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Assessing Heterogeneity in Governance Outcome: Evidence from Local Government Institutional Capacity Self-Assessment (LISA) in Nepal

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Abstract

Local Government Institutional Capacity Self-Assessment (LISA) as a self-evaluation tool that assess the workflows and performance by identifying the pros and cons for governance enrichment and development delivery. It analyzes periodic plans, financial management, and governance delivery while developing quantifiable indicators and strengthening local government capacity on a larger landscape. The LISA assessment covers ten dimensions with a total of 100 indicators and sub-indicators, broadly addressing accomplishments and evaluation methods through the Totalitarian Approach, Procedural Order, and Quantitative Results. This study includes evaluation approaches, multi-dimensional scope of LISA and scores of 749 local governments (who submitted their assessment scores for the Fiscal Year 2022/23) published by the ministry after quality assurance. The study method employed is Structural Equation Modeling (SEM) with regression analysis. This study aims to divulge the significance, effectiveness, and diversity of local governance outcomes, exploring their implications and variations across different contexts. These comprehensive understandings will thereby contribute to informed policy-making (improvement recommendations in the guideline, directives and working procedure), efficient service delivery and enhanced outcomes (structural and institutional change in local governments, allocation and expenditure efficiency and capacity enhancement) of the local governments. The findings of the study reveal that ten categorized dimensions each contribute differently to governance outcomes. These variations highlight how each dimension's unique impact can influence overall performance. The direction and strength of their relationships can predict how changes in one area might impact another. The newly institutionalized assessment technique promotes regional balanced development and improved local governance by integrating diverse needs, fostering yardstick competition, and advancing whole-of-government collaboration. Thus, moving beyond a blanket approach, governing policies in Nepal must adopt targeted and tailored strategies that account for the diverse realities and local governance heterogeneity.

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LISA, self-evaluation tool, institutional bricolage, yardstick competition, tailored-approaches, governance-outcomes

JEL Codes
H1, H7

1. Introduction: Nepalese governance overview

Nepal is a fledgling federal country when the new Constitution was promulgated in 2015. The state power has been divided into three tiers of the government: seven hundred fifty-three local governments/levels (Municipalities: 293 and Rural Municipalities: 460), seven Provinces, and one Federation (Figure 1). This governance framework promotes inclusive and participatory democracy, emphasizing just, resilient, and sustainable development activities. The new

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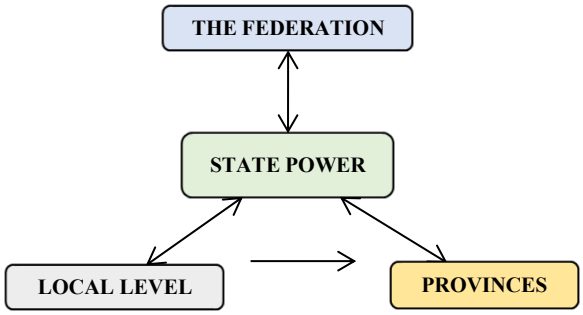
constitution ensures equal opportunities for all citizens in governance, empowering local governments in development and service delivery.

Figure 1: The Division of State-Power



Source: Designed by author based on constitutional provisions

1.1 Nepalese Local Governance: Theories and Practices

To effectively study political systems, one must analyze the extent and types of interconnectedness among political actors within broader frameworks, emphasizing relationships and problem-solving dynamics over a purely structuralist view of institutional change focused on rule implementation (Oakerson, 1999). The term exit-voice dichotomy coined by Hirschman (1970) argues that when the existence of multiple jurisdictions (cities, regions, or countries) is acknowledged, the relationship between office-holders and citizens' changes in two ways. Citizens can react to office-holders' decisions by moving across jurisdictions, which was impossible by the definition under the single-jurisdiction assumption. The application of public choice theory to decision making in local government, argues that citizens will vote for a combination of taxes and benefits that best suit their interests (voice), and/or will relocate to the jurisdiction which offers the best combination of services and taxes (exit); although this theory makes unrealistic assumptions about citizens' ability and willingness to relocate, as well as about the information available to them, particularly in developing countries (Tiebout, 1956). Similarly, the 'voting-with-the-feet' mechanism suggests that competition among multiple jurisdictions providing local public goods results in near-optimal outcomes (Tiebout, 1956). In practice, citizens can improve their assessment of incumbents or policies by comparing with other jurisdictions, even without moving across borders (Salmon, 2019, p. 2). Although local governance under the newly federal structure in Nepal is growing at a slower pace, people desire regionally balanced development. They compare outputs and outcomes among local governments, ultimately creating synergy for yardstick competition. Thus, institutionalizing and enriching local governance is crucial for a shared future in Nepal. No governance system could be back from democratic values in all facets, beyond the one-size-fits-all model (Declaration of 59th Session of High-level Plenary of UNGA: Clause 135).

Understanding the interplay between individuals and institutions is key to societal dynamics, as institutions mediate interactions among individuals, resources, and society. Examining their real-world functioning unveils why certain outcomes favor some groups while marginalizing others. Cleaver (2012) describes these interfaces as institutional bricolage; where individuals use existing social formulas to adapt institutions to respond to changing situations, leading to at least three outcomes. Aggregation advocates that after the introduction of an institution, stakeholders may accept it and then integrate it with various existing social and cultural components. Similarly, alteration: following the stakeholders' decision to adapt the introduced institutions to align with their livelihoods. The last one is articulation: which narrates to a potential resistance from stakeholders to newly introduced institutions by maintaining their institutional identities and culture (Cleaver, 2002; Cleaver & Franks, 2005). Institutional bricolage seeks to understand how institutions function in practice, recognizing that the embedded context: cultural influences, historical legacies, economic drivers and political logics; is not neutral and cannot be overlooked (Hassenforder et al., 2015). In short, it highlights the diverse approaches that stakeholders adopt when confronted with the introduction of new institutions within existing contexts.

Aligning local government performance; the Stewardship Theory speculates that management prioritizes organizational interests over personal goals, linking success-defined as maximizing the utility of both principals and management-thereby supporting with individual interests (Davis et al., 1991). The democracy and democratic behavior in the local governments of Nepal still need to be enriched. Thus, there is a risk of public resources being used for personal purposes. The application of this theory urges local representatives to use resources and put in efforts for the benefit of a larger number of local beneficiaries in Nepal. Similarly, the utmost attention has been directed toward the concepts of strategy content, organization size, staff quality, planning, representative bureaucracy, networking and personnel stability in local governments for better performance (Walker & Andrews, 2015). Most studies are based on contingency theories of organizational design, economic theories of efficient service production, and resource based perspectives on capacity and capabilities for success (Davies, 1969;

Burgess, 1975; Greenwood et al., 1975a, 1975b; Hansen & Kjellberg, 1976; Honadle, 1981; Baumol & Willig, 1986). Many studies in the 1970s and 1980s focused on municipal productivity (Williams, 2003), efficiency (Ostrom, 1972; Newton, 1982), and cost savings in service delivery (Boyne, 1998) based on size and structure. Recently, the rise of New Public Management (NPM) has emphasized market-based, business-like strategies and management practices to enhance the performance of public sector organizations (Walker et al., 2010; Ashworth et al., 2010). Aligning with this theory, the functions and functionaries in many facets in Nepalese local governance, after the grand administrative reform, demand the integration of NPM principles for better performance.

The 3Es model emphasizes Economy (cost of procuring service inputs such as facilities, staff, and equipment for a given quality), Efficiency (technical cost per unit of output and responsiveness to public preferences), and Effectiveness (actual achievement of service objectives) in public services. Similarly, the Inputs-Outputs-Outcomes (IOO) model analyzes the sequence of inputs (linked to economy), outputs (speed, quantity, and quality), and outcomes (effectiveness, impact, and equity), alongside technical efficiency (ratio of outputs to inputs) and 'value for money' or ratio of outcomes to inputs (Walker & Andrews, 2015). The extension of the 3Es and IOO models provides a variety of performance measures across service delivery, governance enrichment, and the democratization of public services. A focus on service delivery in local government is crucial, as it shapes citizens' day-to-day experiences of the state; however, Walker et al. (2010) argue that this focus should not exclude broader governance issues, including accountability, civil and human rights, probity, corruption, and democratic participation. Many functions in the newly formed local governments of Nepal are still entangled with process and output indicators rather than outcome-based ones. Thus, the proper application of such theories in Nepalese local governments may yield better performance outcomes.

