop/ Jewellry Manufacturer	23	3.71
Metal Fabrications/ Engineering Workshop	2	0.32
Mobile phone Shop	16	2.58
Optical Shop	6	0.97
Other Manufacturer business	10	1.61
Other retail business	56	9.03
Other service provider	22	3.55
Other wholesale business	14	2.26
Paint Shop	13	2.1
Paper Products Manufacturer	6	0.97
Pharmacy	22	3.55
Photography Studio	3	0.48
Plastic Goods Manufacturer	2	0.32
Printing & Packaging Business	6	0.97
Printing Press	2	0.32
Real Estate Agency	2	0.32
Restaurant	8	1.29
Spare Parts Shop	21	3.39
Stationery Store	17	2.74
Supermarket	8	1.29
Sweet Shop (Mithai)	10	1.61
Tailoring Shop	2	0.32
Toy Store	7	1.13
Travel agency/Operator	7	1.13
Total	**620**	**100**

Source: Author's compilation



Source: Author's compilation

Figure 4.17: Type of Business Ownership

4.3.3 Measurement Model assessment

In Partial Least Squares Structural Equation Modelling (PLS-SEM) the evaluation of the measurement model is a prerequisite before the evaluation of the structural model. This stage ensures that the latent constructs are measured with enough reliability and validity and thus

establishes the quality of the data before testing the hypothesised relationships (Hair et al., 2019). Following the established guidelines (Fornell & Larcker, 1981; Chin, 1998; Henseler et al., 2015) the present study has assessed the measurement model on the basis of four important parameters: Reliability of indicators, Reliability of the measure (internal consistency), Convergent validity and Discriminant validity.

Indicator reliability was assessed in terms of outer loadings of items as loadings of 0.70 or higher are considered satisfactory although items between 0.40 and 0.70 may be retained if they are theoretically important and do not affect validity (Hair et al., 2019). Internal consistency reliability was measured using Cronbach's alpha and composite reliability (rho_a and rho_c) > 0.70 considered to be adequate. Convergent validity was computed by the Average Variance Extracted (AVE) whereby a minimum value of 0.50 is held as a mark of evidence that the construct explains more than half the variance in its indicators (Fornell and Larcker, 1981). Last, discriminant validity was measured based on the criteria of cross-loadings (Chin, 1998), Fornell-Larcker (Fornell & Larcker, 1981) and Heterotrait-Monotrait (HTMT) (Henseler et al., 2015).

Together, these criteria constituted a comprehensive model of evaluation of the measurement model and ensured that the constructs used in this study were both reliable and valid.

4.3.3.1 Indicator reliability

Indicator reliability is the degree to which each observed item measures its underlying latent construct. In the context of PLS-SEM, this is usually assessed using outer loadings where values of 0.70 and above indicate that an indicator has more variance with its construct than with measurement error (Hair et al., 2021). Items with loadings ranging from 0.40 to 0.70 are sometimes kept if they can lend content validity for the construct and does not lower the internal consistency or the convergent validity of the construct especially when the Average Variance Extracted (AVE) is above 0.50 (Hulland, 1999; Fornell and Larcker, 1981; Hair, et al., 2017).

In the current study, most of the items exhibited loadings greater than

0.70 and so met the reliability criterion for the measurements. For the GST Compliance (GSTC) the result was seven out of eight items GSTC1 (0.799), GSTC2 (0.801), GSTC3 (0.750), GSTC4 (0.770), GSTC5 (0.787), GSTC7 (0.708) and GSTC8 (0.733) exceeded the recommended threshold. One item GSTC6 loaded slightly lower at 0.653 but was retained since the AVE of GSTC was still acceptable at 0.565 and the item was conceptually significant for capturing behavioural dimensions of compliance.

Tax Awareness (TA) had similarly shown high loadings for four of its items (TA1-TA4) measuring between 0.723 and 0.838 while TA5 had a slightly lower loading of 0.647. Given that the AVE of the construct was 0.599 the item was kept as a result of its theoretical relevance. A similar pattern appeared for the Tax Penalties and Fines (TPF) construct in which three items (TPF1-TPF3) loaded strongly above 0.75 and TPF4 somewhat less (0.657). The AVE of 0.577 rationalized the inclusion of this item.

All the other constructs showed very good reliability. Tax Morale (TM) loadings were 0.767-0.863 (AVE = 0.691) whereas Trust in Government (TG) items had extremely highest values of between 0.890 and 0.904 (AVE = 0.801). Tax Complexity (TC) indicator was all robust ranging 0.791 to 0.900 (AVE = 0.730). Digital Payment (DP) items loaded were between 0.778 and 0.892 (AVE = 0.739) and Financial Constraint (FC) items were between 0.862 and 0.887 (AVE = 0.763). Audit Probability (AP), Tax Rates (TR) and Tax Compliance Cost (TCC) also showed strong relationships with outer loadings of greater than 0.82. Their AVEs (0.781 for AP and TR and 0.746 for TCC) supported the reliability of these constructs.

Fashion Consciousness (FCS) was presented as a marker variable for the measurement of the threat of common method bias (Podsakoff et al., 2003). As this was not part of the hypothesised model, it did not have its loadings estimated (indicated as NA in Table 4.30) and was omitted from reliability checks.

Overall, results confirm that reliability of indicators was achieved for all constructs. Some items that did not have the higher loadings were retained since they helped establish theoretical completeness and the above benchmark of 0.50 for AVE. These results are summarised numerically in

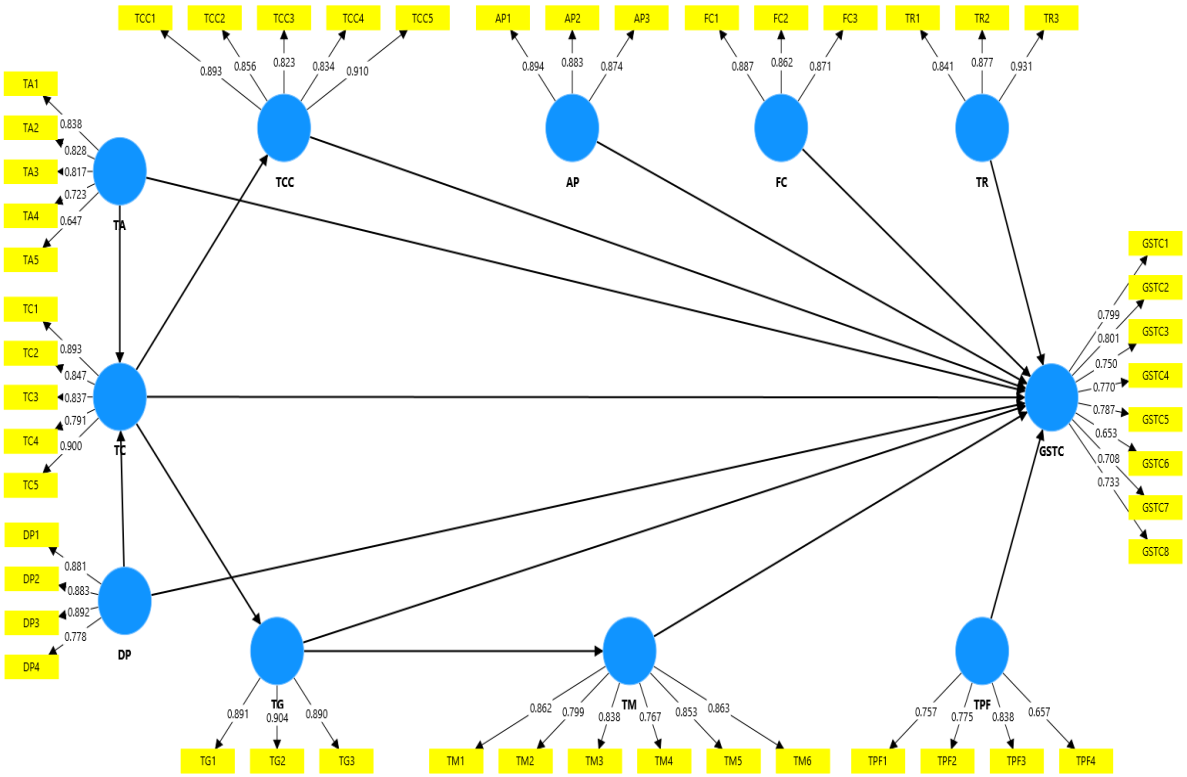
Table 4.30 (Item-wise Outer Loadings) and visually as in Figure 4.18 (Measurement Model with Indicator Loadings).

Table 4.30: Item wise Outer Loadings

Construct	Items	Outer Loadings
GST Compliance (GSTC)	GSTC1	0.799
	GSTC2	0.801
	GSTC3	0.750
	GSTC4	0.770
	GSTC5	0.787
	GSTC6	0.653*
	GSTC7	0.708
	GSTC8	0.733
Tax Morale (TM)	TM1	0.862
	TM2	0.799
	TM3	0.838
	TM4	0.767
	TM5	0.853
	TM6	0.863
Trust in Government (TG)	TR1	0.891
	TR2	0.904
	TR3	0.890
Tax Complexity (TC)	TC1	0.893
	TC2	0.847
	TC3	0.837
	TC4	0.791
	TC5	0.900
Digital Payment (DP)	DP1	0.881
	DP2	0.883
	DP3	0.892
	DP4	0.778
Tax Awareness (TA)	TA1	0.838
	TA2	0.828
	TA3	0.817

	TA4	0.723
	TA5	0.647*
Financial Constraint (FC)	FC1	0.887
	FC2	0.862
	FC3	0.871
Tax Penalties and Fines (TPF)	TPF1	0.757
	TPF2	0.775
	TPF3	0.838
	TPF4	0.657*
Audit Probability (AP)	AP1	0.894
	AP2	0.883
	AP3	0.874
Tax Rates (TR)	TR1	0.841
	TR2	0.877
	TR3	0.931
Tax Compliance Cost (TCC)	TCC1	0.893
	TCC2	0.856
	TCC3	0.823
	TCC4	0.834
	TCC5	0.910
Fashion consciousness (FCS)	FCS1	NA
	FCS2	NA
	FCS3	NA

Source: Authors Compilation



Source: Author's compilation

Figure No 4.18: Measurement Model (Reflective Constructs with Indicator Loadings)

4.3.3.2 Internal Consistency reliability

Internal consistency reliability is the examination of the degree to which items in a construct measure the same underlying concept thus ensuring that the construct is stable and dependable (Nunnally & Bernstein, 1994; Hair et al., 2019). Two of the common measures, Cronbach's Alpha (α) and Composite Reliability (CR) which includes both rho_a (ρ_a) and rho_c (ρc). Cronbach's Alpha gives a conservative estimate whereas composite reliability is regarded as a more accurate indicator in PLS-SEM because it takes into consideration different indicator loadings (Hair et al., 2021). Specifically, rho_a (ρ_a) is regarded as a consistent reliability measure situated between Cronbach's Alpha and rho_c (ρc), while rho_c (ρc) reflects the traditional composite reliability estimate. For both measures values above 0.70 are generally acceptable though values above 0.80 and 0.90 reflect good to excellent reliability (Fornell & Larcker, 1981; Henseler et al., 2015).

In the present study Cronbach's Alpha values ranged from 0.754 to 0.914 confirming satisfactory to excellent reliability across all constructs

(see Table 4.31). For example, the construct of GSTC measured items were 8 and the reported values were α = 0.889 and composite reliability values were rho_a = 0.892 and rho_c = 0.912 (Table 4.32). These results show good internal consistency and stability of a measurement structure. Tax Morale also exhibited good reliability with α = 0.911, rho_a = 0.926, and rho_c = 0.930 and Trust in Government with α = 0.876, rho_a = 0.878, and rho_c = 0.924, thus further strengthening the internal consistency of the constructs.

The Tax Complexity construct, which is measured using five items, showed α = 0.907, rho_a = 0.914 and rho_c = 0.931, all of which are higher than recommended thresholds, confirming its good reliability. Similarly, Digital Payment (α = 0.883, rho_a = 0.909, rho_c = 0.919) and Tax Awareness (α = 0.831, rho_a = 0.850, rho_c = 0.881) also showed strong internal consistency.

Financial Constraint (α = 0.844, rho_a = 0.845, rho_c = 0.906), and Tax Penalties and Fines (α = 0.754, rho_a = 0.768, rho_c = 0.844) were also found to have acceptable reliability. Although the values for Tax Penalties and Fines (α = 0.754, rho_a = 0.768, rho_c = 0.844) were lower as compared to other constructs but still, they are above the minimum acceptable level and theoretically important in explaining GST compliance behaviour. The constructs Audit Probability (α = 0.860, rho_a = 0.864, rho_c = 0.915) and Tax Rates (α = 0.863, rho_a = 0.939, rho_c = 0.915) had high internal consistency. Finally, Tax Compliance Cost showed the highest internal reliability across the model with α = 0.914, rho_a = 0.916, and rho_c = 0.936, which expresses the robustness of this construct.

Overall, all constructs had Cronbach's Alpha and composite reliability exceeding recommended thresholds of 0.70, which confirms that they were suitable for further analysis in the structural model. Even items that loaded somewhat below 0.70 were justified in retention because of their theoretical significance and the fact that their AVE values were all above 0.50, which should have assured that no loss of convergent validity occurred.

Table 4.31: Cronbach's Alpha (α)

Construct	Items	Cronbach's Alpha (α)
GST Compliance	8	0.889
Tax Morale	6	0.911
Trust in Government	3	0.876
Tax Complexity	5	0.907
Digital Payment	4	0.883
Tax Awareness	5	0.831
Financial Constraint	3	0.844
Tax Penalties and Fines	3	0.754
Audit Probability	3	0.860
Tax Rates	3	0.863
Tax Compliance Cost	5	0.914

Source: Authors Compilation

Table 4.32: Composite reliability

Construct	Items	Composite reliability	
		(rho_a- ρ_a)	(rho_c- ρc)
GST Compliance	8	0.892	0.912
Tax Morale	6	0.926	0.930
Trust in Government	3	0.878	0.924
Tax Complexity	5	0.914	0.931
Digital Payment	4	0.909	0.919
Tax Awareness	5	0.850	0.881
Financial Constraint	3	0.845	0.906
Tax Penalties and Fines	3	0.768	0.844
Audit Probability	3	0.864	0.915
Tax Rates	3	0.939	0.915
Tax Compliance Cost	5	0.916	0.936

Source: Authors Compilation

4.3.3.3 Convergent validity

Convergent validity tests the degree of shared variance of the items of a construct and the degree to which all items in the construct actually

measure the same construct. In PLS-SEM, this is most commonly measured by so-called Average Variance Extracted (AVE). According to Fornell and Larcker (1981), an AVE value of 0.50 or above indicates that the construct can explain greater than 50% of the variance in its indicators and hence, a measure can be considered to have acceptable convergent validity. If the AVE is below this threshold, then it suggests that the error variance is larger than the variance that is explained by the construct, which is a cause for concern about the validity of the measure.

In this study, the AVE values for all constructs were higher than the recommended minimum value, indicating satisfactory convergent validity across the measurement model (see Table 4.33). For example, the GST Compliance (GSTC) construct obtained an AVE of 0.565, which shows that its eight reflective items together account for more than half of the variance of the latent construct (even though one indicator (GSTC6) loaded slightly below the ideal 0.70 level). Similarly, Tax Morale obtained an AVE of 0.691, indicating that there is a strong convergence among its six indicators with respect to capturing intrinsic taxpayer motivation.

The construct Trust in Government had a particularly high AVE of 0.801 that shows its three indicators are highly cohesive and are well capturing perceptions of institutional trust. Likewise, Tax Complexity with an AVE of 0.730, confirmed the good convergence of its five items towards the perception of taxpayers on the complexity of the GST system. Digital Payment also demonstrated good convergent validity with an AVE of 0.739 in four of its indicators indicating the strength of this construct to be used in measuring digital transaction practices.

Tax Awareness showed an AVE of 0.599, which is comfortably above the 0.50 cut-off, and provided sufficient rationale for retaining its five indicators, which even included TA5 that loaded a bit below 0.70. The construct financial constraint showed excellent convergence with AVE of 0.763 which indicated that its three indicators were consistent in explaining latent variable. In the case of Tax Penalties and Fines the AVE was 0.577 which is acceptable despite the fact that one item (TPF4) had a lower loading the overall construct was still found to be theoretically significant and remained.

Further, Audit Probability and Tax Rates both got AVE values of 0.781 confirming excellent convergent validity and high between their indicators and latent dimensions. Finally, Tax Compliance Cost showed the highest convergence with an AVE of 0.746 highlighting the reliability and conceptual coherence of the five-item structure.

Taken together, these results provide great evidence of the convergent validity of all constructs within the measurement model. Even where individual indicators failed to meet the 0.70 threshold, the corresponding AVE values surpassed the threshold of 0.50 thus confirming adequate measurement properties and reliability of the constructs to be used in further structural model assessment.

Table 4.33: Average variance extracted (AVE)

Construct	Average variance extracted (AVE)
GST Compliance	0.565
Tax Morale	0.691
Trust in Government	0.801
Tax Complexity	0.730
Digital Payment	0.739
Tax Awareness	0.599
Financial Constraint	0.763
Tax Penalties and Fines	0.577
Audit Probability	0.781
Tax Rates	0.781
Tax Compliance Cost	0.746

Source: Authors Compilation

4.3.3.4 Discriminant validity

Discriminant validity is the extent to which a construct is conceptually and empirically different from other constructs in a model. Establishment of discriminant validity is crucial to prove that each latent variable describes unique aspects of the phenomenon under study and not overlaps with other constructs (Campbell & Fiske, 1959; Hair et al., 2019). If discriminant validity is not achieved, the results of the-structural model

may be compromised because the constructs would not represent truly independent dimensions.

In this study, the discriminant validity was investigated using three widely recognised methods, namely the cross-loadings criterion (Chin, 1998), the Fornell-Larcker criterion (Fornell & Larcker, 1981), and the Heterotrait-Monotrait ratio (HTMT) of correlations (Henseler et al., 2015). These techniques are often recommended in PLS-SEM because they add complementary information on the construct distinctiveness and quality of measurement. Together, they make possible a complete assessment of discriminant validity in the measurement model.

1. Cross loadings

Discriminant validity tests to determine whether constructs that are expected to be different actually are empirically different from one another. One of the first and most popular methods for testing discriminant validity in PLS-SEM is the cross Loadings criterion (Chin, 1998). This criterion dictates that each indicator will load highest on its assigned construct than on all of its loadings on the other constructs. That is, an indicator should show greater association with its latent variable than with other constructs that it is unrelated to.

In this study, the result of cross loadings validation revealed that the discriminant validity of all constructs is satisfactory (see Table 4.34). For example, GSTC1 loaded 0.799 on its intended construct, GST Compliance, which was substantially higher than its cross loadings on Tax Morale (0.210), Trust in Government (0.268) and other constructs. Similarly, TM1 has a loading of 0.862 on Tax Morale, its construction, and the loadings on other constructs such as GST Compliance (0.268) and Trust in Government (0.211) were very low. This clear dominance of loadings on their assigned constructs was consistently found across all reflective indicators in the model.

The Trust in Government construct also demonstrated good discriminant properties with its three items (TG1-TG3) having loadings ranging from 0.890 to 0.904 on their respective construct and have considerably weaker cross-loadings on other latent variables. Likewise, the

five items of Tax Complexity all showed their highest loadings on the Tax Complexity construct with values ranging between 0.791 and 0.900, much higher than their loadings on unrelated constructs.

Further, constructs like Digital Payment, Tax Awareness, Financial Constraint and Tax Penalties and Fines showed the same pattern, items were loaded the most on their respective constructs and moderately or weakly on others. For example, a loading of 0.883 on Digital Payment was recorded by DP2 when compared to much lower values on non-related constructs. Similarly, TA1 loaded highly on Tax Awareness (0.838) whereas the rest of the constructs loadings were less than 0.40. Even items with slightly lower primary loadings, for example, TPF4 (0.657 on Tax Penalties and Fines), still showed their strongest loading to the correct construct, which confirmed discriminant validity.

The constructs, Audit Probability, Tax Rates and Tax Compliance Cost were also found to satisfy the cross-loading criterion. For example, AP1 scored 0.894 on Audit Probability as opposed to much lower cross-loadings on other constructs. Tax Rates indicators had very high primary loadings (0.841 to 0.931) which clearly surpassed their cross loadings. Likewise, the five items measuring Tax Compliance Cost all revealed their highest loadings (0.823-0.910) on the construct itself with no evidence of problematic cross-loadings.

Overall, the present results presented in Table 4.34 confirm that each item loaded more strongly on its own construct than on any other, and provide strong evidence of discriminant validity using the cross-loadings approach. These results suggest that the items in the measurement were unique and suitable for their respective constructs and hence meet the criteria outlined by Chin (1998).

Table 4.34: Cross loadings

Items	GSTC	TM	TG	TC	DP	TA	FC	TPF	AP	TR	TCC
GSTC1	**0.799**	0.210	0.268	-0.207	0.093	0.288	-0.377	0.383	0.363	-0.023	-0.198
GSTC2	**0.801**	0.232	0.228	-0.228	0.161	0.330	-0.392	0.433	0.368	0.000	-0.199
GSTC3	**0.750**	0.175	0.203	-0.200	0.164	0.330	-0.377	0.355	0.333	-0.045	-0.165
GSTC4	**0.770**	0.159	0.233	-0.227	0.158	0.341	-0.352	0.369	0.331	-0.044	-0.207
GSTC5	**0.787**	0.202	0.233	-0.193	0.177	0.346	-0.353	0.375	0.382	-0.034	-0.159

GSTC6	**0.653**	0.305	0.276	-0.197	0.058	0.254	-0.264	0.275	0.338	-0.036	-0.151
GSTC7	**0.708**	0.228	0.287	-0.183	0.027	0.270	-0.311	0.284	0.363	-0.020	-0.146
GSTC8	**0.733**	0.226	0.321	-0.200	0.038	0.306	-0.346	0.272	0.366	-0.102	-0.182
TM1	0.268	**0.862**	0.211	-0.121	0.021	0.166	-0.068	0.049	0.118	-0.066	-0.059
TM2	0.228	**0.799**	0.093	-0.005	0.117	0.157	-0.087	0.050	0.041	-0.083	-0.034
TM3	0.233	**0.838**	0.134	-0.067	0.065	0.154	-0.093	0.031	0.064	-0.108	-0.067
TM4	0.174	**0.767**	0.080	-0.074	0.088	0.140	-0.107	-0.006	0.055	-0.048	-0.037
TM5	0.274	**0.853**	0.160	-0.079	0.125	0.217	-0.089	0.058	0.082	-0.062	-0.049
TM6	0.227	**0.863**	0.135	-0.054	0.073	0.198	-0.079	0.026	0.062	-0.041	-0.055
TG1	0.290	0.147	**0.891**	-0.302	-0.146	0.212	-0.173	0.119	0.258	-0.037	-0.244
TG2	0.271	0.151	**0.904**	-0.264	-0.156	0.144	-0.095	0.027	0.232	-0.022	-0.170
TG3	0.344	0.160	**0.890**	-0.259	-0.079	0.197	-0.118	0.136	0.257	-0.077	-0.228
TC1	-0.234	-0.070	-0.268	**0.893**	0.111	-0.201	0.172	-0.018	-0.057	0.161	0.359
TC2	-0.270	-0.070	-0.251	**0.847**	0.081	-0.249	0.156	-0.037	-0.042	0.160	0.279
TC3	-0.217	-0.046	-0.215	**0.837**	0.088	-0.159	0.123	-0.022	0.002	0.170	0.276
TC4	-0.205	-0.112	-0.283	**0.791**	0.032	-0.203	0.086	-0.014	-0.042	0.145	0.274
TC5	-0.235	-0.063	-0.291	**0.900**	0.113	-0.195	0.114	-0.042	-0.081	0.118	0.390
DP1	0.105	0.078	-0.109	0.113	**0.881**	0.056	-0.038	0.127	0.073	-0.064	0.117
DP2	0.164	0.064	-0.122	0.090	**0.883**	0.096	-0.084	0.207	0.110	0.002	0.090
DP3	0.127	0.114	-0.110	0.094	**0.892**	0.042	-0.036	0.128	0.037	-0.011	0.109
DP4	0.107	0.073	-0.152	0.040	**0.778**	0.079	-0.008	0.105	0.067	-0.074	0.030
TA1	0.386	0.197	0.213	-0.235	0.067	**0.838**	-0.231	0.220	0.254	-0.039	-0.125
TA2	0.365	0.163	0.125	-0.136	0.094	**0.828**	-0.259	0.211	0.224	0.057	-0.095
TA3	0.308	0.165	0.112	-0.158	0.083	**0.817**	-0.161	0.183	0.181	-0.019	-0.127
TA4	0.286	0.150	0.183	-0.201	0.046	**0.723**	-0.201	0.177	0.203	0.024	-0.149
TA5	0.214	0.123	0.165	-0.181	0.005	**0.647**	-0.143	0.080	0.139	-0.038	-0.111
FC1	-0.419	-0.071	-0.160	0.072	-0.043	-0.249	**0.887**	-0.168	-0.207	0.033	0.114
FC2	-0.403	-0.093	-0.100	0.179	-0.035	-0.217	**0.862**	-0.138	-0.165	0.018	0.181
FC3	-0.392	-0.105	-0.117	0.153	-0.061	-0.220	**0.871**	-0.126	-0.161	0.077	0.107
TPF1	0.373	0.008	0.146	-0.073	0.132	0.156	-0.134	**0.757**	0.355	0.018	-0.013
TPF2	0.302	0.014	0.024	0.045	0.126	0.150	-0.119	**0.775**	0.320	0.140	-0.028
TPF3	0.405	0.018	0.082	-0.021	0.147	0.200	-0.125	**0.838**	0.347	0.086	-0.049
TPF4	0.302	0.109	0.062	-0.037	0.109	0.201	-0.124	**0.657**	0.290	0.107	-0.085
AP1	0.449	0.064	0.274	-0.093	0.037	0.243	-0.183	0.402	**0.894**	0.029	-0.117
AP2	0.402	0.093	0.243	-0.013	0.071	0.212	-0.164	0.371	**0.883**	0.085	-0.100
AP3	0.399	0.079	0.220	-0.032	0.125	0.244	-0.193	0.375	**0.874**	0.119	-0.058
TR1	-0.037	-0.005	-0.005	0.118	-0.038	0.043	0.064	0.077	0.059	**0.841**	0.089
TR2	-0.034	-0.113	-0.070	0.159	-0.041	-0.005	0.062	0.101	0.085	**0.877**	0.069
TR3	-0.055	-0.093	-0.059	0.178	-0.024	-0.031	0.018	0.110	0.082	**0.931**	0.081
TCC1	-0.226	-0.035	-0.239	0.320	0.116	-0.154	0.152	-0.098	-0.115	0.061	**0.893**

TCC2	-0.188	-0.065	-0.192	0.343	0.103	-0.139	0.131	-0.021	-0.055	0.120	**0.856**
TCC3	-0.181	-0.060	-0.154	0.319	0.009	-0.142	0.113	-0.027	-0.053	0.083	**0.823**
TCC4	-0.201	-0.045	-0.205	0.298	0.123	-0.111	0.105	-0.018	-0.085	0.057	**0.834**
TCC5	-0.218	-0.061	-0.245	0.330	0.097	-0.125	0.159	-0.072	-0.143	0.068	**0.910**

Source: Authors Compilation

2. Fornell-Larcker's criteria

The second approach used for evaluating the discriminant validity was the Fornell-Larcker criterion, which is one of the most widely used methods in variance-based SEM (Fornell & Larcker, 1981). This method involves comparing the square root of Average Variance Extracted (AVE) of each construct with correlation to other latent variables. Discriminant validity is proven when the square root of AVE, which is shown in the diagonal of the correlation matrix, is greater than the correlation of the construct to the other constructs, which are shown by the off-diagonal values. This means that the construct has greater variance with its own indicators than with other external constructs.

As shown in Table 4.35, all constructs in this study met the Fornell-Larcker criterion. For example, the GST Compliance construct had a square root of AVE of 0.752 that was higher than the correlations with the related constructs such as Tax Penalties and Fines (0.461), Audit Probability (0.473), etc. Tax Awareness (0.411) had a square root of AVE of 0.411. Similarly, Tax Morale showed a diagonal value of 0.831 that became greater than its correlations with other constructs including GST Compliance (0.287) and Trust in Government (0.171). Likewise, Trust in Government showed a squared root of AVE of 0.895, which was higher than its correlations with constructs like Tax Complexity (-0.307), GST Compliance (0.338) and Audit Probability (0.279).

This consistent pattern across all the latent variables is taken to suggest that the constructs explain more variance of their own items compared to other constructs, thereby confirming the distinctiveness of the constructs. Taken together, the results from the Fornell-Larcker criterion are strong evidence of discriminant validity in the measurement model.

Table 4.35: Fornell-Larcker's criteria

Construct	AP	DP	FC	GSTC	TA	TC	TCC	TG	TM	TPF	TR
AP	**0.884**										
DP	0.086	**0.860**									
FC	-0.204	-0.053	**0.873**								
GSTC	0.473	0.149	-0.463	**0.752**							
TA	0.264	0.080	-0.262	0.411	**0.774**						
TC	-0.054	0.101	0.153	-0.272	-0.236	**0.855**					
TCC	-0.105	0.105	0.154	-0.235	-0.156	0.373	**0.864**				
TG	0.279	-0.140	-0.145	0.338	0.207	-0.307	-0.241	**0.895**			
TM	0.089	0.095	-0.102	0.287	0.209	-0.084	-0.062	0.171	**0.831**		
TPF	0.434	0.171	-0.165	0.461	0.233	-0.032	-0.056	0.108	0.045	**0.759**	
TR	0.085	-0.037	0.048	-0.050	-0.003	0.175	0.090	-0.052	-0.082	0.110	**0.884**

Source: Authors Compilation

3. Heterotrait-Monotrait Ratio (HTMT)

The third method that was used to assess the discriminant validity was the Heterotrait-Monotrait ratio of correlations (HTMT), which is widely considered as a more stringent and reliable criterion in variance-based SEM, especially in PLS-SEM (Henseler et al., 2015). Unlike cross-loadings and the Fornell - Larcker criterion, which are based on factor loadings and AVE comparison, HTMT directly compares the ratio of between-construct correlations to within-construct correlations. Values below 0.90 are generally seen as acceptable discriminant validity of distinct constructs while a more conservative cutoff of 0.85 is the recommended one in contexts that require rigorous testing (Hair et al., 2021).

As reported in Table 4.36, all HTMT values in this study were well below the 0.90 benchmark and therefore provided strong support for discriminant validity. For example, the HTMT ratio between GST Compliance and Tax Penalties and Fines was found to be 0.553 and the HTMT ratio between GST Compliance and Financial Constraint was found to be 0.533. Both values are well within the range of acceptability, indicating that these constructs are empirically distinct. The maximum HTMT observed throughout the model was 0.553 with most of the inter-construct ratios falling within a range of 0.05 to 0.54, indicating a relatively low degree of construct overlap.

Furthermore, some pairs showed particularly low HTMT values following good discriminant separation. For example, the ratio between Tax Rates and GST Compliance was just 0.058 and the HTMT values between constructs like Tax Awareness and Digital Payment, or Trust in Government and Tax Morale were also way below the cut-off.

Overall, the results from the HTMT support the earlier results from the cross loading and the Fornell-Larcker tests to provide strong evidence that each of the constructs in the measurement model are conceptually and empirically distinct.

Table 4.36: Heterotrait-Monotrait Ratio (HTMT)

Construct	AP	DP	FC	GSTC	TA	TC	TCC	TG	TM	TPF	TR
AP											
DP	0.101										
FC	0.239	0.056									
GSTC	0.540	0.163	0.533								
TA	0.306	0.092	0.308	0.469							
TC	0.068	0.109	0.175	0.303	0.271						
TCC	0.116	0.115	0.174	0.260	0.180	0.406					
TG	0.319	0.165	0.166	0.385	0.240	0.343	0.266				
TM	0.096	0.111	0.120	0.315	0.235	0.092	0.066	0.182			
TPF	0.536	0.201	0.207	0.553	0.286	0.074	0.076	0.142	0.074		
TR	0.101	0.055	0.065	0.058	0.063	0.196	0.101	0.061	0.095	0.141	

Source: Authors Compilation

4.3.4 Structural model assessment

Following the confirmation of the measurement model, the next step was to assess the structural model, which describes the hypothesised relationships between latent constructs and the role that they play in the occurrence of GST compliance. Structural model assessment allows researchers to acquire the theoretical framework and scrutinise if the proposed relationships with the theory are confirmed by the observed data (Hair et al., 2019; Kline, 2023). In this study, the structural model has been used to explore the structural influence on GST compliance behaviour among registered businesses in Goa due to aspects of economic and non-economic factors.

The evaluation was performed based on a number of key criteria.

First of all, the problem of multicollinearity was analyzed using Variance Inflation Factor (VIF) to check the independence of predictor variables. Second, the explanatory power of the model was evaluated by the coefficient of determination (R^2), which was supported by the adjusted R^2 values. Third, the effect size (f^2) was calculated in order to understand the relative contribution of each construct in the model. Predictive relevance was then tested using Stone-Geisser's Q^2 statistic and predictive power was assessed using the PLS Q^2 Predict which compares the predictive accuracy of the PLS-SEM model with linear regression benchmarks. Model fit was further verified by using Standardised Root Mean Square Residual (SRMR).

After the direct relationships were tested, mediation analysis was carried out to examine the indirect effect of constructs like tax morale, trust in government, tax complexity and tax compliance cost on GST compliance behaviour. Finally, advanced post-hoc analyses were conducted for enriching the insights. Importance-Performance Map Analysis (IPMA) was used to identify those constructs which are both influential and practical in terms of compliance importance and Necessary Condition Analysis (NCA) was used to identify the conditions which are critical but not alone sufficient for ensuring GST compliance. Together, these analyses have some theoretical validation and some practical implications for understanding compliance behaviour.

4.3.4.1 Multicollinearity Test (VIF)

Before continuing with the evaluation of the structural model it was necessary to test for the existence of multicollinearity between the predictor constructs in order to ensure that the estimates of path coefficients were not biased by redundant information. Values for Variance Inflation Factor (VIF) were tested for all constructs. As per Hair et al. (2021), below 3.3 VIF value, it is a conservative criterion in the case of PLS-SEM, implying that there is no major concern regarding multicollinearity. In traditional regression analysis, higher cut-off points such as 5.0 or even 10.0 have sometimes been suggested (Kline, 2015; Diamantopoulos and Siguaw, 2006) but in the context of variance-based SEM, it is widely recommended

using stricter criteria.

In the present study, the values for VIF ranged between 1.066 (Tax Rates) and 1.377 (Audit Probability) which is considerably less than the recommended conservative value of 3.3. These results show clearly that the constructs in the model are free from the multicollinearity problems. The low VIF values indicate that each of the constructs provides unique information to the model with little overlap and redundancy with other predictors. This result increases the reliability of the path estimates of the structures because it verifies that the associations between economic and non-economic factors and GST compliance are not artificially inflated because of collinearity.

Therefore, the outcomes of the multicollinearity analysis confirm the appropriateness of the dataset for further testing of the structure, to ensure that subsequent analyses of path coefficients, effect sizes and predictive relevance are based on stable and unbiased estimates.

Table 4.37: Multicollinearity Test

Constructs	VIF
Tax Morale	1.084
Trust in Government	1.273
Tax Complexity	1.312
Digital Payment	1.098
Tax Awareness	1.244
Financial Constraint	1.126
Tax Penalties and Fines	1.298
Audit Probability	1.377
Tax Rates	1.066
Tax Compliance Cost	1.207

Source: Authors Compilation

4.3.4.2 Hypothesis testing (Direct hypothesis testing)

The structural model analysis yielded strong empirical evidence in support of most of the hypothesised relationships with the majority found to be statistically significant at either the 1% or 5% level. Furthermore, the confidence intervals (CI) for all significant paths did not include zero,

which means the robustness of the estimates was confirmed, and the proposed conceptual framework of GST compliance was verified. As presented in Table 4.38 and illustrated in Figure 4.19, the results are a reflection of the combined influence of both economic and non-economic factors on compliance behaviour.

Among the non-economic factors, Tax Morale (H2a) showed a significant positive result on compliance of GST ($\beta = 0.158$, $t = 4.720$, $p = 0.000$, CI [0.105, 0.216]), which indicates that ethical responsibility and intrinsic motivation play an important role in driving compliance. Similarly, Trust in Government (H2b) showed a positive association ($\beta = 0.121$, $t = 3.462$, $p = 0.000$, CI [0.065, 0.179]) which gives further evidence of the relationship between confidence in institutions and willingness of taxpayers to pay voluntarily.

Tax Complexity (H2c) showed that there was a significant negative relationship ($\beta = -0.110$, $t = 3.616$, $p = 0.000$, CI [-0.160, -0.059]), which confirmed the hypothesis that when the GST system is perceived to be too complex, taxpayers tend not to comply. In terms of technological adaptation, Digital Payment (H2d) was positively related to compliance ($\beta = 0.081$, $t = 3.182$, $p = 0.001$, CI [0.040, 0.123]) and underscores the idea that digitalisation helps promote transparency and record keeping. Likewise, Tax Awareness (H2e) had a significant positive effect on willingness to pay ($\beta = 0.123$, $t = 3.340$, $p = 0.000$, CI [0.064, 0.185]), and so we can conclude that well-informed taxpayers show a higher level of willingness to pay.