1.2 Performance Evaluation ın Local Governments

Previously, in the unitary governance structure, the *Village Development Committees (VDC)* had practiced the *Minimum Conditions and Performance Measures (MCPM)* system in Nepal. Its results were tied up with the funds obtained from the central government (LBFC, 2011). In 2015, the federal governance system was established, these *VDCs* were converted into Wards of Rural Municipalities, and the state restructuring was done. Thereafter, the Local Government Institutional Capacity Self-Assessment Guideline: LISA (2020) developed a self-evaluation tool for local governments, representing a reformed extension and continuation of the MCPM system within a newly federalized context. The LISA tool evaluates the overall activities of local governments from the previous fiscal year, aiming to enhance capital expenditure efficiency, service delivery, and overall performance with respect to policy oversight, adherence to due process, and the quantification of results achieved. The Nepalese local governance performance can be studied through the lens of Cleaver's (2012) conceptual framework; as the whole assessment process is divided into three evaluation grades. The Totalitarian Approach (TA) seems to generalize policy provisions through 'Zoom Out' theory first, and then, Procedural Order (PO) and Quantitative Results (QR) follows as a part of 'Zoom In' process of policy formulation and implementation landscapes (Cairney, 2019, pp. 62-63). Such theories are highly relevant for explaining local governance approaches, their functions, and performance management in Nepal. The umbrella act governing the functioning of all local governments emphasizes the use of information and technology, stating: *ministry may designate the format of information technology to be used at the local levels to maintain uniformity in the financial transactions and administrative functioning to promote transparency and accountability'* (LGOA, 2017, Clause 80); providing the legal background for the enactment of LISA guideline. LISA provides a comprehensive self-evaluation of local governance in Nepal, emphasizing that institutional diagnostics must be contextualized within the broader societal framework. As a Standard Operating Procedure of the Local Government Operation Act, 2017, LISA can be a valuable tool for promoting local burgeoning and sustainability. Although, Nepalese local governments enjoy constitutional autonomy with assured grants and revenue shares, released in tranches to sub-national governments; in the future, LISA results are expected to be integrated into the fiscal transfer process from higher to lower governments.

1.3 The Lisa Self-Assessment Procedure

Ministry of Federal Affairs and General Administration (MoFAGA) is the focal ministry for all local governments, primarily focusing on policy coordination and program implementation, and quality control. During this process, it coordinates by developing web-based reporting system, managing web-cloud services, and regularly updating self-assessment procedures and templates. The facilities and support are provided to District Coordination Committees (DCC: An elected body constitutionally designed to monitor local governments within a district and facilitate coordination among them) for Training of Trainers (TOT) programs and assessment procedures; and to the local governments for compiling, analyzing, and publishing LISA results. Annually,

results are discussed and appraised on a provincial basis with line ministries and sectoral institutions. Local governments with lower scores from the previous year are prioritized. As a result, MoFAGA implements federal programs in these local governments to enhance their performance. Such programs include facilitation on periodic plan formulation, annual planning and budgeting cycle, revenue improvement plans, master procurement plans, and capacity enhancement for local personnel etc. Ministry officials also visit the Municipal Executive's Office and interact with elected representatives and local officials to improve the performance and sustainability of the outcome in the next fiscal year.

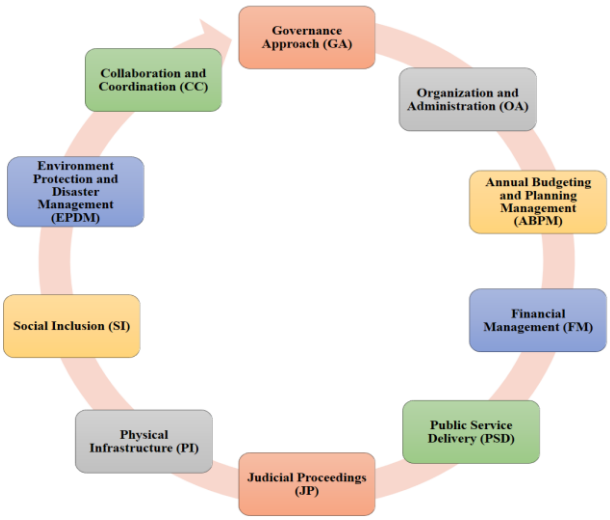
The self-assessment consists of an evaluation of all the indicators and sub-indicators from each division, section, and unit, with the results compiled by the Municipal Executive's Office. The major steps in brief are as follows: The Liaison Officer of the Municipal Executive's Office first notifies elected representatives and personnel's about the objectives, importance, and procedure of LISA. Once the self-assessment is completed, the results from all divisions, sections, and units will be submitted to the Chief Administrative Officer (CAO). The results will be compiled and discussed in the Rural/Municipal Executives (a body of elected representatives). A detailed diagnosis will be made on the performance achieved, indicated by the overall score based on each indicator and sub-indicator, during the meeting of the Rural/Municipal Executive. In this meeting, the CAO will provide appropriate elaborations and descriptions to the elected body. Thus, the score is finalized and approved by the 14th of January of the current fiscal year. The final LISA results will be published by the Office of the Municipal Executives. It should be uploaded on websites and posted notice boards by 21st January for the purpose of Right to Information (RTI). Side by side, the overall evaluation score, along with means of verifications are uploaded into the system provided by the MoFAGA.

The self-evaluated claimed score of the previous fiscal year (also the whole assessment process) from each local government undergoes probation for quality assurance by MoFAGA. The quality assurance process involves a desk review of the means of verification uploaded by local governments in the web-based system, such as examining facts and figures, minutes, and records of transactions. Occasionally, it also includes field observations and monitoring by competent personnel from the ministry. The score claimed by local governments may be revised during this process. They will be informed and provided adequate time to re-submit any means of verification in case of compliance found. The ministry will then verify all the submissions and make a final decision, concluding the quality assurance process. The quality-assured final results will be published by MoFAGA on their website (https://lisa.mofaga.gov.np/report). The best Rural Municipality and Municipality will be separately announced and honored by the ministry based on their final scores. A copy of the final results is sent to the Office of the Prime Minister and Council of Ministers (OPMCM), Ministry of Finance (MoF), National Natural Resources and Fiscal Commission (NNRFC), and the Cabinet.

1.4 Scope and Evaluation Approaches

LISA covers following ten dimensions as shown in diagram below (Figure 2).

Figure 1: Scope (dimensions) of LISA



Source: Designed by author based on LISA guideline

The institutional capacity of local governments is assessed in aforementioned ten dimensions; each dimension is studied on the basis of major three indicators such as Totalitarian Approach (TA), Procedural Order (PO) and Quantitative Results (QR). TA focuses on the overall aspects of local governance in a broader context. It includes, to some extent, the political aspect of the evaluation, comprising 21% of the total weight. PO covers the steps and methodologies to be followed as part of the due process of law, with a weightage of 34%. Meanwhile, QR includes result-oriented indicators that can be measured, analysed, and quantified, carrying the highest weightage of 45%. The division of weightage was made based on local constitutional functions and the provisions of existing laws. Due to the newly federalized structure and the relatively inexperienced, naive local governments, TA and PO account for more than half of the weightage, primarily comprising process indicators. Each dimension is evaluated based on indicators and sectoral sub-

indicators. TA is assessed in four stages (1 to 4), while PO and QR are assessed in three stages (Weak, Average and Best). Scores from all sub-indicators across the ten dimensions are cumulated to determine the final assessment result, representing the local level's status. The Table 1 summarizes the indicators, stages, and weights for the assessment.

Table 1: Assessment Grades

Indicators	Codes	Stages/ Results	Assessment Grades				
Totalitarian Approach	TA	4	Stages	1	2	3	4
			Score	0	0.5	0.75	1
Procedural Order	PO	3	Results	Weak		Average	Best
			Score	0		0.5	1
Quantitative Results	QR	3	Results	Weak		Average	Best
			Score	0		0.5	1

Source: Designed by author based on LISA guideline

1.5 Designing the Analysis

The quantitative empirical research on local government management and performance has a spectrum of extended pedigree. Although it demonstrates significant conceptual and theoretical heterogeneity, the diverse findings from empirical studies have not been integrated to assess how local government management impacts the performance. Thus, a comprehensive study of management's effects on local government performance must consider various dimensions from both external and internal stakeholders utilizing diverse data sources. By integrating qualitative insights (provisions in the LISA guideline) with quantitative data (scores of each local government), this study aims to analyze the significance, effectiveness, and diversity of local governance outcomes, exploring their implications and variations across different contexts. These comprehensive understandings will thereby contribute to informed policy-making (improvement recommendations in the guideline, directives and working procedure) and enhanced service delivery to the people and better performance (structural and institutional change, allocation and expenditure efficiency and capacity enhancement of local governments). In Nepal, each local government varies in financial and administrative capability, revenue mobilization, resource allocation, allocation and expenditure efficiency, and monitoring, evaluation, and reporting systems. Although same constitutional rights are assured, their performance levels differ. Therefore, a blanket approach to policy formulation and program implementation may not yield the expected outcomes. This calls the need for a comprehensive study the performance in multiple facets. Since the enactment of the LISA guideline, no study has examined and acknowledged the heterogeneity in local governance outcomes based on the scores. This study, analyzing scores to assess local government performance in Nepal, may be the first to cover all indicators and sub-indicators of this type. Its policy revisions and score analysis not only benefit Nepalese local governance practices but also make a significant contribution to the academic knowledge spheres. Thus, to address these research gaps and fulfill the objectives; this paper is divided into four sections as follows:

1. Introduction-Nepalese Governance Overview: This section discusses the Nepalese local governance: theories and practices, Performance evaluation in local governments, the LISA self-assessment procedure, Scope and evaluation approaches, and Designing the analysis.
2. Materials & Methods: The Analytical framework, Variables, and Coding are discussed in this section.
3. Results & Discussions: Coefficients and findings and Discussions are presented in this section.
4. Conclusion & Recommendations: This section summarizes the key findings and provides pragmatic recommendations for the fruitful delivery of local governance outcomes.

For the Fiscal Year 2022/23 (Nepali Year 2079/080), 749 out of 753 local governments submitted their assessment score. Kandel (2021) argues that some local governments have not fully internalized the importance of the self-evaluation process; thus, they continue to bypass the guidelines and fail to submit their self-assessment scores. The remaining four local governments that did not submit their scores are not included in this study. All the data used in this research were collected from the ministry's website as an open data source. Since the final results are published by the ministry after quality assurance, there is no risk of missing data, outliers, or inconsistencies. The scores obtained are used directly for the analysis.

Some limitations in this study are considered as follows. It is believed that all local governments exhibit the similar vigor in their management efforts, characterized by homogeneous inter-organizational relationships, decentralization of decision-making, and bureaucratic autonomy. The key limitations in performance evaluation include the lack of comprehensive meta-mega policies and integrated service mapping, as well as insufficient technological and human resources at local level. Additionally, evaluating 'performing' and 'less-performing' local governments undermines the potential benefits of yardstick competition in advancing public welfare. Furthermore, challenges arise from inadequate management of public policies, insufficient de-concentration and decentralization, and persistent issues in governance and anti-corruption efforts; all of which hinder overall progress in local governance. This study includes, three evaluation grades, ten dimensions, 100 sub-indicator counts with respect to the performance of 749 local governments all together to

examine the heterogeneity in local governance. However, a comprehensive analysis of each local government based on all the dimensions and sub-indicator counts could not be made due to resource and time constraint. A detailed study of each dimension and sub-indicator counts for every local government is left for future research.

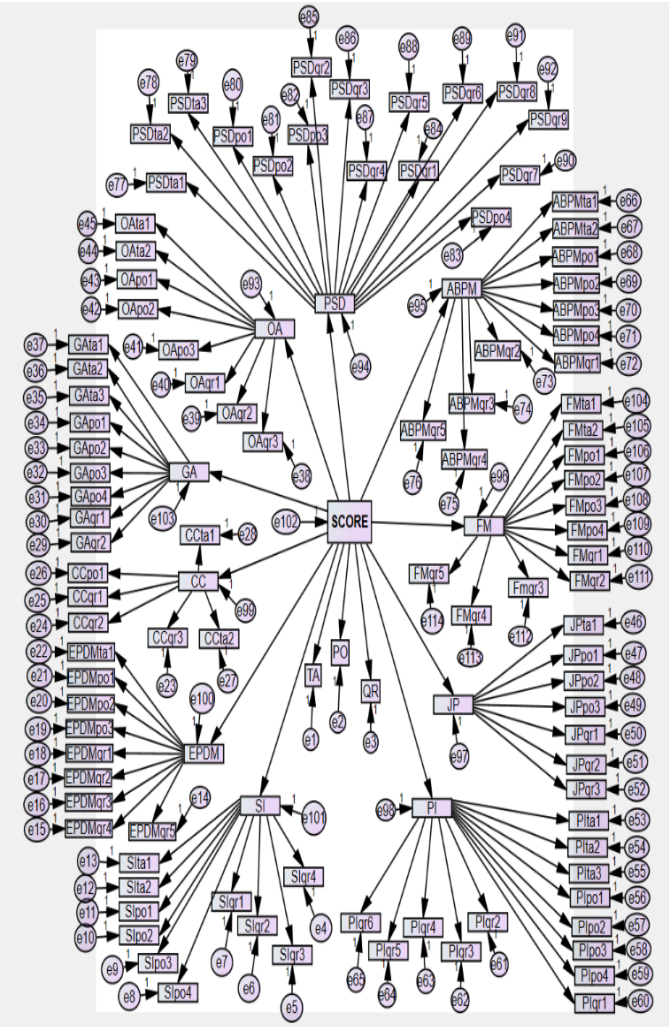
2. Materials & Methods

The mixed method approach was applied for the study by combining systematic analytical review and quantitative methodology. The policy analysis begins with an extensive literature review to identify key provisions and establish a contextual basis. Subsequently, the Structural Equation Modeling (SEM) with regression analysis was used for examining the direction and strength of variables to predict the heterogeneity of local governance outcomes. The practical context for each local government may vary, making interactions and unobserved factors critical as they ultimately impact performance. The complex simultaneous analysis of multiple relationships and latent constructs, along with testing mediation and indirect effects to uncover causal pathways, necessitates the use of SEM with regression analysis. There may be some limitations in the data obtained for analysis. Since this is a self-evaluation approach, the scores achieved may not fully reflect actual performance. Some means of verification may fail to be uploaded, certain indicators might be underreported, and there may be varying levels of understanding among local governments regarding the indicators and sub-indicators, especially when relying solely on the web-based system. These factors could affect the final scores achieved by local governments. Despite these challenges, the quality assurance process conducted by MoFAGA addresses these issues by verifying the scores and publishing the final results, which are used for this analysis.

2.1 Analytical Framework

The analytical framework (Figure 3) consists of variables that contribute to the evaluation of local government's performance in Nepal. The whole process of evaluation via 10 dimensions and 100 sub indicators counts encompasses through three evaluation grades TA, PO and QR. It consists of ten variables (GA, OA, ABPM, FM, PSD, JP, PI, SI, EPDM, and CC), influenced by specific observed variables (sub-indicator counts) for each, also categorized into three evaluation grades ultimately characterize the endogenous variable 'SCORE.' The model is likely used to understand how different aspects of performance (also measured by TA, PO, and QR) interrelate and contribute to the 'Score' achieved. The details of indicators, sub indicators and their cumulative counts are presented into Table 2. The relative correlation, strength and direction of the analysis is presented through the respective coefficients (Table 3).

Figure 3: Analytical Framework of the Study



Source: Designed by author

2.2 Coding and Description of Variables

The designated ten dimensions, indicators, sub-indicators included in the guideline are mostly inherited from the constitutional provisions, Local Government Operation Act (LGOA, 2017) and existing laws. Table 2 presents a concise overview of the variables utilized in this study.