The economic factors acted in line with the hypothesised relationships. Financial Constraint (H2f) was the most significant negative predictor ($\beta = -0.280$, $t = 8.653$, $p = 0.000$, CI [-0.334, -0.227]), which suggests that financial resources prevent businesses from meeting their tax obligations. In contrast, constructs that emphasized deterrence had a significant promotion effect on compliance. Tax Penalties and Fines (H2g) had a strong positive effect ($\beta = 0.259$, $t = 6.204$, $p = 0.000$, CI [0.192, 0.331]), and Audit Probability (H2h) also had a significant effect on compliance ($\beta = 0.206$, $t = 5.098$, $p = 0.000$, CI [0.141, 0.273]).

Interestingly, Tax Rates (H2i) did not show a significant effect ($\beta = -$

0.035, t = 1.089, p = 0.138, CI [-0.075, 0.040]), implying that the difference in tax rates (GST) is not decisive in influencing the compliance behaviour in the Goan context. On the other hand, Tax Compliance Cost (H2j) had a small but significant negative impact (β = -0.062, t = 2.208, p = 0.014, CI [-0.108, -0.015]) underlining the fact that the administrative and financial burden of fulfilling compliance discourages businesses from fully complying.

In addition to the main predictors of compliance with GST, a number of inter-construct relationships were also confirmed. Tax Awareness reduced Tax Complexity (H2k: β = -0.246, t = 6.509, p = 0.000, CI [-0.305, -0.179]), implying that awareness assists taxpayers in overcoming the perceived barriers. On the contrary, Digital Payment brought about an increase in perceived Tax Complexity (H2l: β = 0.121, t = 2.919, p = 0.002, CI [0.049, 0.186]), which indicates the transitional issues that businesses encounter in adapting to the new digital systems. Furthermore, Tax Complexity was positively related to Tax Compliance Cost (H2m: β = 0.373, t = 9.993, p = 0.000, CI [0.310, 0.433]) and negatively related to Trust in Government (H2n: β = -0.307, t = 8.083, p = 0.000, CI [-0.367, -0.241]), so Tax Complexity is an economic and institutional burden. Finally, the Trust in Government contributed to improved Tax Morale (H2o: β = 0.171, t = 4.319, p = 0.000, CI [0.102, 0.232]) supporting that reinforcement of intrinsic motivation among ethics is strengthen by the confidence in state institutions.

In summary, the structural model (Figure 4.19) affirms that the compliance behaviour of GST is determined by a complex interaction of factors that are of economic and non-economic significance. Out of fifteen direct hypotheses, fourteen were supported and only H2i (Tax rates) was found to be non-significant. These findings taken together provide empirical evidence for the proposed framework of GST compliance behaviour among businesses in Goa.

Table 4.38: Hypothesis testing results

Hypothesis	Direct Path	B	SD	T Value	P Value	Confidence Interval 2.50%-97.50%		Significance?
H2a	TM-> GSTC	0.158	0.034	4.720	0.000	0.105	0.216	**Yes**
H2b	TG-> GSTC	0.121	0.035	3.462	0.000	0.065	0.179	**Yes**
H2c	TC-> GSTC	-0.110	0.030	3.616	0.000	-0.160	-0.059	**Yes**
H2d	DP-> GSTC	0.081	0.025	3.182	0.001	0.040	0.123	**Yes**
H2e	TA-> GSTC	0.123	0.037	3.340	0.000	0.064	0.185	**Yes**
H2f	FC-> GSTC	-0.280	0.032	8.653	0.000	-0.334	-0.227	**Yes**
H2g	TPF-> GSTC	0.259	0.042	6.204	0.000	0.192	0.331	**Yes**
H2h	AP-> GSTC	0.206	0.041	5.098	0.000	0.141	0.273	**Yes**
H2i	TR-> GSTC	-0.035	0.032	1.089	0.138	-0.075	0.040	No
H2j	TCC-> GSTC	-0.062	0.028	2.208	0.014	-0.108	-0.015	**Yes**
H2k	TA->TC	-0.246	0.038	6.509	0.000	-0.305	-0.179	**Yes**
H2l	DP-> TC	0.121	0.041	2.919	0.002	0.049	0.186	**Yes**
H2m	TC-> TCC	0.373	0.037	9.993	0.000	0.310	0.433	**Yes**
H2n	TC-> TG	-0.307	0.038	8.083	0.000	-0.367	-0.241	**Yes**
H2o	TG-> TM	0.171	0.040	4.319	0.000	0.102	0.232	**Yes**

Source: Authors Compilation

4.3.4.3 The Coefficient of Determination (R^2)

The model explanatory power was measured with the coefficient of determination (R^2) and its adjusted values for all the endogenous constructs. The results, summarised in Table 4.39 and illustrated in Figure 4.19, draw attention to various levels of explanatory strength between the dependent and mediating constructs.

For the main dependent construct, GST Compliance (GSTC) the R^2 value is 0.542 (adjusted $R^2 = 0.534$). According to the guidelines suggested by Hair et al. (2021), R^2 values of 0.75, 0.50 and 0.25 can be explained as substantial, moderate, and weak, respectively. On the basis of these benchmarks the value of 0.542 indicates a moderate explanatory power, which means that the predictors can explain more than half the variance in GST compliance behaviour among businesses in Goa (Chin, 1998) when taken together. This suggests that the included economic and non-economic drivers, such as tax morale, trust in government, digital payment adoption, awareness, financial constraints, penalties and audit probability provide a meaningful explanation of why businesses comply (or fail to comply) with GST obligations.

In comparison, the mediating constructs show somewhat week explanatory values. Tax Compliance Cost (TCC) had an R^2 of 0.139

(adjusted = 0.138) which is in the weak range. Trust in Government (TG) was an explained variable of 9.5% (R^2 = 0.095, adjusted = 0.093), Tax Complexity (TC) had an explained variable of 7.0% (R^2 = 0.070, adjusted = 0.067). The least explanatory power was found for Tax Morale (TM) with 2.9% (R^2 = 0.029, adjusted = 0.028).

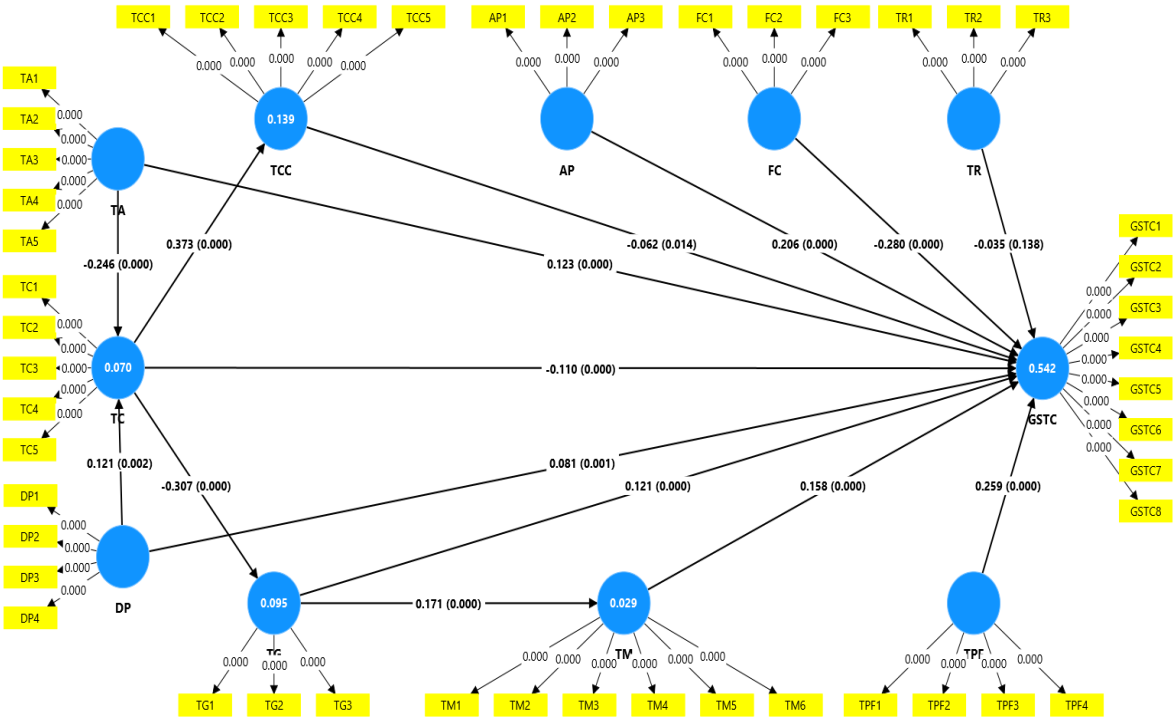
While these values for mediators appear to be small, these results are far from uncommon in mediation analysis and are expected theoretically. As Hair at al. (2021) note, mediators are often indirect psychological, perceptual or institutional mechanisms that explain how and why independent variables influence the main dependent construct. Their importance is not maximisation of variance explained, but to provide information about the pathways of effects transmission. Thus, relatively poor R^2 values of mediators do not discredit and rather underscore the complementary role of mediators in unpacking indirect influences on compliance behaviour.

Overall, the results show that the model has a reasonable explanatory power, GST compliance is explained on a moderate and practically meaningful level whereas the mediators contribute to the comprehension of the more complex, indirect dynamics of the taxpayer behaviour.

Table 4.39: The Coefficient of Determination (R^2) and Adjusted R^2 Values of Endogenous Constructs

Construct	R-square	R-square adjusted	Interpretation of R-square
Main dependent Variable			
GSTC	0.542	0.534	Moderate
Mediating variables			
TCC	0.139	0.138	Weak
TG	0.095	0.093	Weak
TC	0.070	0.067	Weak
TM	0.029	0.028	Weak

Source: Authors Compilation



Source: Author's compilation

Figure No 4.19: Structural Model of GST Compliance

4.3.4.4 f^2 (Effect Size Analysis)

To complement the explanatory power of R^2, the effect size (f^2) was calculated in order to measure the individual contribution of each predictor to the dependent construct, GST compliance. While R^2 gives us an overall measure of variance explained, the f^2 report gives the unique effects of each independent variable in or out of the model (Cohen, 1988; Hair et al., 2021). As a rule of thumb, f^2 values of 0.02, 0.15 and 0.35 are interpreted as small, medium and large effects, respectively.

The result in Table 4.40 shows that the explanatory strength of predictors on the compliance of GST varied significantly across constructs. Amongst the economic factors, Financial Constraint (f^2 = 0.152) and Tax Penalties and Fines (f^2 = 0.113) were the most significant predictors and both were within the moderate range. This underlines the fact that financial problems and deterrence mechanisms (in the form of penalties) play a significant role in shaping compliance behaviour. Audit Probability (f2=0.068) also showed a visible impact, although categorised as weak, implying that the perceived chances of being audited does have a role, but to a smaller extent than financial constraints and penalties.

In contrast, most of the other constructs had weak effects. These are Tax Morale ($f^2 = 0.050$), Trust in Government ($f^2 = 0.025$), Tax Awareness ($f^2 = 0.026$) and Tax Complexity ($f^2 = 0.020$). Their contributions while statistically significant in the structural paths, add individually marginal explanatory value. This suggests that while these factors are important in the process of influencing compliance, their effect sizes suggest that they work more in combination with other predictors than in isolation.

At the lower end, Digital Payment ($f^2 = 0.013$), Tax Compliance Cost ($f^2 = 0.007$) and Tax Rates ($f^2 = 0.002$) all showed very weak effects. This suggests that while digitalisation, compliance costs and tax rate differences do affect behaviour, their individual explanatory power is very small when contrasted with more powerful factors such as financial constraints or penalties. These results consist with the R^2 findings, which demonstrated that these constructs did not contribute significantly to the variance explained.

Overall, the f^2 analysis confirms the fact that the most meaningful drivers of GST compliance behaviour are on the deterrence-related (penalties and audits) and financial capacity (constraints). Non-economic predictors like morale, awareness and trust are also important, but the relative explanatory contribution of such variables is smaller. Constructs such as digital payments, tax rates and compliance costs, although statistically significant, are only marginally significant to variance explained. This underlines the fact that the nature of GST compliance in Goa is more influenced by financial and enforcement-related pressures as compared to softer behavioural influences.

Table 4.40: f^2 (Effect Size Analysis)

Constructs	**Effect Size (f^2)**	**Effect Size Interpretation**
Tax Morale	0.050	Weak effect
Trust in Government	0.025	Weak effect
Tax Complexity	0.020	Weak effect
Digital Payment	0.013	Very weak effect
Tax Awareness	0.026	Weak effect

Financial Constraint	0.152	Moderate effect
Tax Penalties and Fines	0.113	Moderate effect
Audit Probability	0.068	Weak effect
Tax Rates	0.002	Very weak effect
Tax Compliance Cost	0.007	Very weak effect

Source: Authors Compilation

4.3.4.5 Predictive Relevance and Predictive power (Q^2)

1. Predictive Relevance (Q^2)

Predictive relevance in PLS-SEM is measured by the Stone-Geisser's Q^2 statistic which is obtained by the blindfolding procedure. Unlike R^2 that measures the explanatory power, Q^2 assesses whether the model has enough predictive accuracy for observed indicators (Stone, 1974; Geisser, 1975; Hair et al., 2021). A Q^2 value above zero means that the exogenous constructs are predictive of the endogenous construct. According to the guideline, the values of 0.02, 0.15, and 0.35 are small, medium, and large predictive relevance, respectively (Hair et al., 2019; 2021).

As shown in Table 4.41 the Q^2 value for the variable GST Compliance (GSTC) was 0.451 which is well above the Q^2 value threshold of 0.35, indicating a high predictive relevance. This finding suggests that the included model predictors - which cover both economic (e.g. financial constraint, penalties, compliance costs) and non-economic (e.g., trust, awareness, morale) factors together contribute to provide a good prediction of GST compliance behaviour. In more practical terms, the high Q^2 is a confirmation that the model is not just statistically significant but also holds meaningful power in terms of predictive ability for actual compliance outcomes in real life.

Table 4.41: Predictive Relevance (Q^2)

Construct	Q^2
GSTC	0.451

Source: Authors Compilation

2. Predictive Power (PLS Q^2 Predict)

As a complement to the explanatory power of the model, predictive power was evaluated using the PLS-Predict algorithm. This approach is

valuable especially because it investigates how well the model can predict new the data points outside of the current sample, providing an indication of the out-of-sample utility of the model (Shmueli et al., 2016; Hair et al., 2021). Unlike R^2 or Q^2 which mostly account for the variance explained, PLS-Predict specifically tests the accuracy of the predictions and hence is more pertinent in a practical/policy related context.

The procedure is based on the repeated cross validation, where the data are divided into training and holdout samples. The model is first estimated using the training data set and then tested on the holdout data set to measure the prediction error. For the purposes of interpretation, the type of prediction error distribution needs to be checked. If errors are symmetrically distributed then the Root Mean Square Error (RMSE) is compared with the benchmark linear regression model (LM). If they are not symmetric, then the Mean Absolute Error (MAE) is used instead (Shmueli et al., 2016). Depending on this comparison, four conclusions can be made:

1. The model has no predictive power if PLS-SEM errors are consistently higher than LM.
2. It demonstrates low predictive power if PLS-SEM errors exceed LM for a minority of items.
3. It shows moderate predictive power if PLS-SEM errors are lower than LM for the majority of items.
4. It achieves high predictive power if PLS-SEM errors are lower for all indicators.

For the current study, the PLS-Predict analysis was applied with ten folds and 10 repetitions as is recommended in methodological guidelines. Examination of error distribution confirmed that the errors of the predictions were symmetrical, hence, the RMSE values were compared with the LM benchmark.

As shown in Table 4.42, the values of Q^2 for the construct of GST Compliance were between 0.171 and 0.322 indicating meaningful predictive ability. In most cases (GSTC1 through GSTC6), the PLS-SEM model showed lower values of RMSE in comparison to the LM model. This is shown in negative PLS-LM differences like -0.012 for GSTC2 and -0.008 for GSTC5 indicating clearly that PLS model is superior to the

simple linear model in terms of predicting these indicators.

Two of the indicators (GSTC7 and GSTC8) had slightly positive differences (0.006 and 0.009, respectively), indicating that the LM model had a little greater fit for those items. However, since these only constitute a small percentage of the indicators, the assessment overall places the model in the category of moderate predictive power.

This outcome shows that the model is not only successful in explaining variance in the case of the compliance with GST ($R^2 = 0.542$ for GSTC) but it also has an adequate predictive ability for most indicators. In practical terms, the results mean that the model can be trusted to predict compliance behaviours in similar settings which means that it is both theoretically sound and relevant to real-world applications.

Table 4.42: Predictive Power (PLS Q^2 Predict)

Items	Q^2 predict	PLS-SEM RMSE	LM RMSE	PLS-LM RMSE
GSTC1	0.277	0.798	0.805	-0.007
GSTC2	0.322	0.772	0.784	-0.012
GSTC3	0.272	0.818	0.824	-0.006
GSTC4	0.268	0.794	0.800	-0.006
GSTC5	0.292	0.725	0.733	-0.008
GSTC6	0.171	1.054	1.066	-0.012
GSTC7	0.200	1.057	1.051	0.006
GSTC8	0.225	1.086	1.077	0.009

Source: Authors Compilation

4.3.4.6 Model Fit (SRMR)

The goodness of fit of the structural model was assessed by using the Standardized Root Mean Square Residual (SRMR) that is a global indicator of fit in PLS-SEM. SRMR measures the difference between the observed correlations and the correlations that would have been expected in the data if the model were correct, thus giving a global measure of the goodness of fit of the model to the data (Henseler et al., 2014; Hair et al., 2021).

Threshold guidelines indicate that SRMR values of 0.08 or lower are an indication of a good fit and values closer to 0.05 indicate very good fit (Hu & Bentler, 1999). In this study, the saturated model gave an SRMR of 0.048 and the estimated model gave a slightly larger value of 0.069 (see

Table 4.43). Both values are within the recommended cut-off and this confirms that the structural model achieves an acceptable fit to the empirical data.

It is important to note that the evaluation of the model fit via SRMR complements the results of the path coefficients and R^2 values presented in the previous paragraphs. Whereas, the path coefficients and R^2 values determine the strength and the explanatory power of the relationships between constructs, SRMR ensures that the overall structure of the model is consistent with the data collected. Together these assessments help to strengthen the robustness and credibility of the proposed conceptual framework of GST compliance.

Therefore, the results from SRMR confirm the structural model to be a good overall fit which is empirical validity and theoretical soundness in explaining the GST compliance behaviour amongst businesses in Goa.

Table 4.43: SRMR results

Saturated model	Estimated model
0.048	0.069

Source: Authors Compilation

4.3.5 Mediation Analysis

Mediation analysis was performed to determine whether the impact of exogenous constructs on the levels of compliance with GST was mediated through intermediary variables that would shed light on the mechanism of influence behind the model. In accordance with methodological recommendations (Hair et al., 2022), this study resorted to the non-parametric method of bootstrapping with 10,000 resamples based on SmartPLS 4. This approach allows to estimate confidence intervals strongly and keeps the restrictive assumption of normality. The classification of the effects of mediation is based on Zhao et al. (2010), which has the following possibilities: partial mediation (complementary or competitive), indirect only mediation (full mediation), direct only non-mediation, no effect non-mediation. By adding several mediators into the structural model, the analysis not only determines the importance of single indirect pathways, but also their total impact by estimating total indirect effects. This procedure ensures a comprehensive evaluation of the role of

constructs like tax awareness, digital payment, tax complexity, trust in government and tax morale in channeling effect of independent variables towards GST compliance behaviour.