Table 2: Coding and description of variable

S. N.	Dimensions	Description of Variables			Total
		Indicators (I.)	Sectoral Sub Indicators (S. I.) and Coding	Count	
1.	Governance Approach (GA)	TA	Operation of municipal assembly (**GAta1**), decision process of municipal executive (**GAta2**), and local laws promulgated (**GAta3**)	3	9
		PO	Operating procedure for committees and sub-committees (**GApo1**), operation of municipal executive meetings (**GApo2**), internal control system (**GApo3**), publishing the property details of elected representatives (**GApo4**)	4	
		QR	Municipal executive's total meeting counts (**GAqr1**), use of Sub-National Treasury Regulatory Application (SuTRA) in accounting system (**GAqr2**)	2	
2.	Organization and Administration (OA)	TA	Capacity enhancement of local government (**OAta1**), reporting to higher governments (**OAta2**)	2	8
		PO	Providing TOR for each officials (**OApo1**), Outsourcing non-permanent officials (**OApo2**), performance contract of officials (**OApo3**)	3	
		QR	Investment in human resource (OAqr1), attendances of Chief Administrative Officer (**OAqr2**), involvement of officials and elected representatives in capacity enhancement programs (**OAqr3**)	3	
3.	Annual Budgeting and Planning Management (ABPM)	TA	Formulating annual budgeting and planning and periodic plan (**ABPMta1**), involvement of concerned committee and coordination (**ABPMta2**)	2	11
		PO	Localization of Sustainable Development Goals (SDGs) (**ABPMpo1**), sectoral budget ceilings (**ABPMpo2**), endorsement of annual budget and programs in municipal assembly (**ABPMpo3**), integrating NGO's program into annual budget and approval from assembly (**ABPMpo4**)	4	
		QR	Proportion of internal income in total budget (**ABPMqr1**), proportion of projects (cost estimated below 500 thousands) in total budget (**ABPMqr2**), annual increment in internal income (**ABPMqr3**), mutual partnerships by NGOs (cash) (**ABPMqr4**), budget allocation for the projects to be accomplished by matching funds (**ABPMqr5**)	5	
4.	Financial Management (FM)	TA	Internal revenue (**FMta1**), and financial discipline (**FMta2**)	2	11
		PO	Application of government approved accounting procedures (**FMpo1**), publishing income and expenses (**FMpo2**), formulating annual/procurement plan and its implementation (**FMpo3**), progress review of annual budget and programs (**FMpo4**)	4	
		QR	Budget transfer and re-allocation (**FMqr1**), administrative expenses (**FMqr2**), capital expenditure (**FMqr3**), revenue collection (**FMqr4**), delegating expenses authority to CAO (**FMqr5**)	5	
5.	Public Service Delivery (PSD)	TA	Service delivery (**PSDta1**), services provided by Ward Offices (**PSDta2**), public satisfaction over service delivery (**PSDta3**)	3	16
		PO	Use of technology in service delivery (Token, Online registration, or Computerized billing) (**PSDpo1**), SOP of service delivery (**PSDpo2**), payment via banking channels (**PSDpo3**), alternative service delivery mechanism in Ward Offices (**PSDpo4**)	4	
		QR	Non-compliance, and its handling (**PSDqr1**), Social Security Allowance payment via banking channel (**PSDqr2**), birth registration by 35 days (**PSDqr3**), public hearings (**PSDqr4**), mobile service outreach (Vaccination, Vitamin A, Polio, Basic Health Services Camp) (**PSDqr5**), access to education (enrollment rate) (**PSDqr6**), access to health services (Equipped health posts, hospitals, compulsory Vaccines for children) (**PSDqr7**), agriculture and livestock services (**PSDqr8**), value addition and marketization of local products (**PSDqr9**)	9	
6.	Judicial Proceedings (JP)	TA	Operation of Judicial Committee (**JPta1**)	1	7
		PO	Provision of mediators for dispute resolution (**JPpo1**), decision making process of Judicial Committee (**JPpo2**), reporting system of Judicial Committee (**JPpo3**)	3	
		QR	Compliance resolution (**JPqr1**), appeal over decisions of Judicial Committee (**JPqr2**), formation of Mediation Center (**JPqr3**)	3	
7.	Physical Infrastructure (PI)	TA	Road infrastructure development based on master plan (**PIta1**), land-use plan based on vulnerability and resilience (**PIta2**), Public Private Partnership on physical infrastructure development (**PIta3**)	3	13
		PO	Child and disable friendly infrastructure (**PIpo1**), utilization of infrastructure and sustainable management (**PIpo2**), Brief Environment Study (BEE), Initial Environmental Examination (IEE) and Environmental Impact Analysis (EIA) of projects (**PIpo3**), Implementation of National Building Code and Standards (**PIpo4**)	4	
		QR	Road expansion (**PIqr1**), upgradation of roads (**PIqr2**), drinking water service expansion (**PIqr3**), implementation of annual plan (**PIqr4**), waste management (**PIqr5**), industrial infrastructure development (**PIqr6**)	6	
8.	Social Inclusion (SI)	TA	Minimization of social discrimination (**SIta1**), proportional participation (**SIta2**)	2	10

		PO	Social security and protection (**SIpo1**), advocacy and movements for ending the domestic violence (**SIpo2**), activities to end the child labor, child marriage, dowry, *Boksi,* Menstrual Seclusion *(Chhaupadi)* customs (**SIpo3**), Gender Equalization and Social Inclusion (GESI) responsive budget auditing (**SIpo4**)	4	
		QR	Reduction in the number of domestic violence against women (**SIqr1**), investment in the programs to decrease child labor, child marriage, dowry, *Boksi,* Menstrual Seclusion *(Chhaupadi)* customs (**SIqr2**), Users Committees lead by women, secluded class, disable people (**SIqr3**), investment to lift-up the socio-economic status of women, back warded, minorities and marginalized people, senior citizens, secluded people, disables and vulnerable (**SIqr4**)	4	
9.	**Environment Protection and Disaster Management (EPDM)**	TA	Disaster Management (**EPDMta1**)	1	9
		PO	Controlling environmental pollution (**EPDMpo1**), Child friendly infrastructure (**EPDMpo2**), identifying and mapping hazard prone areas (**EPDMpo3**)	3	
		QR	Budget allocation for environmental conservation (**QRta1**), involvement of private sector, community organization and citizens for environment protection (**QRta2**), establishment of Local Disaster Management Fund and expenses (**QRta3**), formation and operation of Local Community Organizations (**QRta4**), accessibility of emergency services such as ambulance, fire engine and extinguisher (**QRta5**)	5	
10.	**Collaboration and Coordination (CC)**	TA	Collaboration and coordination among Federation, Provinces and Local Level (**CCta1**), Inter-local governments collaboration and coordination (**CCta2**)	2	6
		PO	Formation and operation of committees to address the issues affecting two or more local governments (**CCpo1**)	1	
		QR	Coordination and facilitation by local governments for projects implementation with higher governments (**CCqr1**), inter-local government partnership (**CCqr2**), coordination with DCC (**CCqr3**)	3	
			GRAND TOTAL	**100**	**100**

Source: Author-coded data based on LISA guideline: aligned with analytical framework

2.2.1 Governance Approach (GA):

In the context of governance approaches, a TA involves the operation of the municipal assembly, the decision-making process of the municipal executive, and the promulgation of local laws, with a score of 3. Similarly, PO focuses on the operating procedures for committees and sub-committees, the functioning of municipal executive meetings, the internal control system, and the publication of property details of elected representatives, scoring a 4. Likewise, QR measure the municipal executive's total meeting counts and the use of the Sub-National Treasury Regulatory Application (SuTRA) in the accounting system, with a score of 2. The governance is primarily analyzed through totalitarian and procedural methods. With the newly established system, focusing on the overall context and due process holds particular significance; thus, GA is assigned a weightage of 9.

2.2.2 Organization and Administration (OA):

In the realm of organization and administration, the TA emphasizes capacity enhancement of local government and reporting to higher governments, which scores a 2. Similarly, PO aspect includes providing Terms of Reference (TOR) for each official, outsourcing non-permanent officials, and implementing performance contracts for officials, receiving a score of 3. Likewise, QR evaluate investment in human resources, the attendance of the CAO, and the involvement of officials and elected representatives in capacity enhancement programs, also scoring a 3. Organization and administration is a functional wing of the Office of the Municipal Executive. Efficient administration and a well-structured organization can accomplish tasks effectively. Thus, by focusing on process and output indicators, it is assigned a weightage of 8.

2.2.3 Annual Budgeting and Planning Management (ABPM):

In annual budgeting and planning management, the TA focuses on the formulation of annual budgets, planning, and periodic plans, as well as the involvement of concerned committees and coordination, with a score of 2. The PO emphasizes the localization of SDGs, setting sectoral budget ceilings, endorsing annual budgets and programs in the municipal assembly, and integrating NGOs programs into the annual budget with assembly approval, receiving a score of 4. Similarly, QR are assessed based on the proportion of internal income in the total budget, the proportion of projects with cost estimates below 500 thousand in the total budget, the annual increment in internal income, mutual partnerships by NGOs (cash), and budget allocation for projects to be accomplished by matching funds, which achieves a score of 5. ABPM emphasizes the administration and efficient allocation of resources, ensuring that plans align with local priorities and deliver maximum results. Thus, with a focus on process and output indicators, it is assigned a weightage of 11.

2.2.4 *Financial Management (FM):*

In the financial management sector, TA centers on maintaining internal revenue and financial discipline, earning a score of 2. The PO focuses on adhering to government-approved accounting procedures, publishing income and expenses, formulating and implementing annual and procurement plans, and conducting progress reviews of the annual budget and programs, which receives a score of 4. Similarly, QR are evaluated based on budget transfers and re-allocations, administrative expenses, capital expenditures, revenue collection, and the delegation of expense authority to the CAO, achieving a score of 5. Financial management focuses on the accountability of local governments, emphasizing prudent fiscal practices, transparency, and long-term financial sustainability. The weightage of 11 highlights its importance in maintaining trust and ensuring the efficient use of public funds.

2.2.5 Public Service Delivery (PSD):

The public service delivery is one of a major dimension in local governance. Among three evaluation grades, the TA addresses service delivery, the services provided by ward offices, and public satisfaction with these services, scoring a 3. Similarly, PO emphasizes the use of technology in service delivery, such as tokens, online registration, or computerized billing, and includes the establishment of Standard Operating Procedures (SOPs) for service delivery, payments via banking channels, and alternative service delivery mechanisms in ward offices, with a score of 4. Likewise, QR are assessed based on factors such as handling non-compliance, Social Security Allowance payments via banking channels, timely birth registration, public hearings, mobile service outreach initiatives (including vaccination, Vitamin A, polio, and basic health services camps), access to education (enrollment rates), access to health services (equipped health posts, hospitals, and compulsory vaccinations for children), agriculture and livestock services, and the value addition and marketization of local products, which achieve a score of 9. Focusing on governance and delivery, output indicators are primarily emphasized, complemented by process indicators. The totalitarian aspect is also incorporated to benchmark basic service delivery provisions. Thus, the highest-ranked indicator, PSD altogether holds a weight of 16.