1. Direct effect (Total Effect) without including mediating variable

The first stage of the mediation analysis measured the direct effect of selected independent variables on compliance with GST, before the mediating constructs were included in the analysis. As shown in Table 4.44, all four hypothesised paths were statistically significant at either the 1% or 5% level with the confidence intervals (CI) not including zero, hence confirming the robustness of the estimates.

Tax Awareness (β = 0.166, t = 4.558, p = 0.000, CI [0.108, 0.228]) had a positive impact on GST compliance which is strong and therefore informed taxpayers are more likely to fulfilling compliance requirements Similarly, Digital Payment (β = 0.059, t = 2.238, p = 0.013, CI [0.017, 0.104]) had a positive and significant influence, which highlights that digital adoption contributes to transparency and helps in the timely compliance. Trust in Government (β = 0.148, t = 4.297, p = 0.000, CI [0.092, 0.205]) also had a significant positive relationship with voluntary compliance, which suggests that trust in institutional systems generates voluntary compliance. By contrast, Tax Complexity (β = -0.178, t = 6.246, p = 0.000, CI [-0.226, -0.132]) had a significant negative effect supporting perceived administrative complexity as a reason for non-compliance behaviour. Collectively, these findings can be used as baseline evidence of direct effects against which to compare the next analysis that includes mediators.

Table 4.44: Direct effect without including mediating variable

					Confidence Interval		
Path	**β**	**SD**	**t-value**	**p-value**	2.50%	97.50%	**Significance?**
TA -> GSTC	0.166	0.037	4.558	0.000	0.108	0.228	**Yes**
DP-> GSTC	0.059	0.027	2.238	0.013	0.017	0.104	**Yes**
TC-> GSTC	-0.178	0.029	6.246	0.000	-0.226	-0.132	**Yes**

TG-> GSTC	0.148	0.034	4.297	0.000	0.092	0.205	**Yes**

Source: Author's Compilation

2. Direct effect (Path Coefficients) including mediating variable

After incorporating the mediating constructs into the structural model, notable adjustments were observed in the strength of the direct paths to GST compliance. As shown in Table 4.45, all four direct relationships remained statistically significant at either the 1% or 5% level, and confidence intervals (CI) excluding zero, confirming the robustness of the results.

The effect of Tax Awareness on GST compliance decreased from $\beta = 0.166$ (without mediators) to $\beta = 0.123$ ($t = 3.340$, $p = 0.000$, CI [0.064, 0.185]), yet remained significant. This reduction highlights that part of its influence is transmitted indirectly through mediators such as Tax Complexity. By contrast, the direct effect of Digital Payment on GST compliance strengthened after mediation, rising from $\beta = 0.059$ to $\beta = 0.081$ ($t = 3.182$, $p = 0.001$, CI [0.040, 0.123]), indicating that while mediation is present, its direct contribution to compliance also becomes more pronounced.

For Tax Complexity, the direct negative effect reduced from $\beta = -0.178$ to $\beta = -0.110$ ($t = 3.616$, $p = 0.000$, CI [–0.160, –0.059]), suggesting that a portion of its adverse influence is transmitted through mechanisms like compliance costs and trust in government. Similarly, the positive effect of Trust in Government on GST compliance slightly declined from $\beta = 0.148$ to $\beta = 0.121$ ($t = 3.462$, $p = 0.000$, CI [0.065, 0.179]), pointing to the role of Tax Morale in partially mediating this relationship.

Overall, these shifts demonstrate the importance of mediation analysis: by including mediators, the study uncovers the pathways through which independent variables exert their influence, offering a more nuanced understanding of GST compliance behaviour.

Table 4.45: Direct effect including mediating variable

Path	B	SD	t-value	p-value	Confidence Interval		Significance?
					2.50%	97.50%	
TA -> GSTC	0.123	0.037	3.340	0.000	0.064	0.185	**Yes**
DP-> GSTC	0.081	0.025	3.182	0.001	0.040	0.123	**Yes**
TC-> GSTC	-0.110	0.030	3.616	0.000	-0.160	-0.059	**Yes**
TG-> GSTC	0.121	0.035	3.462	0.000	0.065	0.179	**Yes**

Source: Author's Compilation

3. Total Indirect effects including all the mediating variables

Table 4.46 shows the total indirect effects, which represent the combination of the mediation pathways from each of the predictors to the outcome of GST compliance. All four indirect effects were statistically significant at either 1% or 5% level, with p-value varying from 0.000 to 0.005, and the confidence intervals (CI) of each excluding zero, hence confirming the robustness of the results.

For Tax Awareness, the total indirect effect was positive and significant (β = 0.044, t = 4.398, p= 0.000, CI [0.029, 0.062]), which indicates that part of its contribution to compliance is transmitted through its ability to reduce perceived tax complexity. Digital Payment, on the other hand, showed a total indirect effect of -0.022 (t = 2.602, p = 0.005, CI [-0.037, -0.009]), which is also negative. This would indicate that while its direct impact on compliance is positive, some of this is offset by indirect challenges that are created by increased complexity in digital systems.

The findings also show the more general effect of Tax Complexity, which demonstrated a significant negative overall indirect effect (β = -0.069, t = 4.327, p = 0.000, CI [-0.096, -0.044]). This validates the fact its negative impact on compliance is further amplified when it is communicated through more costly compliance costs and lower trust in government. Finally, Trust in Government had a positive total indirect effect (β = 0.027, t = 3.192, p = 0.001, CI [0.015, 0.043]), indicating that some of the total indirect effect of Trust in Government on compliance is mediated through improvements in tax morale.

Taken together, these findings show that mediating constructs such as Tax Complexity, Compliance Cost, Trust in Government and Tax Morale are important transmission mechanisms. They not only influence the strength of direct relationships but also explain the influence of both economic and non-economic drivers on GST compliance behaviour.

Table 4.46: Total Indirect effects including all the mediating variables

					Confidence Interval		
Path	**β**	**SD**	**t-value**	**p-value**	2.50%	97.50%	**Significance?**
TA -> GSTC	0.044	0.010	4.398	0.000	0.029	0.062	**Yes**
DP-> GSTC	-0.022	0.008	2.602	0.005	-0.037	-0.009	**Yes**
TC-> GSTC	-0.069	0.016	4.327	0.000	-0.096	-0.044	**Yes**
TG-> GSTC	0.027	0.008	3.192	0.001	0.015	0.043	**Yes**

Source: Author's Compilation

4. Mediation Hypothesis results (Specific Indirect Effects)

The results of the mediation analysis showed that all 5 hypothesised indirect pathways were statistically significant at either the 1% or 5% level. Importantly, the confidence intervals (CI) around each path did not contain zero as further evidence of the robustness of indirect effects (Table 4.47).

The first pathway showed that Tax Awareness had a positive and significant indirect effect on the level of compliance of GST through Tax Complexity (H3a: $\beta = 0.027$, $t = 3.072$, $p = 0.001$, CI [0.014, 0.043]). This result suggests that part of the overall effect of Tax Awareness on GST compliance is transmitted through its effect on complexity.

In the second pathway the effect of Digital Payment on GST compliance via the mediation of Tax Complexity was shown to be significantly and negatively, i.e. H3b: $\beta = -0.013$, $t = 2.219$, $p = 0.013$, CI [-0.026, -0.005]). While the direct effect of Digital Payment on Compliance is positive, the indirect effect, through the complexity, was observed to be adverse.

The third pathway showed that Tax Complexity had an indirect effect on the GST compliance through Tax Compliance Cost (H3c: $\beta = -0.023$, $t = 2.141$, $p = 0.016$, CI [-0.042, -0.006]). This highlights the fact that some of

the negative impact of complexity on compliance is transferred through its contribution to an increase in compliance-related costs.

The fourth pathway further reinforced the institutional aspect of mediation. Tax Complexity had a strong negative indirect effect on the GST compliance via Trust in Government (H3d: $\beta = -0.037$, $t = 3.081$, $p = 0.001$, CI [-0.059, -0.019]). This demonstrates that complexity causes a lack of trust, which leads to a lack of compliance.

Finally, the fifth pathway indicated that the Trust in Government was indirectly affecting the compliance with GST through Tax Morale (H3e: $\beta = 0.027$, $t = 3.192$, $p = 0.001$, CI [0.015, 0.043]). This confirms that part of the positive contribution of institutional trust is channelled through ethical responsibility of taxpayers.

Taken together, these findings provide support for all five of the mediation hypotheses (H3a-H3e). The indirect effects channeled through Tax Complexity, Tax Compliance Cost, Trust in Government and Tax Morale were statistically significant confirming that the impact of economic and non-economic factors in the compliance of GST is not only direct but also through these mediators.

Table 4.47: Mediation Hypothesis results

					Confidence Interval		
Hypothesis Path	**β**	**SD**	**t-value**	**p-value**	2.50%	97.50%	**Sig?**
H3a: TA -> TC->GSTC	0.027	0.009	3.072	0.001	0.014	0.043	**Yes**
H3b: DP->TC->GSTC	-0.013	0.006	2.219	0.013	-0.026	-0.005	**Yes**
H3c: TC->TCC->GSTC	-0.023	0.011	2.141	0.016	-0.042	-0.006	**Yes**
H3d: TC->TG->GSTC	-0.037	0.012	3.081	0.001	-0.059	-0.019	**Yes**
H3e: TG->TM->GSTC	0.027	0.008	3.192	0.001	0.015	0.043	**Yes**

Source: Author's Compilation

5. Type of the mediation effect

The mediation analysis showed that all five hypothesised indirect pathways were statistically significant at either 1% or 5% level (Table 4.48). This supports the strength of the indirect effects and gives clear evidence of mediation in the model. Importantly, all five pathways (H3a-

H3e) were identified as partial mediations, in the sense that whilst the mediators are significantly transmitting part of the effect, the direct paths were also statistically significant.

In the first case, Tax Awareness (H3a) provided partial mediation with the overall effect of Tax Awareness on the basic GST compliance behavior being shared between a direct effect (β = 0.123) and an indirect effect of Tax Complexity (β = 0.027) while the overall effect was still significant (β = 0.166).

The second pathway (H3b) showed that Digital Payment had a significant direct impact on GST compliance (β = 0.081) as well as a relatively small but significant negative indirect impact through Tax Complexity (β = -0.013). This is an indicator of partial mediation where the overall positive effect is partially cancelled out by challenges associated with complexity.

Tax Complexity was a contributing factor in two partial mediation pathways. First, its negative direct effect on compliance (β = - 0.110) was accompanied by an indirect effect of Tax Compliance Cost (H3c: β = - 0.023). Second, it again mediated its influence through Trust in Government (H3d: β = - 0.037), again while maintaining a significant direct effect. Both cases verify that complexity passes its negative impact on indirectly, besides its direct role.

Finally, Trust in Government showed some partial mediating effects by way of Tax Morale (H3e). While its direct impact on the compliance of the GST continued to be significant (β = 0.121), another indirect impact (β = 0.027) was spread through the ethical responsibility and intrinsic motivation of taxpayers.

In summary, all mediating constructs in the model i.e., Tax Complexity, Tax Compliance Cost, Trust in Government and Tax Morale work as partial mediators. This means that the independent variables affect compliances towards GST both directly and indirectly with the mediators, which act as complementary channels rather than totally replacing the direct effects (Table 4.48).

Table 4.48: Type of Mediation effect

Hypothesis	Path	Total Effect	Direct Effect	Specific Indirect Effect	Type of Mediation
H3a	TA -> TC->GSTC	0.166**	0.123**	0.027**	Partial Mediation
H3b	DP->TC->GSTC	0.059*	0.081**	-0.013*	Partial Mediation
H3c	TC->TCC->GSTC	-0.178**	-0.110**	-0.023*	Partial Mediation
H3d	TC->TG->GSTC	-0.178**	-0.110**	-0.037**	Partial Mediation
H3e	TG->TM->GSTC	0.148**	0.121**	0.027**	Partial Mediation

Note: * and ** denotes significance at 5% and 1% levels, respectively
Source: Author's Compilation

4.3.6 Importance-Performance Map Analysis (IPMA)

The Importance-Performance Map Analysis (IPMA) was undertaken to complement the path coefficient analysis and extend the evaluation of the predictors beyond their statistical significance to their performance scores. According to Hair et al. (2022) in IPMA, not only the constructs influencing the dependent variable the most (importance) are identified but also how well the constructs are performing (performance). This dual focus is useful in highlighting priority areas for managerial or policy intervention especially in an applied setting as GST compliance. The results of the IPMA are presented in three stages: importance analysis, performance analysis and the combination of the two by the map.

1. Important Analysis for GST Compliance model

Table 4.49 reports the values of importance (expressed as total effects) for the predictors of the GST compliance. The analysis indicates that Tax Penalties and Fines (0.263) and Tax Awareness (0.180) turned out to be the two most important determinants, stood close to Audit Probability (0.161) and Tax Morale (0.147). These results suggest that both deterrence-

based and motivational constructs exert strong leverage with compliance behaviour. Importantly, Financial Constraint (-0.167) and Tax Complexity (-0.110) have negative importance values which would suggest they have a significant negative impact on compliance, not a positive one.

Meanwhile, Trust in Government (0.093) and Digital Payment (0.045) have somewhat low levels of importance, indicating that although these factors are important, the overall contribution to GST compliance is not significant compared to the other factors of penalties, awareness and morale. Tax Compliance Cost (-0.038) and Tax Rates (-0.022) are of least importance, indicating their relatively small contribution to the form of compliance in this dataset.

Table 4.49: Important Analysis for GST Compliance model

Construct	Importance (Total Effect)
Tax Morale	0.147
Trust in Government	0.093
Tax Complexity	-0.110
Digital Payment	0.045
Tax Awareness	0.180
Financial Constraint	-0.167
Tax Penalties and Fines	0.263
Audit Probability	0.161
Tax Rates	-0.022
Tax Compliance Cost	-0.038

Source: Authors Compilation

2. Performance Important Analysis for GST Compliance model

Table 4.50 shows the performance scores of each of the constructs, which indicates the degree to which the businesses perceive these factors to be performing effectively. The analysis shows that Tax Penalties and Fines (80.402), Tax Morale (79.278) and Tax Awareness (76.949) are the best-performing constructs, indicating that these drivers are already at a strong level in the sample. Digital Payment (74.230) and Audit Probability (72.562) also have relatively good performance scores, reflecting good implementation and acceptance.

On the other hand, Financial Constraint (30.729) is the least effective construct, indicating that businesses are experiencing significant difficulties in managing liquidity and resources for compliance. Similarly, Trust in Government (57.182) and Tax Complexity (55.767) communicate moderate levels of performance, indicating there are still areas for improvement to the institutional trust and simplicity. Tax Compliance Cost (58.884) and Tax Rates (67.419) fall in a middle ground, not doing badly or great compared to other constructs.

Table 4.50: Performance Analysis for GST Compliance model

Construct	Performance
Tax Morale	79.278
Trust in Government	57.182
Tax Complexity	55.767
Digital Payment	74.230
Tax Awareness	76.949
Financial Constraint	30.729
Tax Penalties and Fines	80.402
Audit Probability	72.562
Tax Rates	67.419
Tax Compliance Cost	58.884

Source: Authors Compilation

3. The Important-Performance Map Analysis for GST Compliance model

The combined analysis, shown in table 4.51 and illustrated in Figure 4.20, combines the importance (total effects) and performance values in a two-dimensional way. This map gives a holistic picture of some of the constructs that should be given priority attention.

The upper right quadrant is the quadrant with high importance and high performance, it is Tax Penalties and Fines (importance = 0.263, performance = 80.402), Tax Awareness (0.180, 76.949) and Tax Morale (0.147, 79.278). These are obvious advantages of the system, showing both deterrence and intrinsic motivation to be not only influential, but also well operationalised.

The quadrant of low importance but high performance in the upper left is comprised of Digital Payment (0.045; 74.230) and Audit Probability (0.161; 72.562). While these constructs are performing well, their overall influence on compliance is more moderate which would indicate that they are supportive, but not key drivers.

One quadrant of high importance with low-to-moderate performance areas, i.e., the lower right quadrant, points to areas of potential priority policy action. Notably, Trust in Government (0.093; 57.182) fits this slot: it is important for compliance but also underperforming, indicating a need for strengthening that of institutional credibility.

Finally, the lower-left quadrant, low importance and low performance, is occupied by Financial Constraints (-0.167; 30.729) and Tax Complexity (-0.110; 55.767). These constructs not only have poor performance, they also exert a negative influence to mark them as problematic barriers to compliance. Tax Compliance Cost (-0.038; 58.884) and Tax Rates (-0.022; 67.419) are also in this quadrant and demonstrate minimal importance and average performance.

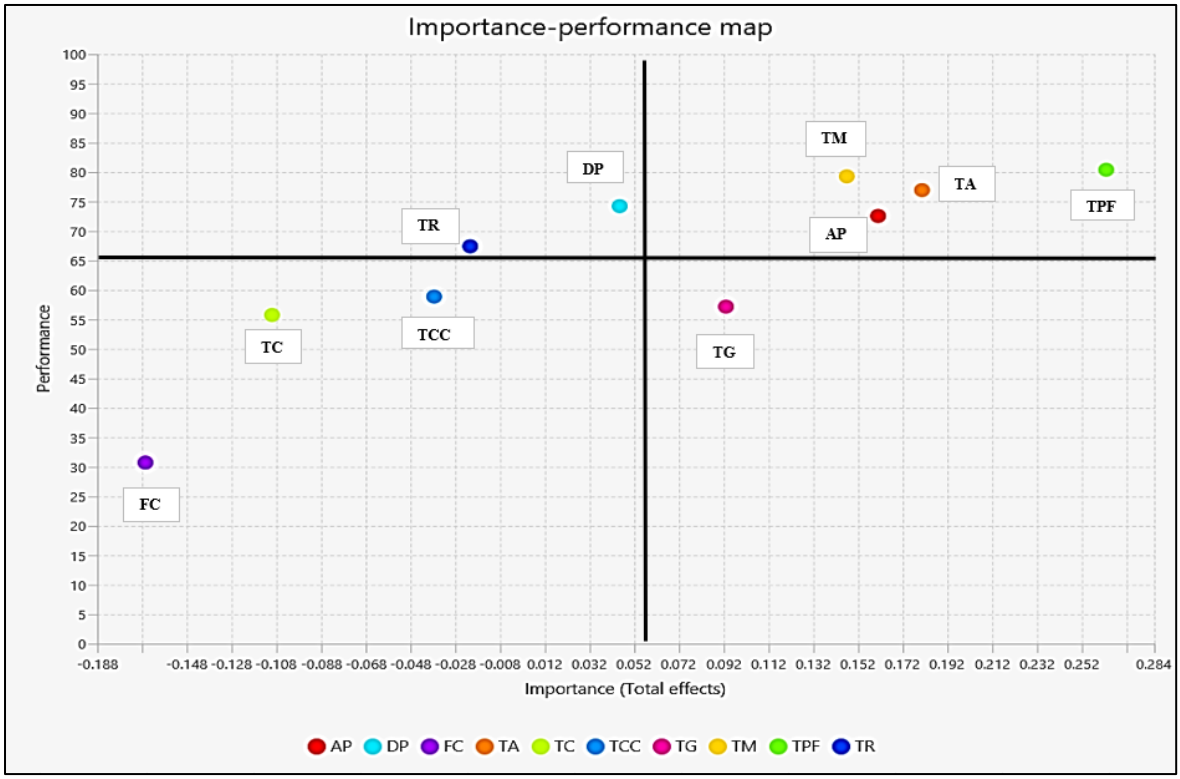
In sum, the results of the IPMA (Figure 4.20) underline that while the measures designed to ensure compliance through deterrence (penalties, audits) and the motivational drivers (awareness, morale) are proving to be successful, there are also still structural problems that need improving significantly, in order to ensure broader compliance success: These structural problems include, inter alia, financial burdens, complexity and moderate institutional trust.

Table 4.51: The Important-Performance Map Analysis for GST Compliance model

Construct	Importance (Total Effect)	Performance
Tax Morale	0.147	79.278
Trust in Government	0.093	57.182
Tax Complexity	-0.110	55.767
Digital Payment	0.045	74.230
Tax Awareness	0.180	76.949

Financial Constraint	-0.167	30.729
Tax Penalties and Fines	0.263	80.402
Audit Probability	0.161	72.562
Tax Rates	-0.022	67.419
Tax Compliance Cost	-0.038	58.884

Source: Authors Compilation



Source: Primary Data

Figure No 4.20: The Importance-Performance Map Analysis for GST Compliance Model

4.3.7 Necessary Condition Analysis

Necessary Condition Analysis (NCA) was performed in order to investigate the existence of certain constructs as necessary conditions for GST compliance, i.e., the minimum levels of the constructs must be met in order to comply with GST correctly, higher compliance results cannot be attained regardless of the presence of other factors. Unlike sufficiency-based techniques such as PLS-SEM that are interested in the magnitude of the variance in the dependent variable explained by predictors, NCA identifies the "must-have" conditions that create bottlenecks for desired

levels of the outcome (Dul, 2016; Hair et al., 2022). NCA was used for the top causes of GST compliance in this study using effect size analysis and bottleneck analysis, which was supported by ceiling line scatterplots for graphical validation.

The effect size results are shown in Table 4.52, in which the values (d) indicate the degree to which each construct restrain compliance of GST, with permutation p-values to test for statistical significance. Following the guidelines suggested by Dul (2016), if the effect size is smaller than 0.1, the effect size is considered as small, whereas 0.1 to 0.3 is considered as a moderate effect size and above 0.3 is considered as a large effect size. The results showed that Tax Penalties and Fines had the strongest necessity effect result with effect size of 0.124 and highly significant p value ($p = 0.000$) and it is placed in the moderate category. This proves that enforcement in the form of penalty acts as a necessary condition in ensuring higher levels of compliance in GST, without reaching some threshold of penalty enforcement, businesses are not able to achieve maximum compliance. Tax Morale also became a necessary condition with an effect size of 0.081 and p-value of 0.000 showing a small but significant effect. Although this is a weaker result than the penalties, it does indicate that taxpayers need to have at least a baseline level of ethical responsibility and intrinsic motivation for compliance to even be possible. Similarly, Tax Awareness had a small but significant impact size of 0.050 ($p = 0.004$) to highlight that informed taxpayers are irreplaceable in the quest for a higher level of compliance. In comparison, Audit Probability ($d = 0.011$, $p = 0.157$), Digital Payment ($d = 0.005$, $p = 0.593$) and Trust in Government ($d = 0.000$, $p = 0.972$) failed to show significant necessity effects. This distinction shows how one important property of NCA is that, whereas these constructs play an important role in sufficiency analysis (PLS-SEM), they are not necessary prerequisites in the necessity framework.

To further validate these findings the bottleneck analysis was used as is shown in table 4.53. This analysis assumes that the minimum level of each predictor needed to achieve higher levels of GST compliance from 0% to 100% can be calculated. At lower levels of compliance (around 40%), Tax Morale and Tax Penalties are already tighter, imposing minimum

scores of 1.134 and 1.347 respectively, although other conditions are non-binding. As compliance requirements increase to 60%, Tax Awareness shows up as a critical bottleneck with a minimum required of 1.531 combined with rising requirements for Tax Morale (1.356) and penalties (1.498). At 80% compliance the need for awareness is strong with a score of 2.376 and correspondingly for morale (1.578) and penalties (1.649). At the highest level of compliance 100%, the bottlenecks are more stringent in every construct: Tax Awareness at least 3.222, Tax Morale at 1.800 and penalties at 1.799, whereas Digital Payment, even though no significant effect size is shown before, now also shows to be a requirement at a minimum of 1.418. Interestingly, Trust in Government invariably stays as a non-binding condition for all levels of compliance, so it reiterates that it is not a necessary condition in this model though it is relevant in sufficiency analysis. These bottlenecks thresholds prove the more that as compliance levels increase, the indispensable requirements increase, Tax morals, awareness, and penalties emerge as critical conditions along with pathway of full compliance.

The ceiling line scatterplots in Figure 4.21 give a visual demonstration of these relationships of necessity. In the case of Tax Penalties and Fines, the ceiling line is quite clear which shows that higher GST compliance values are not achieved below a certain minimum level of penalties. Similarly, the plots on Tax Morale and Tax Awareness show upward boundaries, indicating that the range of scores that can be achieved in terms of compliance exists only after certain base level thresholds on these constructs are satisfied. By contrast, the scatterplots for Audit Probability, Digital Payment and Trust in Government do not have strong ceiling lines, since observations are spread across the plot area with no obvious upper boundary. This is visual evidence of the statistical findings that these variables, while important in models of sufficiency, are not necessary conditions.

In summary, the NCA results offer an important complement to the sufficiency analysis that has been done earlier. Whereas PLS-SEM emphasized the contribution of constructs such as Tax Morale, Penalties, Awareness and Trust to explaining variance in compliance, NCA

illuminates that there are specific conditions that are indispensable prerequisites. In particular, Tax Penalties and Fines, Tax Morale and Tax Awareness appeared as important necessary conditions, with the bottleneck thresholds increasing with increasing compliance levels. These results show that with the absence of minimum levels of these constructs, business cannot achieve higher compliance outcomes, even if other supportive factors are in place. Consequently, the results emphasize the difference between those factors that are important drivers and those that are actually must have conditions for GST compliance, thereby adding to the overall understanding of compliance behaviour among businesses in Goa.

Table 4.52: NCA Effect size and Accuracy

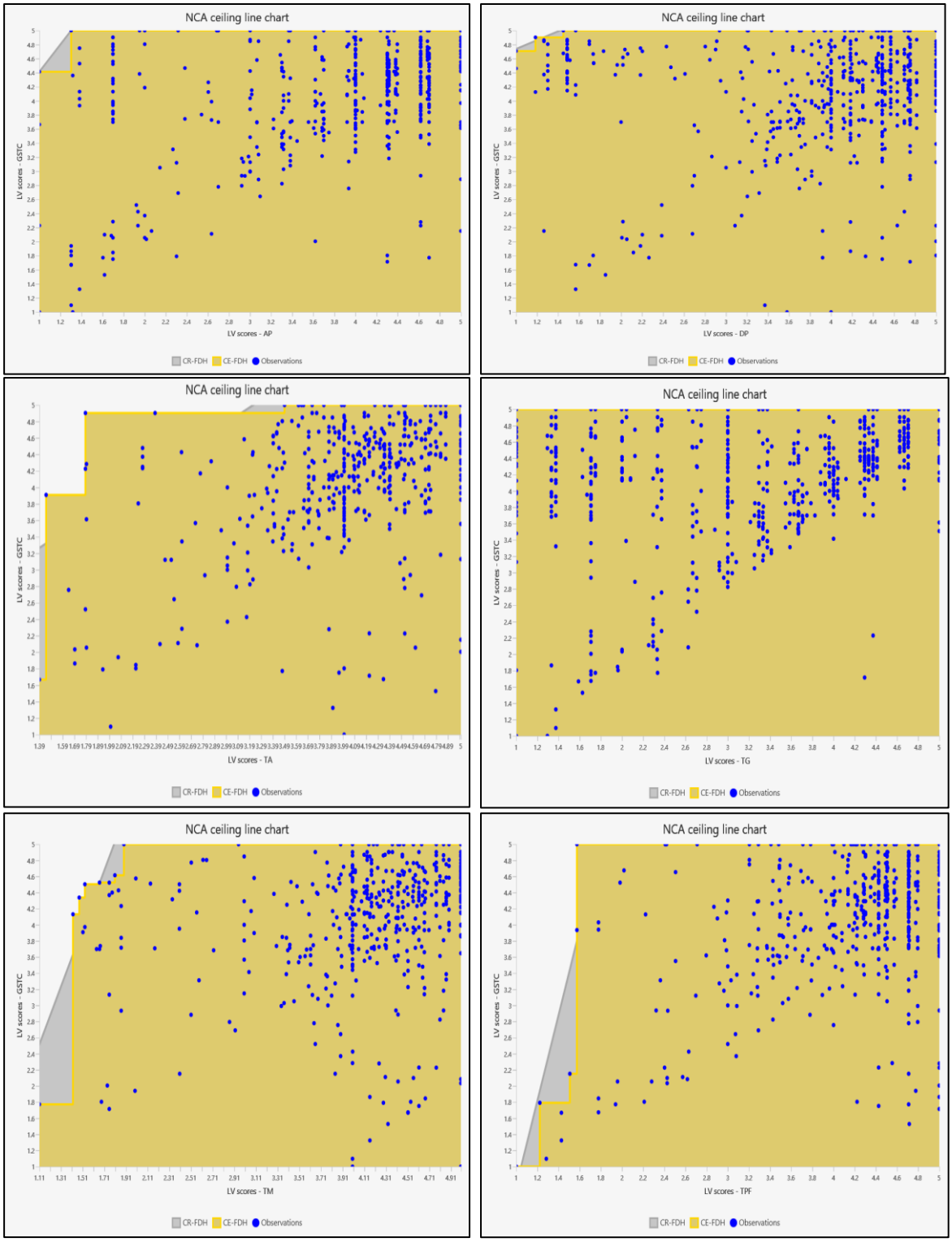
Construct	Effect size (d)	Type of Effect Size	Permutation p value
AP	0.011	Small	0.157
DP	0.005	Small	0.593
TA	0.050	Small	0.004**
TG	0.000	-	0.972
TM	0.081	Small	0.000**
TPF	0.124	Moderate	0.000**

Note: ** Denotes significance at 1% levels
Source: Author's Compilation

Table 4.53: Bottleneck Table for GSTC (in percentage)

Percentage	GSTC	AP	DP	TA	TG	TM	TPF
0.00%	1	NN	NN	NN	0	NN	1.046
10.00%	1.4	NN	NN	NN	0	NN	1.121
20.00%	1.8	NN	NN	NN	0	NN	1.196
30.00%	2.2	NN	NN	NN	0	NN	1.272
40.00%	2.6	NN	NN	NN	0	1.134	1.347
50.00%	3	NN	NN	NN	0	1.245	1.422
60.00%	3.4	NN	NN	1.531	0	1.356	1.498
70.00%	3.8	NN	NN	1.954	0	1.467	1.573
80.00%	4.2	NN	NN	2.376	0	1.578	1.649
90.00%	4.6	1.096	NN	2.799	0	1.689	1.724
100.00%	5	1.302	1.418	3.222	0	1.8	1.799

Source: Author's Compilation



Source: Author's Compilation

Figure No 4.21: Necessary Condition Analysis scatterplots for GST Compliance Model

4.3.8 Summary of Hypothesis Testing Results for Objective 2 & 3

The outcomes of the hypothesis testing for Objectives 2 and 3 as summarised in Table 4.54 offer a great deal of empirical validation of the conceptual framework of GST compliance. The results reaffirm that antecedents of economic and non-economic nature as well as mediating constructs play an important role in determining compliance behaviour in the Goan context.

For the direct hypotheses (H2a-H2o), fourteen out of fifteen paths were supported, which is a high level of robustness. Tax Morale (H2a), Trust in Government (H2b), Digital Payment (H2d), Tax Awareness (H2e), Tax Penalties and Fines (H2g) and Audit Probability (H2h) both received significant positive impacts on GST compliance, making them key enablers of voluntary and deterrence-based compliance. In contrast, Tax Complexity (H2c), Financial Constraint (H2f) and Tax Compliance Cost (H2j) showed significant negative impacts, indicating the impediments these factors pose to taxpayers. Among these, Financial Constraint turned out to be the strongest barrier to compliance. Inter-construct linkages were also confirmed: Tax Awareness was found to lower complexity (H2k), Digital Payment raised the perception of complexity (H2l), Tax Complexity increased the cost of compliance (H2m) and lowered trust in government (H2n), while Trust in Government improved Tax Morale (H2o). The only unsupported hypothesis was Tax Rates (H2i) implying that the variation in rates alone does not significantly influence compliance outcomes in Goa.

The mediation hypotheses (H3a-H3e) were also completely supported. Tax Awareness showed indirect effect on the level of GST compliance by lowering the complexity (H3a), whereas Digital Payment showed direct positive and indirect negative effect on the level of GST compliance by lowering the complexity (H3b). Tax Complexity passed on its negative impact in both compliance costs (H3c) and lack of trust in government (H3d). Meanwhile, Trust in Government indirectly improved compliance by improving Tax Morale (H3e). These results taken collectively show the impact of antecedents on compliance is not only

direct but also a significant mediator via institutional, cognitive and economic pathways.

Overall, the results with respect to Objectives 2 and 3 support nineteen of twenty hypothesised relationships which is a good level of empirical support for the proposed model. The above finding strengthens the argument that compliance to GST is determined by a complex interplay of factors thus providing validation to the integrated framework advanced by the study.

Table 4.54: Summary of Hypothesis Testing (Objective 2 and 3)

Hypothesis	B	P Value	Significance?	Remark
Direct Hypothesis results				
H2a	0.158	0.000**	**Yes**	Supported
H2b	0.121	0.000**	**Yes**	Supported
H2c	-0.11	0.000**	**Yes**	Supported
H2d	0.081	0.001**	**Yes**	Supported
H2e	0.123	0.000**	**Yes**	Supported
H2f	-0.28	0.000**	**Yes**	Supported
H2g	0.259	0.000**	**Yes**	Supported
H2h	0.206	0.000**	**Yes**	Supported
H2i	-0.035	0.138	No	Not Supported
H2j	-0.062	0.014*	**Yes**	Supported
H2k	-0.246	0.000**	**Yes**	Supported
H2l	0.121	0.002**	**Yes**	Supported
H2m	0.373	0.000**	**Yes**	Supported
H2n	-0.307	0.000**	**Yes**	Supported
H2o	0.171	0.000**	**Yes**	Supported
Mediation Hypothesis results				
H3a	0.027	0.001**	**Yes**	Supported
H3b	-0.013	0.013*	**Yes**	Supported
H3c	-0.023	0.016*	**Yes**	Supported
H3d	-0.037	0.001**	**Yes**	Supported
H3e	0.027	0.001**	**Yes**	Supported

Note: * and ** denotes significance at 5% and 1% levels, respectively
Source: Author's compilation

Chapter 5

Findings, Implications and Conclusion

5.1 Introduction

This chapter summarises the most significant results of the study and puts them within the scope of the recent ongoing debate on the matter of compliance with taxation in India. Using both a national-level analysis of the patterns of GST compliance by Indian States and UTs based on official secondary data and a state-level analysis of determinants and mechanisms in influencing compliance in GST-registered businesses in Goa based on primary survey data, this study synthesises comprehensive evidence. The chapter draws these macro and micro perspectives together, to produce a multilayered comprehension of how structural, institutional, economical and behavioural factors interact in the environment of a modern and consumption-driven tax system.

The chapter is in three steps. First, it explains the empirical results in a direct relation to the three research objectives of the study. In Objective 1, the level of compliance with GST between States is compared to highlight the importance of the institutional capacity as opposed to the demographic size of a State in the degree of filing behaviour. In Objective 2, the economic and non-economic motivations of compliance are found based on the analysis of 620 businesses in Goa. In the case of Objective 3, the chapter is a reflection of the findings of the mediation given to explain the indirect mechanisms by which complexity, costs, trust and morale increase or decrease the immediate effects of key determinants.

Second, the findings achieved as a result of the research are related to the theoretical underpinnings of the research in this discussion. In doing so, it throws light on how the results justify and extend to the institutional and established frameworks of the Institutional Theory, Social Exchange

Theory, Attribution Theory and the Deterrence Theory and incorporates new and current constructs like the digital payment adoption and financial constraints that are specifically applicable in a changed GST ecosystem. This theoretical stance comes in handy in order to move beyond the assumptions which dwell entirely on enforcement-based explanation to a more intricate description which also addresses the elements of legitimacy, reciprocity, internal capability and the perceived burden.

Third, the chapter concludes with the evidence to implications and conclusions. It builds theoretically informed and practice-oriented insights into policymakers, into tax administrators and into businesses, outlines the contributions and the limitations of the research, as well as suggesting a programmatic agenda of further investigations. The rest of the chapter is structured as follows: Section 5.2 is the discussion of the findings by each objective, Section 5.3 is the theoretical as well as practical implications, Section 5.4 is the conclusion in relation to the objectives, Section 5.5 is the limitations and Section 5.6 reflects the future research directions. Taken together these sections make a coherent synthesis of results, implications and contribution to knowledge on GST compliance behaviour in India.

5.2 Discussion of Findings

In this section, the author discusses the empirical results of the research concerning the aim of the study and the theoretical perspectives of the study. The aim of the discussion is to explain the results of the statistical interpretation, which is situated within the broader literature on tax compliance and how the results contribute to the further development of the idea of the behaviour of GST compliance in India. The study by combining knowledge on the national level based on secondary data with primary data based on the survey in Goa provides an interpretation on a multi-level basis with structural, institutional, economic and behavioural perspectives.

In accordance with research objectives, the discussion that follows has three parts. To begin with, the GST compliance pattern among the States and UTs indicates that the compliance level is very diverse in the

various regions and that institutional capacity is much more significant than demographic factors like the number of people. Second, the results of Goa highlight the importance of both economic and non-economic variables and how, although the morale of tax compliance encourages this, there consistently remains a problem of financial constraints, perceived complexity and compliance costs. Third, the mediation analysis has shown the indirect processes through which compliance behaviour is determined by showing that such constructs as complexity, trust, costs and morale provide routes through which the direct influences of compliance determinants are reinforced or diluted.