2.2.6. Judicial Proceedings (JP):

Judicial Committees in local governments are led by vice chair/vice mayors. The functions assigned in Local Government Operation Act, 2017 are performed by the committees; considered as judicial proceedings. Aligning with other dimension, the TA focuses on the operation of the Judicial Committee, which scores a 1. Similarly, PO includes provisions for mediators to aid in dispute resolution, outlines the decision-making process of the Judicial Committee, and establishes a reporting system for the committee, receiving a score of 3. Whereas, QR are assessed based on compliance resolution, appeals against decisions made by the Judicial Committee, and the formation of a Mediation Center, which also scores a 3.As Judicial Committees are newly established in local governments, elected representatives resolve local disputes and conflicts based on the provisions of the LGOA, 2017. Considering process and output indicators, Judicial Proceedings assigned a weightage of 7.

2.2.7 Physical Infrastructure (PI):

In physical infrastructure sector, the TA involves road infrastructure development guided by a master plan, a land-use plan addressing vulnerability and resilience, and Public-Private Partnerships for physical infrastructure projects, scoring a 3. The PO includes creating child- and disability-friendly infrastructure, ensuring sustainable management and utilization of infrastructure, conducting Brief Environmental Studies (BEE), Initial Environmental Examinations (IEE), and Environmental Impact Analyses (EIA) for projects, and adhering to the implementation of National Building Code and Standards, which achieves a score of 4. Similarly, QR are evaluated based on road expansion, road upgradation, expansion of drinking water services, implementation of annual plans, waste management practices, and industrial infrastructure development, earning a score of 6. Physical infrastructure development is crucial, particularly considering the significant disparities in infrastructure assets among local governments in Nepal. Addressing these gaps is essential for ensuring balanced development and delivery of services. Accordingly, it is assigned a weightage of 13, reflecting its high priority.

2.2.8 Social Inclusion (SI):

The social inclusion is one of an acknowledged dimension in overall Nepalese governance since three decades. Its foundation must be assured even from the lowest units of governance. In this evaluation process, within the social inclusion; the TA focuses on minimizing social discrimination and ensuring proportional participation, scoring a 2. The PO involves social security and protection measures, advocacy and movements to end domestic violence, efforts to eradicate child labor, child marriage, dowry, Boksi, and Chhaupadi customs, and implementing Gender Equalization and Social Inclusion (GESI) responsive budget auditing, receiving a score of 4. Similarly, QR are assessed based on reductions in domestic violence against women, investments in programs to address child labor and related issues, the establishment of user committees led by women, and efforts to enhance women's socio-economic status, marginalized groups, senior citizens, and people with disabilities, also scoring a 4. Nepal is a multi-ethnic, multi-cultural, multi-religious, and multilingual country, where social cohesion, cultural pluralism, and the participation of all groups in decision-making are cutting-edge governance issues. Social Inclusion is allocated a weight of 10 in measuring local government performance because it ensures equitable access to resources and opportunities, particularly for marginalized and vulnerable groups, reflecting the commitment to inclusive governance and addressing social inequalities.

2.2.9 Environment Protection and Disaster Management (EPDM):

The environment protection and disaster management are cross-cutting issues around the globe; as it impedes the sustainable development. It is commonly accepted that the enhanced capacity of local governments can have a profound impact on saving lives, and assets and building community based disaster resilience (Rose, 2014). Thus, understanding the global perspectives, this dimension in the evaluation process consists of TA primarily focuses on disaster management, scoring a 1. Similarly, PO includes controlling environmental pollution, creating child-friendly infrastructure, and identifying and mapping hazard-prone areas, which receives a score of 3. Likewise, QR are evaluated based on budget allocation for environmental conservation, involvement of the private sector, community organizations, and citizens in environmental protection, the establishment and expenses of a Local Disaster Management Fund, the formation and operation of local community organizations, and the accessibility of emergency services such as ambulances, fire engines, and extinguishers, achieving a score of 5. Given the sensitivity of global warming, climate change, environmental protection, and disaster management, quantitative indicators are prioritized, assigning EPDM a weightage of 9.

2.2.10 Collaboration and Coordination (CC):

Collaboration, coordination, and working at communities are major values of federalism in Nepal. Thus, the practices of going hand-to-hand even from lowest units is much appreciated in Nepalese governance. Thus, TA in this dimension focuses on collaboration and coordination among the Federation, Provinces, and Local Levels, as well as inter-local level coordination, scoring a 2. Similarly, PO involves the formation and operation of committees addressing issues affecting two or more local governments, which scores a 1. Ultimately, QR are assessed based on the coordination and facilitation by local governments for project implementation with higher governments, inter-local government partnerships, and coordination with the DCC, achieving a score of 3.

The collaboration and coordination among the three tiers of government, as well as among local governments, is a fundamental and essential approach in the newly federalized structure. However, despite its necessity and sensitivity, clear provisions for coordination with non-state actors and private financing institutions to support local government financing appear to be lacking. While output indicators are more prevalent, it is assigned a weightage of 6.

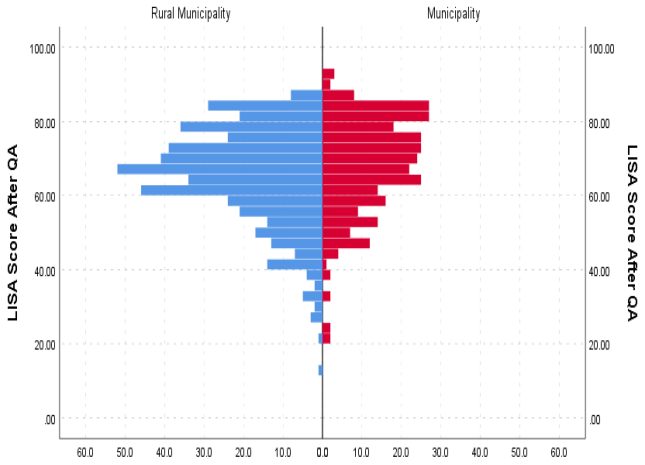
As political-administrative units, the local level stands for lowest governments tier in the vicinity of people. Therefore, they are considered delivery institutions. Being a multidimensional approach, performance measurement of local governments is more challenging when assessed via scores. Therefore, selecting the dimensions and indicators that truly reflect the performance of local governments is a difficult task. The selection of these dimensions, indicators, their counts, and weightage is finalized based on the constitutional functions of local level (Constitution of Nepal, Schedule-8), the Local Government Operation Act, 2017, and other existing laws. These weightages in sectoral performance assessment serve as vital indications, facilitating the identification of weaker sectors and the subsequent implementation of targeted policy measures aimed at enhancing their performance.

3. Results and Discussions

The LISA score after Quality Assurance (conducted by MoFAGA) showed that Municipalities (291) scored higher at 68.56 compared to Rural Municipalities (458) at 65.43. In terms of evaluation grades, Municipalities achieved a score of 33.11 in QR, slightly surpassing the 32.16 scored by Rural

Municipalities. When analysing the PO, Municipalities also led with a score of 21.13, while Rural Municipalities scored 19.62. However, under the TA, Rural Municipalities scored 13.66, slightly lower than the Municipalities' score of 14.32. The scores of Rural Municipalities are spread out between 20 and 80, with a significant number of occurrences around the mid-range (60-80). Whereas Municipalities scores are more concentrated between 60 and 90, indicating higher and more consistent scores compared to Rural Municipalities (Figure 4).

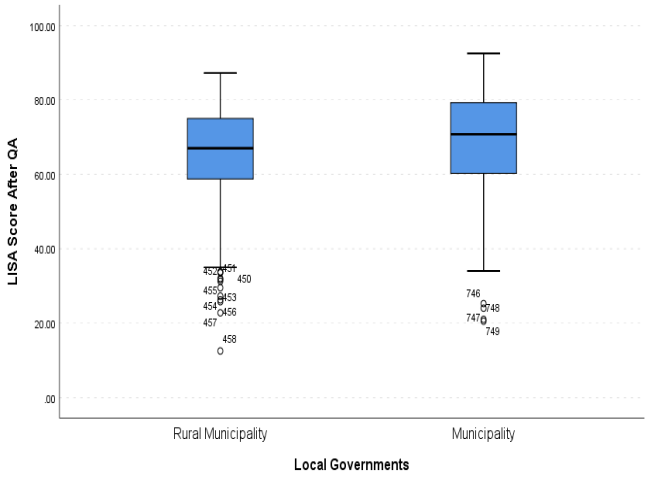
Figure 4: LISA Scores in Rural Municipalities and Municipalities



Source: Prepared by author based on the LISA Score

The box plot for Municipalities seems to have a slightly higher median and a smaller range of scores; whereas, Rural Municipalities have more variability, as indicated by the longer whiskers and the occurrence of outliers on the lower side. This indicate that Municipalities generally have higher and less variable LISA scores. Rural Municipalities show greater variability and have more outliers, suggesting that their scores are more spread out with some particularly low values (Figure 5).