All these findings suggest that the compliance with GST is not uniform across India and cannot be explained by the enforcement itself. Rather, compliance is a multifaceted relationship between institutional design, perceptions by taxpayers, incentives of taxpayer behaviour and situational challenges. The following sub sections (5.2.1 to 5.2.3) provide a discussion of each of the research objectives in detail, and provide a connection between the findings and the theories and the previous empirical researches.

5.2.1 Discussion of Findings for Objective 1

Strong indication of Kruskal-Wallis test and subsequent DSCF pairwise comparisons indicates that the GST compliance behaviour has significant variation among and among large, medium, and low population States and UTs in India. This observation validates all four hypotheses (H1a, H1b, H1c and H1d) that point out that the compliance behaviour is by no means one-size-fits-all but rather it is existing dependant on various structural and contextual dimensions of the Indian federal system.

A further examination of the masses of people reveals that Gujarat is relatively performing well with an average coverage rate of 72.1% as compared to Bihar and Telangana which average below 60%. The compliance range 57.4% -72.1% implies that great disparities exist between states that otherwise would be having the common characteristic of having a vast population. Similarly, in medium population states as well, Punjab is the best performer (72.4%) and Assam is the worst (50.6%), which means

that the compliance is spread between 50.4% to 72.4%. Chandigarh (UT) (72.8%) has the highest compliance in the population category of low than Manipur (40.1%), which leads to the largest range of compliance (between 40.1% and 72.8%). These findings lend weight to the fact that population size is not a determinant of compliance outcomes on its own but other institutional and behavioural variables are more effective.

Despite the fact that some high-performers including Gujarat, Punjab and Chandigarh demonstrate that quite good compliance could be achieved, the situation in the country is alarming overall. The majority of the States and UTs have lower than 70% compliance scores, an indicator of poor performance in the submission of GST returns on time. This is particularly a problem in the case of a consumption-based tax system that relies on a steady stream of revenue collection by businesses in every jurisdiction. Moreover, the patterns of the compliance data over the time period are volatile with various states experiencing drastic declines in compliance through the crisis when the world was shaken with the Covid-19 pandemic in 2020 and has since been gradually recovering in the following years. This implies that compliance behaviour is fragile and vulnerable in most aspects.

The noticed deviations are easier to explain by the Institutional Theory (Scott, 1995). The increased compliance in the Gujarat, Punjab and Chandigarh reflects increased institutional capacity, such as regulative (e.g. efficient enforcement), normative (e.g. strong awareness and professional support) and cognitive (e.g. trust in the system and knowledge about the digital filing procedures) ones. Quite to the contrary, weaker institutional structures in other states such as Bihar, Assam and Manipur, might curtail the capacity and the willingness of taxpayers to do so, resulting in continued low compliance. This interpretation can be aligned with the past research highlighting the impact of firm size, industry type (Azrina et al., 2014), tax authority measures quality (Nurhayati et al., 2015), awareness and knowledge of taxpayers (Dewi, 2019) and financial constraint (Roy et al., 2020) on different regions to the outcome of compliance.

The other very important aspect is that large population States are slightly higher in compliance on average, compared to medium and low

population states/UTs. This tendency could be perhaps attributed to the fact that the administrative capacity is relatively higher, the dependency on the revenues of larger states, which contribute to encouraging them to institutionalise compliance in a better way. Nonetheless, it is confirmed that the size of the population group can never be regarded as a predictor of superior performance in the future unless it is well-established in the institution through ensuring moderate or low levels of compliance by several large states.

Lastly, the fact that low compliance did not end regardless of the introduction of penalties and interest rates also raises doubts about the assumptions of the Deterrence Theory, which suggests that the effect of the harsher enforcement on the compliance should have been a direct positive effect (Alem & Tewabe, 2022). These punitive measures in the Indian GST context do not appear to be sufficient to alter the behaviour of compliance meaningful in making any change. Rather the evidence is directed in the direction of the central role of structural and behavioural variables including tax morale, trust in government, institutional efficiency, and perceptions of complexity.

Overall, Objective 1 results indicate that behaviour with respect to compliance with GST in India is characterised by big regional variations and cannot be explained by the deterrence factor alone, but by the institutional ability and behavioural circumstances. This highlights the need to consider and appreciate the inter-state heterogeneity when analysing compliance under GST framework.

Table 5.1: Overview of hypothesis and results for Objective 1

Hypothesis	Result
H1a: GST compliance behaviour significantly differs among large population States in India.	**Supported**
H1b: GST compliance behaviour significantly differs among medium population States and UTs in India.	**Supported**
H1c: GST compliance behaviour significantly differs among low population States and UTs in India.	**Supported**

H1d: There is a significant difference in GST compliance behaviour across large, medium, and low population States and UTs in India.	**Supported**

Source: Author's compilation

5.2.2 Discussion of Findings for Objectives 2

To address the second objective which was to find out how the economic and non-economic determinants influenced the behaviour of GST compliance, primary survey was done on 620 registered GST businesses in Goa. The hypothesis was verified by the assistance of Partial Least Squares Structural Equation Modelling (PLS-SEM). The outcome of the analysis revealed that the proposed economic and non-economic variables significantly affect compliance in almost all cases except the tax rate construct which supports the hypothesised relationships. These results highlight the reality that the compliance behaviour depends on a combination of moral, institutional, technological and financial factors.

Tax morale (H2a): According to our model, there is a very positive relationship between tax morale and GST compliance. Companies that are more civically responsible, honest and morally obligated tend to have more compliance behaviour. The result is correlated with Taing and Chang (2021) that claims that tax morale is a critical psychological factor of tax compliance and a foundation of voluntary cooperation between taxpayers and the state. Earlier studies, involving both the developed and the developing countries have shown that where taxpayers perceive compliance as an ethical obligation, they tend to be more inclined to comply with the taxation laws, despite the taxation not being enforced. Considering Goa is a family-owned business and that most businesses are a part of close-knit networks, reputation and moral standing is significant to business continuity. The community-based environment helps in the reinforcement of the fact that even non-compliance is not only a failure of legal compliance but also as a failure of social expectations, therefore reinforcing the position of tax morality in motivating the compliance behaviour.

Trust in government (H2b): The findings also show that the association of trust in government has a highly positive value on GST

compliance. Established businesses that perceive government institutions as just and transparent and efficient in the process of providing government services, tend to adhere to GST requirements. This result corresponds to the results of Youde and Lim (2019) and Ayoola et al. (2023) who pointed out the necessity of voluntary compliance in order to increase in the situation when taxpayers were convinced that the tax authorities acted in the best interest of citizens. A similar argument was offered by Feld and Frey (2007) who also argued that the level of compliance increases when taxpayers feel that the revenues are being spent responsibly on providing services to the people. Under the Goan environment, where business enterprises are expected to receive responsive service by tax officials and be transparent on the expectation of compliance, it is likely that business respond by increasing their compliance. This dynamic can be explained with the help of the Social Exchange Theory (Blau, 1964), and it consists in the fact that the reciprocation of fairness and reliability is done by the taxpayers being cooperative. Trust, in this way, turns out to be reinforcing and guaranteeing that compliance is not merely fear based but it is also legitimacy based.

Tax complexity (H2c): The current research establishes a negative correlation in between tax complexity and GST compliance. In cases where the terms of the GST prove hard to understand to the business or where the rules on how to comply with them are frequently altered then compliance behaviour is undermined. This finding is in line with the conclusion by Kirchler et al. (2008) who argued that the complexity of the issue renders the provision of the correct compliance by the taxpayers as a challenge. On the same note, Ghani et al (2020) have found that high turnover of tax laws leads to high levels of administration burns and loss of compliance. In the case of Goan SMEs, the issue is even more topical because many of them lack staff members who are focused on the tax issue and rely on the services of external tax consultants. The dependence and compliance risk are also higher because there are chances of more delays or errors during filing because the system is seen as being difficult to navigate. In the context of Social Exchange Theory, however, the complexity undermines

the perception of the support of institutions that is expected to be available to the taxpayers as the reward of collaboration and that deterrent to voluntary collaboration.

Digital payments (H2d): The analysis indicates that digital payments are strongly positively related to compliance. The businesses operating on UPI, online banking or mobile wallets have higher chances of conforming to GST since digital payment leaves clear records which helps them file a return, in addition to reducing the degree of concealment. This finding is in line with Wong et al. (2024) who have found positive changes in compliance due to digitalisation that enhances the traceability and responsibility of transactions. The advent of the digital payments push in the Indian context in the post-demonetisation has increased the pace at which technology has been integrated in business operations. As an illustration, in Goa where there is an increasing use of UPI and QR-based systems by the small retailers and service providers, digital records simplify the preparation of the GST Return system. Regarding the Social Exchange Theory, digitalisation belongs to the category of positive aid provided by the state, which in its turn is returned by the taxpayer in form of being more compliant.

The results of H2a, H2b, H2c and H2d are in agreement with Social Exchange Theory (Blau, 1964). They indicate that when the tax system is just, transparent, clear and technological-supportive, the willingness of the businesses to repay through adherence to the system becomes more acceptable. On the other hand, when the system is viewed to be too complicated then compliance behaviour is undermined.

Tax awareness (H2e): Tax compliance and tax awareness had a good positive correlation. Businesses that were well informed on the GST practices and deadlines and credit systems were more likely to ensure timely filing and adhering to the rules. The findings are also consistent with the results of Hayat et al. (2022) that tax education and awareness can result in the reduction of unintentional non-compliance. Exposure provides the tax payer with the vigor to be a part of the system rather than being a passive recipient of the consultants. In Goa, where there is a high

dependency on external tax professionals' awareness ensures that the business owners will have the ability to control the compliance better, reducing the dependency risks. Attribution Theory (Heider, 1958; Kelley, 1973) tries to find an explanation of this relationship, When it is believed that the business is the cause of compliance results because of its own information and internal control, the desire to comply will be greater.

Financial constraints (H2f): The findings show that there is strong negative relationship between financial constraints and compliance. Businesses that are facing liquidity issues or struggling to operate working capital are likely to defer payment of GST or default on returns. This coincides with Trifan et al. (2023) and Roy et al. (2020) who highlighted that compliance will be reduced by the level of financial stress especially among SMEs. Financial instability can directly affect timely compliance in Goa where the retail and tourism sectors such as those in the tourism industry are highly seasonal. The Attribution Theory once again also offers explanatory power, in those cases where the cause of non-compliance is attributed to external and uncontrollable factors like lack of liquidity, this would result in the firms having less motivation to focus on compliance even where they may be willing to do so otherwise.

Therefore, the H2e and H2f results substantiate the contributions of Attribution Theory to the compliance meaning that internal (awareness) and external (financial pressure) factors facilitate and inhibit compliance respectively.

Penalties and fines imposed (H2g): Penalties and compliance have significant positive relationship based on the study. One way in which businesses would react to the threat of financial sanctions is by ensuring that they are at least compliant as a condition of evading the punishment. This observation aligns with Benk and Cakmak (2011) and Olaniyi et al. (2023) who found out that penalties are effective deterrents that prevent non-compliance. Fines on late filing or non-filing could severely strain the finance of a small business in Goa since most businesses in the area are small in size and has an incentive to do otherwise. This interpretation is supported by Deterrence Theory (Becker, 1968; Allingham and Sandmo,

1972) and this means that higher the penalty, the greater the perceived cost of non-compliance and therefore the taxpayer will comply.

Audit probability (H2h): The analysis has resulted and stated that if there is improvement of audit probability than there will be improvement in GST Compliance. Businesses are more cautious when they believe that they stand higher possibilities of being audited in the process of maintaining right records and submitting GST returns in a proper manner. The study is also in line with Engida and Baisa (2014) and Oladele et al. (2019), which reported that audits were a strong deterrent since they enhance the perceived likelihood of being apprehended. In Goa, where smaller and interconnected business communities implies that the threat of reputational damage and simply being financially punished is also a strong source of reinforcement to the effect of audit probability. As an enforcement tool in the context of the Deterrence Theory, audits play a role of escalating the perceived cost of non-compliance, thus augmenting compliance.

Tax rates (H2i): Tax rates were found not to affect GST compliance significantly. This outcome is contrasting with other studies like Peprah et al. (2020), which confirmed that an increase in tax rates leads to an increase in evasion. This is because of the uniqueness of the GST as a consumption-based taxing method. GST basically involves businesses acting as intermediaries in collecting tax on behalf of the government to the consumers. Therefore, increases in tax rates do not have a direct impact on the financial status of businesses and this is the reason why tax rates do not have a big impact on compliance behaviour in Goa. This finding points out the situation of the distinction between GST and direct tax regime in which the levels of rates have a closer influence on the compliance choice.

Tax compliance cost (H2j): Lastly, the findings confirm the adverse effect of tax compliance costs on compliance. Businesses that incur higher expenses when engaging the services of consultants, purchasing software to conduct accounting or invest available staff in compliance are less likely to stay in compliance. This result is consistent with the results of Hong (2022) and Bhalla et al. (2023), who highlighted that the costs of compliance

influence compliance and that the smaller the business is in terms of financial capacity, the less encourage compliance. In Goa, whereby most of the SMEs are already in the financial strains, the additional burden of the compliance costs is more difficult and unwilling to comply. The Deterrence Theory explains this as a reverse deterrent. Despite the penalties and audits being a motivator to comply, compliance is too expensive to be an attractive motivation hence undermining compliance.

The combination of the results of H2g, H2h, H2i, and H2j fall in line with the Deterrence Theory (Becker, 1968; Allingham and Sandmo, 1972). They demonstrate that taxpayers in Goa are attentive not only to the enforcement signals, but also to the cost-benefit aspect and do so quite rationally. The presence of penalties and audits increases the perceived cost of non-compliance and thus increases adherence but decreases the appeal of payment of obligations because of the high compliance costs. The insignificant role of tax rates also confirms the fact that in consumption-based system such as GST, the tax rate itself does not influence the process of compliance. In its turn, behaviour is dictated by the climate of enforcement and perceived compliance weight.

In short, the findings validate the fact that economic and non-economic factors play essential roles in determining the GST compliance behaviour of Goan businesses. The voluntary compliance can be enhanced through non-economic reasons such as tax morale, confidence in government, awareness and digitalisation whereas pressures of finances, cost of compliance and complexity are the obstacles. Penalties and audits are used as a form of deterrence, which is sufficient to achieve compliance, but not sufficient to maintain compliance. The unimportance of the tax rates is also another factor that shows how GST compliance is not so much about the level of rates, but the greater environment of equity, learning, expenses and institutional assistance that businesses are in.

Table 5.2: Overview of hypothesis and results for Objective 2

Hypothesis	Result
H2a: There is a significant positive relationship between tax morale and GST compliance.	**Supported**

H2b: There is a significant positive relationship between trust in government and GST compliance.	**Supported**
H2c: There is a significant negative relationship between tax complexity and GST compliance.	**Supported**
H2d: There is a significant positive relationship between digital payment and GST compliance.	**Supported**
H2e: There is a significant positive relationship between tax awareness and GST compliance.	**Supported**
H2f: There is a significant negative relationship between financial constraint and GST compliance.	**Supported**
H2g: There is a significant positive relationship between Tax penalties and fines and GST compliance.	**Supported**
H2h: There is a significant positive relationship between audit probability and GST compliance.	**Supported**
H2i: There is a significant negative relationship between tax rates and GST compliance.	**Not Supported**
H2j: There is a significant negative relationship between tax compliance cost and GST compliance.	**Supported**

Source: Author's compilation

5.2.3 Discussion of Findings for Objectives 3

The third objective of this research was to test the mediating variables that influence the behaviour of GST compliance by GST-registered businesses in Goa. PLS-SEM Structural Equation Modelling with the application of Structural Equation Modelling (SEM) indicated that all the five hypothesised mediations (H3a-H3e) were statistically significant and all of them presented partial mediation. This implies that there exist direct correlations between the independent and dependent variables, which are complemented by indirect influences using mediating constructs. The combined findings suggest the subtle channels in which you experience the degree of awareness, technology adoption, institutional trust and moral

values that result in compliance behaviour.

Tax complexity as a mediator of a tax awareness and GST compliance (H3a): The findings confirm that the mediating role of tax complexity in the relationship between tax awareness and GST compliance is partially upheld. This implies that awareness results in the enhanced compliance both directly through providing taxpayers with knowledge regarding filing requirements, deadlines and input credit and indirectly through lessening the complexity impression. This is following the argument Kirchler et al. (2008) proposed the use of complexity weakens compliance capacity and Hayat et al. (2022) that awareness minimizes such problem. The more tax aware businesses in Goa are, the more compliant they are in addition to being less confused and less reliant on outside professionals. This in effect enhances their direct and indirect compliance behaviour.

Tax complexity as mediator of digital payment and compliance with GST (H3b): The digital payment adoption is observed to have a positive relationship with the compliance and the mediating variable of tax complexity. On the one hand, digitalisation contributes to the heightened visibility and record keeping, whereas, on the other hand, it may expose the businesses to the complexity and difficulties of the GST reporting. As an example, a reconciliation of the data about digital transactions and GST returns can cause complexity of the law. The same finding is echoed by Wong et al. (2024) which reported that digitalisation encourages compliance, but also that it has to be taken into account in the line of Ghani et al. (2020) that warned that the complex systems bring greater administrative loads. Most of the small businesses in Goa that accept digital payments have the advantage of traceability of the transactions but are burdened with the rigorous nature of the reconciliation processes, which means that complexity in some way counters the constructive influence of digitalisation on compliance.

Tax compliance cost as a mediator of tax complexity and GST compliance (H3c): The findings also indicate that the cost of compliance is the mediating factor of tax complexity and GST compliance. Increased

complexity tends to cause a higher cost on external consultants, software specialisation and employee time on record-keeping, which would reduce the level of compliance. This inference aligns with Bhalla et al. (2023), who indicated that compliance costs are a cost that deters compliance. In the Goan scenario, where a large number of businesses are operating with a limited number of resources to work with, the complexity-cost relationship is particularly high. The higher the level of complexity and consequently the higher the associated cost in terms of professional fees and administration costs, the less willing or able to comply the business is.

Trust in government mediates the relationship between tax complexity and GST compliance (H3d): The other notable mediation may be explained by trust in government because of the tax complexity to compliance. The results suggest that excessive complexity causes a loss of faith in the fairness, transparency and efficiency of the government institutions by the taxpayers. The reduced trust undermines compliance behaviour. This observation agrees with Feld and Frey (2007), who stated that trust plays a key role in ensuring voluntary compliance. Businesses in Goa may lose trust in the capacity of their government to draft effective taxation regimes in the situation when they believe that the GST rules are unnecessary or constantly changing. This perception causes them to have reduced trust in institutions and thus the desire to cooperate reduced.