Figure 5: The Box Plot of LISA Score



Source: Prepared by author based on the LISA Score

The standard deviations (SD) and mean scores (M) in case of 10 governance dimensions across Rural Municipalities and Municipalities are presented below.

i. **GA:** Both Rural Municipalities (M=7.54, SD=1.04) and Municipalities (M=7.59, SD=1.00) have similar governance practices, with Municipalities performing slightly better.

ii. **OA:** Scores are nearly identical, with Rural Municipalities at M=5.80, SD=1.42 and Municipalities at M=5.81, SD=1.37, indicating consistent organizational practices across both.

iii. **ABPM:** Municipalities (M=7.17, SD=1.71) outperform Rural Municipalities (M=6.86, SD=1.79) in budgeting and planning, showing better planning cycle.

iv. **FM:** Both show strong and similar financial management, with Rural Municipalities at M=8.06, SD=1.69 and Municipalities at M=8.08, SD=1.67.

v. **PSD:** Municipalities (M=11.77, SD=2.10) slightly edge out Rural Municipalities (M=11.70, SD=2.24) in delivering public services.

vi. **JP:** Municipalities (M=5.88, SD=1.39) have slightly better judicial proceedings than Rural Municipalities (M=5.77, SD=1.49).

vii. **PI:** Municipalities (M=7.51, SD=2.54) are better at physical infrastructure development compared to Rural Municipalities (M=6.35, SD=2.59).

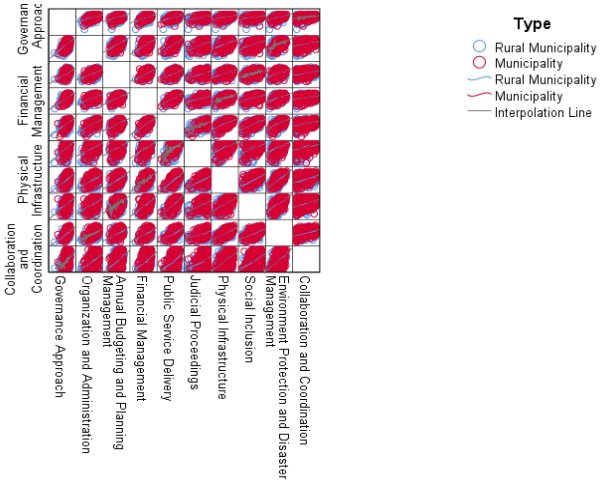
viii. **SI:** Municipalities (M=6.70, SD=2.31) perform better in social inclusion compared to Rural Municipalities (M=6.29, SD=2.22).

ix. **EPDM:** Municipalities (M=5.16, SD=1.75) are more effective in environmental protection and disaster management than Rural Municipalities (M=4.58, SD=1.70).

x. CC: Municipalities (M=2.89, SD=1.94) show slightly better collaboration and coordination efforts than Rural Municipalities (M=2.49, SD=1.93).

Overall, Municipalities tend to outperform Rural Municipalities, with higher average scores in areas such as ABPM, PI and SI. While both show considerable variability, particularly in PSD and PI. Municipalities exhibit slightly better performance and lower variability across most of the dimensions. Thus, Rural Municipalities have more variability in areas like CC suggesting less consistency in their performance. The Scatter Plot Matrix illustrating dimensions in Rural/Municipalities is shown below (Figure 6). The close alignment of red and blue lines suggests that the relationship between variables is similar across local governments. The strong correlation between FM and PSD justifies a uniform policy approach to financial reforms and governance enhancement. Therefore, policies or strategies that work in one local government may also be effective in another. Conversely, divergence of these lines indicates that the relationship between variables differs. The stronger relationship between PI and SI in municipalities might need to include the components of SI into urban infrastructure projects, while rural projects might require different priorities, demanding tailored strategies. Likewise, a steeper slope indicates a stronger relationship between variables, suggesting that targeted interventions could leverage this correlation. In rural municipalities, where FM strongly influences governance quality; improving financial management practices could be a high-impact intervention. Similarly, a curved interpolation line indicates a non-linear relationship. For instance, a curve that flattens at higher levels of one variable might suggest diminishing returns. Also, outliers in the scatterplot represents not following the general trends possibly due to unique local factors, or special circumstances realities and heterogeneity in Nepalese local governance outcomes. The influence of various evaluation approaches across TA ($F(1,747) = 7.704$, $p=0.006$), PO ($F(1,747) = 15.388$, $p<0.001$) and QR ($F(1,747) = 4.528$, $p=0.034$) was evaluated by using One-way ANOVA showing the statistical significance. The highest F-score in PO indicate the greater variations; suggesting the due process of law still needs to be institutionalized. The same applies to the TA. The lowest F-score in case of QR indicates better quantifiable delivery. Despite the lethargic administrative culture and less productive systems-of-systems at the federal and provincial levels, local governments are performing well. Specific TOR, proper organizational structure, and local autonomy lead to better quantifiable results, aligning with the principles of NPM. However, the highly significant impact of PO suggests that not all aspects of NPM are being fully complied with in as in case of JP, PI, SI, EPDM and CC. The black interpolation line represents the overall trend across local governments. Its proximity to the red and blue lines in the areas of ABPM, OA suggests a consistent relationship regardless of the local government reinforcing the idea of unified approach. Conversely, the deviation of red and blue line from black line in case of many variables suggests that a one-size-fits-all policy or blanket approach might not be appropriate in all local governments.

Figure 6: The Scatter plot matrix illustrating dimensions in Rural/Municipalities



Source: Prepared by author based on the LISA Score

The direction and strength of these relationships predict how changes in one area might impact another. Thus, by analysing the alignment, shape, and position of the interpolation lines in this scatterplot matrix; policymakers can prioritize areas for intervention recognizing the ground

Nepalese local governance. Lack of a well-established, sustained, open and free market economy may be one of a logical reason for this. The study conducted by Adhikari and Raut (2024) estimates the size of Nepal's informal economy between 2010/11 and 2020/21 using two different approaches. The National Accounts Approach indicates that 42.66% of the economy is informal, while the Currency Demand Method (CDM) estimates this figure at 40.60%. This substantial proportion of the economy being informal reflects the instability and perturbations in Nepal's market economy. The detailed study was conducted by Structural Equation Modeling (SEM) for multiple regression analysis. For the saturated model of sample size 749, the initial goodness of fit was tested by the most frequently reported parameters in the literature (Collier, 2020, pp 64-65) such as GFI (0.90) and CFI (0.92). The estimates are presented below (Table 3).

Table 2: Regression Weight Summary

Items		Variables	Estimate	S.E.	C.R.	P	Items		Variables	Estimate	S.E.	C.R.	P
PSD	<-	SCORE	0.134	0.004	38.139	***	PIta2	<-	PI	0.102	0.005	20.246	***
OA	<-	SCORE	0.075	0.003	27.438	***	PIta3	<-	PI	0.083	0.005	17.135	***
GA	<-	SCORE	0.049	0.002	22.332	***	PIpo1	<-	PI	0.025	0.003	8.485	***
CC	<-	SCORE	0.096	0.004	23.705	***	PIpo2	<-	PI	0.082	0.005	16.148	***
EPDM	<-	SCORE	0.099	0.003	31.202	***	PIpo3	<-	PI	0.091	0.005	17.73	***
SI	<-	SCORE	0.131	0.004	32.928	***	PIpo4	<-	PI	0.095	0.005	18.784	***
PI	<-	SCORE	0.159	0.004	36.802	***	PIqr2	<-	PI	0.083	0.004	22.104	***
JP	<-	SCORE	0.073	0.003	24.182	***	SIta1	<-	SI	0.099	0.004	24.769	***
FM	<-	SCORE	0.092	0.003	28.916	***	SIta2	<-	SI	0.069	0.004	16.409	***
ABPM	<-	SCORE	0.092	0.004	25.847	***	SIpo1	<-	SI	0.108	0.006	19.677	***
PSDpo3	<-	PSD	0.053	0.004	12.496	***	SIpo2	<-	SI	0.096	0.005	21.156	***
PSDpo4	<-	PSD	0.057	0.004	14.701	***	SIpo3	<-	SI	0.131	0.005	25.568	***
PSDqr1	<-	PSD	0.084	0.004	18.835	***	SIpo4	<-	SI	0.089	0.007	12.584	***
PSDqr2	<-	PSD	0.017	0.002	7.89	***	SIqr1	<-	SI	0.082	0.005	16.232	***
PSDqr3	<-	PSD	0.053	0.007	7.866	***	SIqr2	<-	SI	0.112	0.005	22.455	***
PSDqr4	<-	PSD	0.091	0.006	14.231	***	EPDMta1	<-	EPDM	0.109	0.006	19.38	***
PSDqr5	<-	PSD	0.101	0.006	17.284	***	EPDMpo1	<-	EPDM	0.087	0.005	16.314	***
PSDqr6	<-	PSD	0.048	0.003	14.43	***	EPDMpo2	<-	EPDM	0.032	0.003	9.94	***
PSDqr7	<-	PSD	0.032	0.003	12.205	***	EPDMpo3	<-	EPDM	0.155	0.007	21.673	***
PSDpo2	<-	PSD	0.062	0.006	11.185	***	EPDMqr1	<-	EPDM	0.109	0.007	16.623	***
PSDpo1	<-	PSD	0.067	0.005	12.698	***	EPDMqr2	<-	EPDM	0.168	0.007	24.767	***
PSDqr8	<-	PSD	0.054	0.004	14.139	***	CCta1	<-	CC	0.146	0.006	24.95	***
PSDqr9	<-	PSD	0.113	0.006	18.166	***	CCta2	<-	CC	0.168	0.005	31.305	***
PSDta3	<-	PSD	0.071	0.004	18.582	***	CCpo1	<-	CC	0.185	0.006	31.372	***
PSDta1	<-	PSD	0.067	0.004	15.075	***	CCqr1	<-	CC	0.164	0.006	26.602	***
PSDta2	<-	PSD	0.029	0.003	10.999	***	CCqr2	<-	CC	0.18	0.006	30.529	***
OAta1	<-	OA	0.142	0.009	15.596	***	CCqr3	<-	CC	0.156	0.007	23.406	***
OAta2	<-	OA	0.166	0.008	19.665	***	GAta2	<-	GA	0.066	0.005	14.6	***
OApo1	<-	OA	0.149	0.007	20.105	***	GAta3	<-	GA	0.111	0.007	15.854	***
OApo2	<-	OA	0.049	0.005	10.517	***	GApo1	<-	GA	0.148	0.008	18.14	***
OApo3	<-	OA	0.196	0.01	20.467	***	GApo2	<-	GA	0.103	0.006	16.581	***
OAqr1	<-	OA	0.102	0.009	11.819	***	GApo3	<-	GA	0.201	0.011	18.091	***
OAqr2	<-	OA	0.021	0.004	5.746	***	GAqr1	<-	GA	0.238	0.012	19.626	***
OAqr3	<-	OA	0.174	0.009	19.854	***	GAqr2	<-	GA	0.003	0.002	1.389	0.165
ABPMta2	<-	ABPM	0.051	0.004	12.38	***	GAta1	<-	GA	0.103	0.007	14.392	***
ABPMpo1	<-	ABPM	0.059	0.005	11.514	***	ABPMta1	<-	ABPM	0.092	0.007	12.726	***
ABPMpo2	<-	ABPM	0.134	0.007	18.199	***	FMta1	<-	FM	0.14	0.008	16.876	***
ABPMpo3	<-	ABPM	0.076	0.007	10.801	***	FMta2	<-	FM	0.091	0.008	11.987	***
ABPMpo4	<-	ABPM	0.135	0.008	17.465	***	FMqr5	<-	FM	0.065	0.005	12.505	***
ABPMqr1	<-	ABPM	0.104	0.008	12.674	***	PIta1	<-	PI	0.094	0.005	18.744	***
ABPMqr2	<-	ABPM	0.065	0.005	12.269	***	PIqr4	<-	PI	0.067	0.004	18.58	***
ABPMqr3	<-	ABPM	0.083	0.007	11.426	***	PIqr5	<-	PI	0.08	0.005	16.311	***
ABPMqr4	<-	ABPM	0.142	0.007	19.088	***	PIqr6	<-	PI	0.032	0.003	9.442	***

ABPMqr5	<-	ABPM	0.059	0.005	11.9	***	SIqr3	<-	SI	0.108	0.006	18.599	***
FMpo1	<-	FM	0.032	0.003	9.735	***	SIqr4	<-	SI	0.106	0.005	21.066	***
FMpo2	<-	FM	0.093	0.006	16.393	***	EPDMqr3	<-	EPDM	0.092	0.005	16.988	***
FMpo3	<-	FM	0.145	0.008	17.651	***	EPDMqr4	<-	EPDM	0.154	0.007	21.134	***
FMpo4	<-	FM	0.169	0.008	20.758	***	EPDMqr5	<-	EPDM	0.093	0.007	14.297	***
FMqr1	<-	FM	0.047	0.004	11.248	***	TA	<-	SCORE	0.218	0.004	57.076	***
FMqr2	<-	FM	0.048	0.004	11.497	***	PO	<-	SCORE	0.365	0.005	70.083	***
Fmqr3	<-	FM	0.053	0.006	8.435	***	QR	<-	SCORE	0.417	0.006	64.678	***
FMqr4	<-	FM	0.118	0.008	15.624	***	PIqr3	<-	PI	0.078	0.004	17.812	***
JPta1	<-	JP	0.084	0.004	19.598	***	GApo4	<-	GA	0.027	0.004	7.345	***
JPpo1	<-	JP	0.209	0.007	29.544	***	PIqr1	<-	PI	0.087	0.004	20.8	***
JPpo2	<-	JP	0.076	0.004	18.709	***	JPqr2	<-	JP	0.09	0.005	18.026	***
JPpo3	<-	JP	0.205	0.009	22.939	***	JPqr3	<-	JP	0.237	0.007	31.644	***
JPqr1	<-	JP	0.099	0.005	18.256	***	**Note: C.R.: Critical Ratio; S.E.: Standard Error; ***p < 0.001; **p < 0.01 & *p < 0.05**						

Source: Author: regression weights derived from analysis

The strength of coefficients in social terms represents the type and degree of policy intervention needed in the respective dimensions. Among the sub-indicator counts in governance approach, the majority of the variables exhibit a significant positive impact. GAta1 (0.103, C.R. = 14.392), GAta2 (0.066, C.R. = 14.6), and GAta3 (0.111, C.R. = 15.854) show a positive significant relationship with GA. Similarly, GApo1 (0.148, C.R. = 18.14), GApo2 (0.103, C.R. = 16.581), GApo3 (0.201, C.R. = 18.091), and GApo4 (0.027, C.R. = 7.345) are statistically significant on GA. Likewise, GAqr1 (0.238, C.R. = 19.626) has significance on GA. But, GAqr2 (0.003, C.R. = 1.389, p = 0.165) shows a very weak relationship (coefficient 0.003) and is not statistically significant. The appropriate promulgation of necessary local laws (GAta3) has the strongest coefficient within the TA. Similarly, the internal control system (GApo3) has the strongest impact within PO. The municipal executives' meeting counts (GAqr1) have the strongest coefficient within QR. The formulation, promulgation, and proper implementation of local laws, along with the application of an internal control system and regular executive meetings, represent transparency, good governance, and the active participation and meaningful engagement of stakeholders in the process of democratic enrichment.

Similarly, OAta1 (0.142, C.R. = 15.596), OAta2 (0.166, C.R. = 19.665) have strong statistical significance on OA. Likewise, OApo1 (0.149, C.R. = 20.105, OApo2 (0.049, C.R. = 10.517), and OApo3 (0.196, C.R. = 20.467) also have significant impact. Equally, OAqr1 (0.102, C.R. = 11.819), OAqr2 (0.021, C.R. = 5.746) and OAqr3 (0.174, C.R. = 19.854) show significant impact on OA. Reporting to higher governments (OAta2) has strongest impact within TA. Similarly, the performance contract of CAO to Chairperson/Mayor and other officials to CAO holds strongest impact within PO. The capacity enhancement programs for elected representatives and officials (GAqr3) have the strongest relationship among QR. Thus, a significant and intact reporting mechanism, capacity enhancement of politicians and officials, and a target-based work culture among officials symbolize an appropriate organizational and administrative system at the local level. Likewise, ABPMta1 (0.092, C.R. = 12.726), and ABPMta2 (0.051, C.R. = 12.38) have a positive effect. The ABPMpo1 (0.059, C.R. = 11.514), ABPMpo2 (0.134, C.R. = 18.199), ABPMpo3 (0.076, C.R. = 10.801), ABPMpo4 (0.135, C.R. = 17.465) also show a positive and significant influence on ABPM. Similarly, ABPMqr1 (0.104, C.R. = 12.674), ABPMqr2 (0.065, C.R. = 12.269), ABPMqr3 (0.083, C.R. = 11.426), ABPMqr4 (0.142, C.R. = 19.088) and ABPMqr5 (0.059, C.R. = 11.9) have positive relationship with ABPM. Formulation of annual budget and programs also including periodic plan (ABPMta1) has highest impact within TA. Similarly, integrating NGO's program into annual budget and approval from assembly (ABPMpo4) has strongest coefficient among PO. Likewise, mutual partnerships on cash by NGOs (ABPMqr4) shows highest impact among QR. These findings align with some previous studies.