Tax morale as mediator of trust in government and GST compliance (H3e): Lastly, the study confirms that tax morale mediates the relationship between trust in government and compliance. Confidence in government is associated with the tax morale because it increases the perception that taxes are spent responsibly and equitably and consequently will lead to voluntary compliance. That is consistent with Taing and Chang 2021, who referred to the psychological aspect of compliance and with Ayoola et al. 2023, who demonstrated that trust creates moral obligations. In Goa, as an example, those businesses with the belief in the government have a higher chance of internalising compliance as an element of their civic responsibility and consequently elevate the level of moral position and actual practice of compliance.

Collectively, these findings demonstrate that compliance behaviour cannot be explained by means of direct relationships alone. Mediating constructs, instead, complexity, compliance cost, trust and morale, create indirect routes of weakening or strengthening the direct effects of determinants. The results evoke the explanatory power of various theoretical points of view. The interplay between awareness (internal attribution) and financial limitation / complexity (external attribution) is Attribution Theory (Heider, 1958; Kelley, 1973). The Social Exchange Theory (Blau, 1964) explains how trust and fairness are part of the compliance in terms of reciprocity. The significance of compliance costs as oppressions to deter compliance has been proved in Deterrence Theory (Becker, 1968; Allingham and Sandmo, 1972).

In conclusion of the Objective 3 results, we have found conclusive presence of mediation processes as regards to the GST compliance behaviour. Complexity is reduced through awareness and perceived complexity is played with through digitalisation and complexity, which increasing compliance, reducing costs and increasing trust, which brings morale. These interrelated processes provide a deeper insight into why business complies or fails to comply with GST and the importance of making the policy work is that it must not only address the immediate factors that determine compliance or noncompliance, but also how the former mediates through the latter.

Table 5.3: Overview of hypothesis and results for Objective 3

Hypothesis	Result
H3a: Tax Complexity mediates the relationship between tax awareness and GST compliance.	**Supported**
H3b: Tax Complexity mediates the relationship between digital payment and GST compliance.	**Supported**
H3c: Tax compliance cost mediates the relationship between tax complexity and GST compliance.	**Supported**
H3d: Trust in government mediates the relationship	**Supported**

between tax complexity and GST compliance

H3e: Tax Morale mediates the relationship between Trust in government and GST compliance.	**Supported**

Source: Author's compilation

5.3 Implications of the study

The current work does not only give empirical evidence on GST compliance behaviour; it also has significant implications to both theory and practice. By summarising the evidence that comes out of the magnitude secondary data and the primary survey evidence of Goa, the study forms a comprehensive view of the compliance behaviour of the Indian tax setting. The findings attract the fact that compliance is dictated by the game of institutional effectiveness and motivational behaviour, financial limitations and technological dilemmas. As such, the current research does not only have helpful implications on current theories of tax compliance, but also has practical implications on policymakers, administrators and businesses. Furthermore, the theoretical implications (Section 5.3.1) and practical implications (Section 5.3.2) are discussed in the following subsections.

5.3.1 Theoretical implications

The present study also contributes substantially to the theoretical knowledge on tax compliance behaviour in the Indian scene by balancing national level data of GST compliance and micro level reactions of businesses within the Goan environment. It offers a distinctive multi-scalar approach by using both secondary and primary data sources thus adding to the theoretical discussion on tax compliance in a federal system. The results all confirm and develop a number of already existing behavioural and institutional theories and they also create new constructs that provide new research directions.

The research strongly supports Institutional Theory at national level (Scott, 1995). It is indicated in the evidence that the compliance behaviour of GST is not only different among the states but also within the states even though the population categories are similar. This brings into focus the fact

that institutional capacity; which is manifested in the quality of regulatory enforcement, the soundness of normative expectations and the formation of cognitive structures continue to stay a fundamentally important predeterminer of compliance. An example to illustrate this is that states with relatively higher compliance rates include Gujarat, Punjab and Chandigarh (UT) due to the relatively better institutional structures and weak institutional structures in the states of Bihar, Assam and Manipur. This is in line with the regulative, normative, and cognitive pillars described in Institutional Theory, which validates the fact that compliance-related results in federal systems are not only predetermined by the demographic or structural size but also determined by the strength of institutions.

According to behavioural perspective, the study confirms Social Exchange Theory (Blau, 1964) by demonstrating that trust in government and tax morale have a direct and indirect impact on compliance. Companies that regard government as just and open to them in turn, return the favor by being more willing to comply on a voluntary basis. In addition, mediation outcomes show that trust in government leads to tax morale that subsequently increases compliance behaviour, which introduces an added layer of psychology to the theory. This provides a better insight into the role of reciprocity in taxation, by indicating that not only is compliance motivated by fear, but also by relational legitimacy.

The current research is also an extension of Attribution Theory of tax compliance research (Heider, 1958; Kelley, 1973). The results show that strong compliance is caused by the internal attributions like tax awareness because businesses who use the attribution as having ability to control the compliance outcome, are more likely to become more responsible. External attributions on the other hand, lower compliance particularly in micro and small businesses in Goa like the financial constraints. This points out that the locus of control be it the internal (awareness, knowledge) or the external (constraints, systemic issues) is deeply influential to compliance behaviour. The study does not only verify but also contextualises Attribution Theory to indirect tax systems in emerging economies by affirming these attributions.

Moreover, the research provides subtle findings to justify Deterrence Theory (Becker, 1968; Allingham and Sandmo, 1972). It affirms that penalties and fines and audit probability are all effective deterrents that can help enhance compliance. The study, however, also counters the simplicity of the Deterrence Theory in that it reveals that punitive mechanisms are not sufficient. Indicatively, even with penalties, there are several States and businesses that are not performing well in terms of compliance, which demonstrates the weaknesses of deterrence without trust, awareness, and institutional support. Besides, the contribution of compliance costs is also quite disarming: rather than acting as a non-compliance deterrent, high compliance costs, themselves, deter compliance. This redefines deterrence as a two-edged process, in which enforcement is optimally benefited by supportive efforts and decreased burdens.

The research is original in terms of its theoretical contribution as the Digital Payment Adoption and Financial Constraints are new constructs in the GST compliance literature. The adoption of digital payment was also found to enhance compliance due to the enhancement of transaction traceability and the minimization of underreporting options. However, the findings of mediation also indicate that digitalisation creates new layers of perceived complexity, in turn, making compliance more complicated. This is a two-fold influence that shows that the role of technology in compliance is something to be re-theorised beyond a simplistic technology improves compliance story to a dynamic relationship that sees both benefits and burdens co-existing. On the same note, the construct of financial constraints presented itself as a very important external obstacle to compliance, particularly to SMEs in Goa whose activities were non-seasonal in nature. The inclusion of the constructs in the existing theories of compliance increases the explanatory strength of the study on tax and provides fresh avenues that scholars can explore on the issue of finance and technology in compliance behaviour.

Lastly, the findings of the mediation broaden the options of theories known to exist in that the findings demonstrate the indirect influences by which compliance is influenced. As an example, there is mediating complexity, that is, awareness, digitalisation, compliance cost, trust, and

morale. These stratified mechanisms are a holistic way of explaining compliance behaviour compared to linear models. This way, the research contributes to the development of a multi-theoretical approach that incorporates the concepts of deterrence, exchange, attribution and institutional approaches without being hindered by the realities of the modern world of digitalisation and financial pressure. Such synthesis does not only confirm the existing theories, but extends their limits, addressing the theoretical gap in the literature on tax compliance.

5.3.2 Practical implications

The study has practical implications to the policymakers, tax administrators and businesses in the case as it will be used in policies to improve further on GST compliance in India in the effort of reaching the findings. These insights involve the administrative changes, policy intervention and capacity-building programs that can produce a better sustainable and inclusive tax regime.

First, the current research confirms that such enforcement tools as penalties, fines and audit probability continue to play an important role in the evolution of compliance. This is where the need to uphold and increase the audit processes and penalties to tax authorities in Goa and elsewhere lies. At the same time the results caution against excessive deterrence approach. Punishments that are excessive and not followed by reform, tend to awaken a feeling of resentment or turn out to be the source of informality. A more effective strategy would, therefore, be a moderate course of enforcement which would imply audits, as well as punishment on top of positive reinforcement by recognition of taxpayers who comply. The reward schemes and rating systems of compliance are one of the reward schemes that may be adopted by tax authorities and reward regular filers.

Second, the cost of administrative complexity and compliance cost denotes the demerits of administrative complexity which generates the need of administrative simplification. Many SMEs consider the GST system to be cumbersome, especially where there is difficulty in navigating the online platform or where the rate of changing the rules is so high. Simplification of filing procedures would significantly reduce the compliance burden, as

well as the amount of redundant reporting requirements and stabilize the rules. The accessibility of simple to operate electronic interfaces and enhanced multilingual features in filing portals would also be used to simplify the work of small businesses with weak technical composition.

Third, compliance was largely constrained by the issue of financial constraint especially to the small and seasonal businesses in Goa. Development of financial support programs are some of the ways through which the policymakers should take into consideration, as they ease the liquidity stress during the periods of tax payments. It can be temporary deferments, staggered or tax credit on small business payment plan. The key Goan sectors of the economy, such as specific tourism and retail interventions, would be highly welcome. This would not only facilitate the compliance but would also assist in reduction of the view that taxation requirements are competing with the survival requirement.

Fourth, positively rated are the roles of the tax morale, governmental trust and tax awareness that bring to consideration the importance of the education and trust-building programs. The tax bodies are also expected to invest on mass awareness, workshops and training on a community level to enable the businesses in terms of awareness on the GST procedures. In the meantime, transparency, sincere grievance redress mechanisms and visible application of the revenues as shown by the government to the citizens is the ingredient in establishing trust on the government. Voluntary compliance will be more improved once the businesses believe that the money on taxes is not wasted and the State has their backing.

Fifth, the findings concerning the issue of digital payments imply two things. On the one hand, traceability and compliance are improved with the help of digitalisation. Instead, it introduces reporting and reconciliation difficulties. To counter this, the tax authorities must provide technical advice and digital literacy programmes that will help businesses to effectively integrate the digital transactions in the compliance processes. The subsidised accounting software or the digital solutions availed to SMEs by the government may help in solving the reconciliation problem. These would ensure that there are more positive effects of digitalisation than the negative effects.

The results of the Importance-Performance Map Analysis (IPMA) provide adequate guidance with the high-importance high-performance constructs such as tax penalties, morale and awareness being high. These are to be enforced through compliance strategy pillars. Conversely, the performance and relevance of such constructs as financial constraints and tax complexity are low, which implies the aspects that need policy reforms on time. These weaknesses would be mitigated leading to the disproportionate alteration of the overall compliance outcomes.

The Necessary Condition Analysis (NCA) takes the additional step that makes tax penalties, morale and awareness another condition that cannot be sacrificed in the effort to achieve compliance. The implication of this would be that there would be no desired compliance achieved even when other factors are enhanced without minimum levels of these constructs. Policymakers have the role of ensuring that there are minimum thresholds in these areas, on which larger thresholds of compliance can be expected.

In practice, the implication of these findings would be that a holistic compliance strategy that is combining deterrence (penalties and audits), simplification (reduction of complexity and costs), empowerment (awareness and trust-building) and digital enablement (support of payment adoption) would be the most effective strategy. Business-wise, the findings indicate that businesses are to become proactive with investment in the awareness, make the most of the digital tools and have the financial planning to sustain the compliance. To the tax authorities the thing is straight forward: enforcing is one thing, but to achieve sustainable compliance, friendly institutional and behavioural ecosystems need to be put in place.

5.4 Conclusion

The chapter summarises the major findings of the study considering the mentioned research objectives and theoretical premises. The main objective of the research was to assess compliance behaviour of businesses in the Goods and Services Tax (GST) regime in India, and the research was

dual-fold, (i) on the national level and across States and UTs and (ii) in-depth analysis of the determinants and mechanisms which formed compliance among GST-registered businesses in Goa. The integration of secondary data in the GST portal and primary survey data gives the study a macro and micro view on the behaviour of compliance, hence, this study adds to a more comprehensive view regarding the interaction between structural, institutional, economic and behavioural factors in a modern consumption-based taxation system.

The conclusions are also put down into three parts which are in relation to the research objectives. First, the patterns of compliance in the state level are analyzed and the outstanding regional differences with which institutional capacity determines compliance instead of population size are observed. Second, determinants investigation in Goa indicates that both economic and non-economic variables are positive determinants of compliance, with tax morale, government trust, awareness, digitalisation and deterrence measures positively influencing compliance, although there are complications of complexity, financial factors as well as costs of compliance. Third, the mediation analysis indicates that compliance behaviour is determined by indirect processes, whereby complexities, trust, costs and morale are the most important mechanisms that either enhance direct impact of the key determinants or reduce them.

Combined, these results back the significance of integrative approach to the understanding of GST compliance. Compliance is not the easy result of deterrence or enforcement but it is an active equilibrium of fairness, institutional robustness, moral ideality, monetary viability and technological facilitation. The subsequent subsections (5.4.1 to 5.4.3) provide the detailed conclusions of each objective, which are followed by an integrative conclusion which gives a tie together of the overall contribution of the study.

5.4.1 Conclusion of Objective 1

The initial research problem was to assess the behaviour of GST compliance behaviour in all Indian States and UTs with reference to secondary data concerning GSTR-3B turn filing between July 2017 and

March 2024. The results showed that there are significant regional differences in terms of the compliance trends, with Gujarat, Punjab and Chandigarh (UT) always reporting higher compliance rates and with States like Bihar, Assam and Manipur reporting significantly lower compliance rates. Such findings verify that not all areas of compliance with GST are evenly distributed on a federal level and that institutional differences drive this phenomenon to be more profound than simply focusing on the size of the demographic or population. Indeed, in instances like Gujarat, where the big states showed greater compliance through the institutional mechanisms, other big states never performed well despite the demographic advantage.

These findings could be explained with the help of the application of the Institutional Theory (Scott, 1995). States that had better regulative power (e.g., better enforcement and audit systems), normative support (e.g., higher awareness and dependence on professional help), and cognitive alignment (e.g. experience with digital filing systems) showed higher compliance behaviour. In contrast, less effective institutional systems in States with low performance inhibited the capacity and motivation of companies to do so. This implies that the results of compliance are highly connected with the ability of the state-level institutions to make and implement GST requirements.

Notably, the fact that compliance levels, even in the majority of States, remain at an unsustainable level of less than 70% indicates that there are structural issues in the consistency in the timeliness of the filing of GST returns, which is directly complicating the stability of a consumption-based tax regime that relies on the stability of revenue inflows. Also, the temporal analysis demonstrated that the vulnerable point of compliance behaviour is at the external shocks like pandemics like the COVID-19 and the states showed significant drops but then recovered partially. This volatility is an indication of the weakness in compliance systems in most regions.

Finally, Objective 1 results in the fact that GST compliance behaviour in India is heterogeneous and strongly dependent on institutional capacity to a significant degree but not on deterrence measures only. These results reinforce the necessity of the region-specific policy interventions strengthening regulatory, normative and cognitive pillars of compliance.

The limitations to use penalties or audits also emerge as highlighted by the evidence since structural and behavioural issues are also decisive in determining compliance results at both the States and UTs levels.

5.4.2 Conclusion of Objective 2

The second objective was to determine how economic and non-economic factors have an effect on GST compliance behaviour in registered businesses in Goa, using primary data gathered on 620 respondents. The results indicated that moral, institutional, financial and technological factors are a mix that influences compliance. The positive factors were tax morale, Trust in government, tax awareness, the adoption of digital payments, audit probability and penalties and fines. Those variables reinforced compliance through voluntary cooperation or transparency or a subjective perception of the cost of non-compliance. Conversely, the negative impact of tax complexity, compliance expenses and financial limitations was experienced since it augmented procedural weight, cost and restricted firms in adhering. Interestingly, tax rates were observed to be irrelevant with no substantial effect and thus this proves why GST is a unique tax since it is a consumption tax and thus businesses are only intermediaries not direct taxpayers.

These findings can be traced in terms of their theoretical basis to various perspectives. The role of trust in government and tax morale confirms the applicability of Social Exchange Theory (Blau, 1964) where businesses feel that they are treated fairly and transparently, they respond with increased voluntary compliance. The evidence can be seen to support Attribution Theory (Heider, 1958; Kelley, 1973) which suggests that internal attributions like being aware of something support compliance whereas external attributions like having limited finances do not. The high impact of penalties and audits reflect the Deterrence Theory (Becker, 1968; Allingham and Sandmo, 1972) which is upside down when the cost of compliance is negative.

Importance-Performance Map Analysis (IPMA) and Necessary Condition Analysis (NCA) offer more knowledge. The results of IPMA analysis indicate that tax penalties, tax morale and awareness are

substantial and well-performing constructs which makes them pillars of the compliance strategy. On the other hand, the constructs like financial constraints and tax complexity do not do so well, showing that the policy should be intervened with immediately. NCA also indicates that the conditions required to attain desired levels of compliance include penalties, awareness and morale, that is, unless there are minimum levels in these areas, it is impossible to maintain compliance levels.

On the whole, Objective 2 shows that the Goan compliance behaviour is the result of a fragile equilibrium among the enforcement, facilitation and intrinsic motivation. Economic constraints and costs are not as important as non-economic factors like morale, trust and awareness. Such results suggest that a comprehensive approach to compliance necessitating the combination of deterrent measures, administrative simplification, financial assistance, as well as awareness development would be effective to maintain high GST compliance rates.

5.4.3 Conclusion of Objective 3

The third objective aimed at investigating the intermediating processes by which the chosen economic and non-economic variables influence GST compliance behaviour amongst businesses in Goa. Based on Structural Equation Modelling (PLS-SEM), the study also established that all five mediators, including tax complexity, tax compliance cost, trust in government and tax morale, had vital roles that all of them had partial mediation. This means that compliance behaviour cannot be understood to be the result of direct relationship only but rather to be the product of layered and interconnected routes.

Precisely, the complexities of tax mediate the relationship between tax awareness and compliance which validates the fact that the perception of complexity is minimized by awareness and this enhances compliance. The relationship between the transparency and traceability achieved by digitalisation as a mediator between digital payment adoption and compliance also exhibited complexity as digitalisation enhances transparency and traceability, but can also result in increasing the perceived burden of the procedure partially neutralising its positive effects. The

relationship between complexity and compliance was mediated by tax compliance cost as it showed that increases in complexity cause the professional fees, software costs and administrative costs to increase and thus dishearten compliance. The effect of complexity was mediated through trust in government and it was found that in situations where the businesses feel that the tax rules are too complex, their trust in the institutions will decrease and their willingness to comply will decrease. Lastly, the correlation between trust and compliance was mediated by tax morale which revealed that trust improves civic duty and moral obligation that subsequently leads to the increase of compliance.

These mediating effects legitimize the interdependence of the behavioural and structural variables, increasing the explanatory value of a number of theories. The Attribution Theory is observed in how the internal factors like awareness ease the complexity, and external factors like financial strains reduce compliance. The mediating factor of trust and morale makes Social Exchange Theory valid by connecting the perception of fairness to voluntary cooperation. The influence of compliance costs is the reflection of the Deterrence Theory as it serves as the burden that deters compliance. In combination, these findings demonstrate that compliance behaviour is a multidimensional concept which is influenced not only by direct incentives and punishments but also by perceptions, motivations, and institutional trust.

Conclusively, the Objective 3 shows that the processes of mediation are decisive in explaining the reasons why businesses conform or do not conform with GST regulations. The implementation of new constructs like the adoption of digital payments and financial limitations also enhance the existing literature by pointing out the modern elements in the indirect taxes. The results provide a significance in designing the policies not only focusing on direct determinants of compliance but also focusing on the mediating pathways like minimizing the complexity of the policies, minimizing the compliance costs, creating trust and maximizing morale, which ultimately influence behaviour.

5.5 Limitations of the Study

In spite of the fact that this research offers a considerable amount of information on the GST compliance behaviour in India, some limitations are to be considered in order to have the balanced interpretation of the results. Such restrictions also provide possibilities to further studies to reinforce and broaden the current research.

To begin with, the primary data collection was limited in Goa to businesses which were registered under GST. Although Goa is a multifaceted economic base of the country with retail, tourism, services, and small-scale industries, there is a possibility of the difference in the socio-economic and cultural features of this state in comparison with other States and UTs of India. As a result, the micro-level results, especially the results related to the determinants of behaviour, including tax morale, trust in government and digital payment adoption, might not be completely applicable in the new contexts with a different institutional environment, degree of digital adoption and cultural predisposition to taxation. Further research is needed to increase the geographical reach of the study to cover more than one State or the regions to paint a more realistic image of the behaviour of compliance in India.

Second, as much as the research investigated the mediation effects in great detail and established the existence of tax complexity, trust, tax morale and compliance costs as mediating variables, the research did not extend the analysis to the moderation variables. Moderation analysis would have been useful in giving information on conditional relationships i.e. whether the firm size, industry or type of tax professional hired makes a difference in the strength of determinants of compliance. It would also be a good idea to include moderators, e.g., the use of external consultants in lieu of internal personnel or the age of the business, to make the answer to the question of why similar businesses react differently to the same compliance pressures. Future studies with moderation would consequently provide a more refined insight into the affect of contextual factors on the course of compliance.

Third, the research is based on cross-sectional research design, which

entails a status of compliance behaviour at a given time. This constrains the ability to come up with causal inferences or to appreciate the dynamics of compliance to changes in policy, technology or the overall economic environment. To illustrate, the external shocks like the COVID-19 pandemic have shown that compliance behaviour can be severely disrupted. Further investigation on how long-term policy change or increased digital adoption or changes in government trust might influence compliance in the long-term could be performed with a longitudinal study design where the same businesses are followed over time.

Fourth, the use of self-reported survey data as the main study increase the risk of biased responses. Although the respondents would have been assured of anonymity, there were also chances of them giving socially desirable responses to queries on their practices of compliance, especially where the respondent is prompted to answer sensitive questions such as the manipulation of invoice or underreporting. Even though anonymity and designing the questionnaires to reduce this risk were considered, it is not possible to completely eliminate the possibility of overreporting compliance. The triangulation could be enhanced in future studies with data based on self-reporting and objective measurement (tax authority records or audited accounts).

Fifth, some of the constructs like digital payment adoption and financial constraints were measured using specific items adapted on the basis of these previous studies. Though reliability and validity were established, in further studies, these scales should be further refined and standardised to be used in compliance literature. Likewise, although the tax rates were also experimented as a factor, they were shown to be not significant in this study and their contribution might be more subtle and had to be operationalised differently or place in other contexts in future studies.

Lastly, the research on the GST compliance behaviour at the national level was done using secondary data provided by the GST portal across States and UTs. Although this dataset is official and exhaustive, it is mainly representative of return filing behaviour and may not be comprehensive to all aspects of quality like accuracy of reporting, experience of taxpayer or administrative bottlenecks. Subsequent research that uses such secondary

information and incorporates field-based information or interviews with taxpayers at the state level may offer a deeper insight into the compliance heterogeneity in India.

Overall, although these limitations do not affect the validity of the findings presented in the study, they indicate the factors that require more careful interpretation and the areas that require additional investigation. With such limitations, future researchers are welcome to expand on the study and give it more dimensions, depth, and methodological considerations to gain a more comprehensive perspective on the GST compliance behaviour in India.

5.6 Directions for Future Research

Although the research contributes to the theoretical and empirical knowledge on the topic of GST compliance behaviour in India, it also leaves a number of gaps to be filled in the future research. These guidelines are necessary to expand the research background, justify the results in different settings, and add value to the methodological and theoretical frameworks of research on compliance.

To start with, the current model should be replicated and extended in the future to other States and UTs in India to be able to capture regional differences in compliance behaviour. The present research determined the geographical scope of Goa to the primary data and to the secondary data of national level to compare the States. This is a great way to get valuable information but there is a great deal of difference in cultural norms, sectoral structure and administrative practice between regions. It may be important to test similar models in States that have more manufacturing bases, agrarian economies or more informality to determine important differences in compliance determinants. Multi-state comparative research would thus enhance the knowledge of the way the federal structures and institutional capacities influence the results of compliance.

Second, multi-group analysis (MGA) needs to be used in the future to investigate the differences by factor of business features: size, sector, type of ownership and digital maturity. The example is that compliance

behaviour in microenterprises can be more susceptible to the lack of funds than in bigger business with professional tax departments. On the same note, digitally mature businesses might find it easy to reconcile transactions as opposed to firms that still use cash-based transactions. MGA would therefore give fine grained information about the nature of the compliance drivers working in various organisational circumstances.

Third, this study did not go further to analyse the effects of moderation in detail but instead focused on mediation analysis, leaving moderation analysis as a significant research direction in the future. Moderating variables like financial constraints, involvement of external consultants or firm age may either reinforce the relationship between independent variable and compliance behaviour or may weaken it. Such conditional effects should be explored as it would add to the depth of explanation because it would clarify when and to whom some of these compliance drivers are most effective.

Fourth, longitudinal or experimental research designs should be embraced in the future work to eliminate the cross-sectional limitations of the current research. A longitudinal study might be done to follow the same businesses through time to observe the changes in the compliance with the changes of GST law, adoption of technology or faith in government institutions. Causal evidence regarding the effectiveness of policy measures could be the result of experimental interventions, i.e. the specific awareness campaigns or simplified filing pilots. Such design would provide more causal inferences and the dynamic nature of compliance behaviour.

Fifth, the use of mixed-method or qualitative methods in supplementing the quantitative models is possible. Although PLS-SEM is useful in providing strong statistical details, two qualitative approaches, including in-depth interviews, focus groups or case studies, might reveal psychological and contextual elements at the nuances of compliance. Other techniques like Fuzzy-Set Qualitative Comparative Analysis (fsQCA) may also be useful in establishing configurations of conditions that result in compliance, thus providing a configurational, as opposed to a purely linear, view.

Sixth, the research also added some novel and less explored

constructs to the body of literature on tax compliance like the adoption of digital payments and financial constraints from previous studies. Further studies may elaborate and increase the scale of the measurement to these variables, perhaps by including larger measures of financial vulnerability (e.g. access to credit, seasonal cash flow, etc.) or technological adoption (e.g., digital literacy, use of GST-compliant software, etc.). These improvements would not only confirm the current results, but they would also offer more extensive instruments to evaluate the new factors in the compliance with indirect tax.

Lastly, there is also theoretical development. Although the present work has confirmed the applicability of Institutional, Social Exchange, Attribution and Deterrence Theories, subsequent studies can consider the incorporation of some more perspectives, e.g., Technology Acceptance Models (TAM/UTAUT) to clarify the impact of digital adoption or Behavioural Economics methods to explain the limited rationality, heuristic and biases in compliance decision-making. Combining these frameworks, researchers will be able to develop more comprehensive models that will capture the multifaceted interaction of economic, psychological, institutional and technological aspects of tax compliance.

Finally, the new studies must consider a wider geographical scope, utilize more sophisticated methods of analysis, like moderation and multi-group analysis, use longitudinal and experimental designs and address more profound dimensions of quality. All these directions will not only help solve the limitations of the current study but will also aid in the development of a more contextually based and policy-relevant insight on GST compliance behaviour in India.

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Appendix A- Research Questionnaire

This questionnaire is part of a Ph.D. research study conducted by Gajanan B. Haldankar, a Ph.D. Scholar at the Goa Business School, Goa University. The study focuses on understanding GST compliance behavior among GST registered businesses in Goa.

Before you begin, please review the Informed Consent Statement provided below. Your participation in this study is highly valued and will contribute significantly to the research.

After reviewing the consent statement, please indicate your agreement to participate by selecting " Yes, I agree to participate ". Once you have done so, you may proceed to complete the questionnaire, which is divided into the following sections:

- **Informed Consent Statement**
- **Section A: Demographic Profile**
- **Section B: Business Characteristics**
- **Section C: GST Compliance and Its Determinants**

I appreciate your time in considering participation in this study. Should you choose to participate, your responses will be invaluable in enhancing our understanding of GST compliance behavior among sole proprietors in Goa. Thank you for your consideration.

Informed Consent Statement

Dear Participants,

I am a Gajanan B. Haldankar, a Ph.D. Scholar at the Goa Business School, Goa University, conducting a survey on " Goods and Services Tax Compliance in India with Special reference to Compliance Behaviour in the State of Goa." Your responses are of great importance as this survey forms a part of my Ph.D. research study. I highly value your cooperation and participation.

Purpose of the Study: The purpose of this study is to understand the behavior of GST registered businesses in Goa concerning GST compliance. Your insights will significantly contribute to this research and help develop a deeper understanding of the topic.

Voluntary Participation: Your participation in this survey is entirely voluntary. However, please note that all questions in this survey are mandatory, as each response is crucial for the completeness of the research. If you choose to participate, you are expected to answer all questions. You may, however, withdraw from the survey entirely at any time without any consequences.

Confidentiality: Please be assured that your responses will be kept strictly confidential. The data collected will be anonymised and used solely for academic research purposes. No personally identifiable information will be associated with your responses.

Risks and Benefits: There are no known risks associated with participating in this study. While there are no direct benefits to you, your participation will contribute to the body of knowledge on GST compliance behaviour.

Contact Information: If you have any questions or concerns about this study, please feel free to contact me at
[Gajanan.8226@gmail.con] or my research supervisor,
[Prof. Santosh Patkar], at [patkar_santosh@rediffmail.com].

Consent: Before you proceed with the questionnaire, I would like to confirm that you:

- Have read and understood the information provided above.
- Voluntarily agree to participate in this survey, acknowledging that all questions are compulsory.
- Understand that you can withdraw from the survey at any time if you choose not to continue.

If you agree to participate, please tap " Yes, I agree to participate " below, and you can proceed with the questionnaire.

- Yes, I agree to participate []
- No, I do not wish participate []

Section A) Demographic Profile

1) Age: _____
2) Gender: Male [] Female []
3) Education Level: 1) Up to 10th Std [], 2) 12th Std [], 3) Diploma [], 4) Graduate degree [], 5) Post Graduate degree [], 6) Professional degree []

Section B) Business characteristics

4) Constitution of business: 1) Sole Proprietorship [] 2) Partnership [] 3) Private limited Company
5) Nature of business: 1) Retail business [] 2) Wholesale business [] 3) Manufacturer 4) Supplier of services []
6) Who manages GST compliance including filing of GST returns for business: 1) Chartered Accountant (C.A) 2) Tax consultant 3) Employee/Staff 4) Self/Owner
7) Business age (operation years): _____
8) Total number of employees working in business: _____
9) Type of Business/Establishment: _____

Section C) GST compliance and its determinants

Please rate each statement in terms of the degree of agreement with each statement; select appropriate response based on the following scale

[1=Strongly disagree, 2= disagree, 3= Neither agree nor disagree, 4 = agree, 5=Strongly agree]

GST Compliance	**SD**	**D**	**N**	**A**	**SA**
The business files its GST returns on time					
The business pays the right amount of GST on time					
The business computes the correct amount of GST by offsetting the eligible input tax with output tax.					
The business charges the correct GST rates according to goods and services that are listed under GST law on GST invoice					
The business keeps records/documents relating to GST for future					
If my customers request a tax invoice be altered for reducing GST, I will not do it					

for them.					
I find it wrong to ask another GST-registered business to alter a tax invoice so that I can claim more GST input					
I find it wrong in creating a fake invoice or altering an invoice, in order to claim higher GST input					
Tax complexity	**SD**	**D**	**N**	**A**	**SA**
The contents of GST returns are hard to understand.					
The proper amount of GST that business have to pay is difficult to calculate					
The procedures for GST return or GST payments are complicated.					
The business spends a lot of time for calculating and paying GST					
Generally, I think the GST tax system in India is complicated					
Tax Compliance Cost	**SD**	**D**	**N**	**A**	**SA**
The complexity of the GST tax system results in business incurring tax compliance cost					
The Business spends high tax compliance costs to comply with GST					
The complexity of business tax administration informs of multiple taxes, the requirement for multiple GST filing per year, etc increases tax compliance costs					
I feel that high tax compliance costs discourage the businesses GST compliance					
The burden of compliance costs in terms of employee/staff time, tax professional fees and external assistance are affecting business GST compliance					
Tax Rate	**SD**	**D**	**N**	**A**	**SA**
The GST tax rate should be the same for every type of business size (small, medium or large businesses).					
The GST tax rate should be the same for every type of goods or Services.					
The GST tax rate should be the same for every type of business sector.					
Financial Constraints	**SD**	**D**	**N**	**A**	**SA**

My business financial burden takes priority over my GST tax payment					
The timely payment of GST taxes causes a financial burden on my business					
The GST tax burden reduces my available working capital, which affects my business's ability to generate profits.					
Digital Payments adoption	**SD**	**D**	**N**	**A**	**SA**
Most of my customers make business payments through digital payment methods such as UPI					
Digital payment by customers have reduced the chances of underreporting business income					
Digital payments by customers have helped in maintaining proper financial records of business					
Digital payments by customers have increased the time spent in recording business transactions by staff or tax professional					
Trust in Government	**SD**	**D**	**N**	**A**	**SA**
I think the government uses government revenues properly					
I think the GST department is transparent and all GST revenues are well used					
I think that GST officials are transparent					
Audit Probability	**SD**	**D**	**N**	**A**	**SA**
Businesses pays the correct amount of GST tax as there is great enforcement and monitoring inform of audits from GST tax department					
The likelihood of audits encourages me to comply with the GST tax law					
Businesses registered for GST law are often subject to tax authority audits and inspections					
Tax penalties and fines	**SD**	**D**	**N**	**A**	**SA**
Our business files GST returns and pays GST taxes on time because we are concerned about penalties and interest payments					
The current GST tax penalties charged					

for late filing are high					
The interest charged on late payments of GST liability is high and does impact business					
The current penalties and interest structure are effective in improving GST compliance					
Tax awareness	**SD**	**D**	**N**	**A**	**SA**
I know the amount of GST tax that my business has to pay.					
I know the type of GST tax that my business has to pay.					
I know when my business has to pay a particular type of GST tax and file the particular type of GST returns.					
I know the chances of being audited by tax officials in case of my GST issues					
I know what the penalties and fines are there for GST tax evasion					
Tax moral	**SD**	**D**	**N**	**A**	**SA**
I think I should honestly declare all my business GST tax liability					
I think businesses should not underreport GST tax liability					
I will not evade paying business GST tax even I have a chance to evade					
I think paying business GST tax is my obligation					
I think evading business GST tax is wrong					
I always obey and follow the GST tax law					
Fashion consciousness (MV)	**SD**	**D**	**N**	**A**	**SA**
A person should try to dress in style					
It is important to me that my clothes be of the latest style					
An important part of my life and activities is dressing smartly					
Please provide any suggestions or recommendations you may have for improving GST tax compliance _____					
Thank you for completing the questionnaire. Your contribution is sincerely appreciated and will provide valuable insights for this research.					

APPENDIX B- Research Paper Publications

1. Haldankar, G., & Patkar, S. (2021). Compliance of Goods and Services Tax: A literature review. *Shodh Sanchar Bulletin, 11*(41), 16–21. **(UGC care listed)**
2. Haldankar, G., & Patkar, S. (2021). A study of the awareness and compliance of Goods and Services Tax (GST) among different small businesses in Goa. *PIMT Journal of Research, 13*(3), 35–39. **(UGC care listed)**
3. Naik, D. M., & Haldankar, G. (2021). Impact assessment of the first wave of COVID-19 pandemic on Goods and Services Tax (GST) revenue collection and distribution in India. *Journal of Distribution Science, 19*(10), 43–54. https://doi.org/10.15722/jds.19.10.202110.43 **(Scopus indexed)**
4. Haldankar, G., & Patkar, S. (2022). Implication of Goods and Services Tax (GST) in India: An analysis of the level of compliance among businesses. *NMIMS Management Review, 30*(3), 54–68. https://doi.org/10.53908/NMMR.300213 **(WOS and UGC care listed)**
5. Haldankar, G., Naik, M., & Patkar, S. (2022). Goods and Services Tax (GST) Law in India -An Analysis of Revenue Performance. *SMART Journal of Business Management Studies*,*18*(2),1–10 http://doi.org/10.5958/2321-2012.2022.00011.2 **(WOS indexed)**
6. Haldankar, G., & Patkar, S. (2024). Regional Dynamics and State-Level Performance in India's Indirect Tax Scenario: Exploring Goods and Services Tax (GST) Revenue Journey. *Regional Science Inquiry*, *16*(1), 39-53. **(Scopus indexed)**
7. Haldankar, G. B., & Patkar, S. (2026). Goods and services tax in India: A systematic literature review and future research agenda. *Apuntes del Cenes, 45*(81), 17–46. **(Scopus indexed)**

Appendix C- Conference Paper Presentations

1. Haldankar, G., & Patkar, S. (2022, June 28). *A study of the level of compliance towards Goods and Services Tax (GST) amongst businesses in Goa*. Paper presented at the **International Conference** on Contemporary Issues in Finance, Accounting and Management, Rosary College of Commerce & Arts, Margao, India.
2. Haldankar, G., & Patkar, S. (2023, March 11). *An analytical study of Goods and Services Tax (GST) compliance towards businesses in India*. Paper presented at the **National Conference** on Emerging Global Practices in Finance & Management, VVM's Shree Damodar College, in association with the Directorate of Higher Education (DHE), Government of Goa, Margao, India.
3. Haldankar, G., & Patkar, S. (2023, April 11). *An evaluation of Goods and Services Tax (GST) performance in the state of Goa: A study of revenue collection and impact of COVID-19 pandemic*. Paper presented at the **International Conference** on Implication and Prospects of Human Capital Formation and Economic Development, VVM's Shree Damodar College, in association with Nirmala Institute of Education, Panaji, Goa, India.
4. Haldankar, G., & Patkar, S. (2023, November 10). *Study of Indian GST: A detailed exploration of voluntary compliance towards GST in India.* Paper presented at the **International Conference** on Navigating Uncertainty: Finance for Sustainable Growth, Christ (Deemed to be University), Bangalore, India.