The annual budgeting and planning, based on the designated local planning process ensure efficient resource allocation and alignment with community priorities (Kattel, 2024). Similarly, by engaging citizens, state and non-state actors, and integrating their programs into the local government's budget cycle, promotes transparency, accountability, and sustainable development, representing strong budget management practices (Goyale & Nash, 2017, pp. 232-233). Thus, sub-indicators corresponding ABPM have key role in outlining the performance of local governments in

Nepal. The sub-indicator FMta1 (0.14, C.R. = 16.876) has a strong positive relationship with FM, whereas FMta2 (0.091, C.R. = 11.987) has a weaker one. Similarly, FMpo1 (0.032, C.R. = 9.375), FMpo2 (0.093, C.R. = 16.393), FMpo3 (0.145, C.R. = 17.651), and FMpo4 (0.169, C.R. = 20.758) also show statistical significance. Likewise, FMqr1 (0.047, C.R. = 11.248), FMqr2 (0.048, C.R. = 11.497), FMqr3 (0.053, C.R. = 8.435), FMqr4 (0.118, C.R. = 15.624), and FMqr5 (0.065, C.R. = 12.505) show significant impact with FM. Annual increment in internal revenue (FMta1) has the strongest relationship with FM within the TA. Similarly, reviewing the progress of the annual budget and programs (FMpo4) has the highest impact within PO. Likewise, total revenue collection (FMqr4) exceeding the assumptions has the strongest impact within QR. Identifying and mobilizing internal revenue and intergovernmental fiscal transfers play crucial roles in performance of local governments (Devas & Alam, 2008, p. 1). A sound local financial system is vital for maintaining the integrity of the public sector and earning citizens' trust (Shah, 2007). Similarly, Caulfield (1997) argues that the real issue is whether improvements in local finances, including the taxation system, can strengthen local economies and reduce inequality, thereby reducing threats to social cohesion in urban areas. Thus, in a nutshell; identifying needs, efficiently utilizing and mobilizing internal revenue, and tracking the progress are crucial aspects of financial management at the local level.

The PSDta1 (0.067, C.R. = 15.075), PSDta2 (0.029, C.R. = 10.999), and PSDta3 (0.071, C.R. = 18.582) show significant impact on PSD. Similarly, PSDpo1 (0.067, C.R. = 12.698), PSDpo2 (0.062, C.R. = 11.185), PSDpo3 (0.053, C.R. = 12.496), and PSDpo4 (0.057, C.R. = 14.701) also have statistical significance. Likewise, PSDqr1 (0.084, C.R. = 18.835), PSDqr2 (0.017, C.R. = 7.89), PSDqr3 (0.053, C.R. = 7.866), PSDqr4 (0.091, C.R. = 14.231), PSDqr5 (0.101, C.R. = 17.284), PSDqr6 (0.048, C.R. = 14.43), PSDqr7 (0.032, C.R. = 12.205), PSDqr8 (0.054, C.R. = 14.139), and PSDqr9 (0.113, C.R. = 18.166) indicate statistically positive relationship with PSD. The public satisfaction over service delivery (PSDta3) has strongest relationship within TA. Similarly, service delivery by using technology: Token, Online registration, or Computerized billing (PSDpo1) shows highest impact within PO. Likewise, value addition and marketization of local products (PSDqr9) has robust effect on PSD within QR.

Devas and Alam (2008, pp. 1-3) argues that local governments being in the vicinity of people; administrative decentralization with proper financing yields better results with direct service delivery role transferred from central to local government. Similarly, grants from the central government may be utilized to improve the delivery of services and enhanced performance. Ten-year strategic plan (FY 2020/21-2030/31) focuses on strengthening federalism and responsible public administration in Nepal; including the key highlights improving citizen access to public services, establishing policies and standards for service quality at all government levels, promoting administrative good governance through necessary tools, and ensuring transparency, ethics, and accountability in public administration (MoFAGA, 2020). Based on these four strategies, the Nepalese bureaucracy is dedicated to enhancing comprehensive service delivery across all three tiers of government. Service delivery at the local governments of Nepal faces challenges such as inadequate infrastructure, logistical difficulties in remote areas, a lack of skilled manpower, bureaucratic inefficiencies, and disparities in equitable distribution of resources among ethnicities. Thus, the strength and direction of the coefficients found in this study may be useful for guiding policy interventions in the relevant areas. The operation of Judicial Committee (JPta1: 0.084, C.R. = 19.598) has significant but weaker effect on JP. Similarly, JPpo1 (0.209, C.R. = 29.544), JPpo2 (0.076, C.R. = 18.709), and JPpo3 (0.205, C.R. = 22.939) also have significant impact. Similarly, JPqr1 (0.099, C.R. = 18.256), JPqr2 (0.090, C.R. = 18.026), and JPqr3 (0.237, C.R. = 31.644) have statistically positive and significant relationship with JP. Reporting system of Judicial Committee (JPpo3) to municipal executive has highest effect within PO. Likewise, formation of Mediation Center (JPqr3) has strongest relationship with JP within QR. Thus, the resolution of conflicts and disputes through mediation seems to be the main focus at the local level. Locally elected representatives perform basic judicial proceedings in Nepal's reformed governance system, which has established and institutionalized a distinct model. The judicial activities carried out by locally elected representatives acknowledge fraternity, socio-economic pluralism, and the regional, cultural, and linguistic diversity that define the unique identities of communities across the region. The development delivery is a major dimension of local governments. Among the various developmental aspects, building physical infrastructure and assets creation are central and key priorities for communities, citizens, officials, and politicians in Nepal. These areas often drive decision-making and shape the focus of local initiatives. In this study, the PIta1 (0.094, C.R. = 18.744), PIta2 (0.102, C.R. = 20.246), and PIta3 (0.083, C.R. = 17.135) show positive relationship with PI. Similarly, PIpo1 (0.025, C.R. = 8.485), PIpo2 (0.082, C.R. = 16.148), PIpo3 (0.091, C.R. = 17.730), and PIpo4 (0.095, C.R. = 18.784) also have statistical significance. Likewise, PIqr1 (0.087, C.R. =

20.800), PIqr2 (0.083, C.R. = 22.104), PIqr3 (0.078, C.R. = 17.812), PIqr4 (0.067, C.R. = 18.580), PIqr5 (0.080, C.R. = 16.311), and PIqr6 (0.032, C.R. = 9.442) have significant impacts on PI. The land-use plan based on vulnerability and resilience (PIta2) has the strongest coefficients in its relationship with PI among TA. The high coefficients of PIta2 reflect the priorities and interventions of local governments at the zenith. Similarly, application of National Building Code and Standards (PIpo4) shows highest impact on PI within PO. After the devastating earthquake in Nepal in 2015, most of the local governments focused its better implementation. Likewise, the expansion of local roads (PIqr1) shows the highest priority of local governments within QR. The lack of well-equipped and reliable public transportation at the local level (Kattel, 2023; Kattel, 2024) creates a strong demand for its improvements. As a result, many local governments are investing in establishment and upgradation of their transportation infrastructure. Devas and Alam (2008, pp. 57-58) argued the alternative sources of financing the capital investment by local governments such as: asset sales, private sector investment, leveraging, joint ventures, private finance initiative (PFI), leasing, sale-and-leaseback, community investment. Some successful schemes for municipalities organized by state-level in India require quite a high level of government (or donors) intention to make them workable (Blore, Devas & Slater, 2004). Another positive aspect of municipal bond in emerging capital markets is the provision and development of credit rating, however it may be costly (Davis & Alam, 2008, p. 57). Thus, details of these facets results more rigorous financial health of local government than the central government, and can be financed also in the physical infrastructure development. These efforts aim to enhance the accessibility and reliability, ultimately improving the quality of life of people. Additionally, it can stimulate local economic growth and contribute to overall regional development. The rich diversity in language, religion, culture, ethnicity, geographical landscape, and socio-economic indices among the Nepalese people inevitably demands social inclusion by prioritizing vulnerable and underprivileged groups in every facet of governance. Therefore, policies and programs across all tiers of government address SI as a key issue. The study results show that SIta1 (0.099, C.R. = 24.769), and SIta2 (0.069, C.R. = 16.409) have significance on SI. Similarly, SIpo1 (0.108, C.R. = 19.677), SIpo2 (0.096, C.R. = 21.156), SIpo3 (0.131, C.R. = 25.568), and SIpo4 (0.089, C.R. = 12.584) also have significant impact. Likewise, SIqr1 (0.082, C.R. = 16.232), SIqr2 (0.112, C.R. = 22.455), SIqr3 (0.108, C.R. = 18.599), and SIqr4 (0.106, C.R. = 21.066) have statistical significance and positive impact on SI. The minimization of social discriminations (SIta1) shows highest relationship with SI within TA. The statistical significance reflects the public demand to eliminate all forms of social discrimination and ensure equality of opportunities. Similarly, the activities carried out by local governments to end child labor, child marriage, dowry practices, Boksi, and Menstrual Seclusion (Chhaupadi) customs are justified by the highest statistical significance of SIpo3 within PO. Likewise, investment in programs aimed at reducing child labor, child marriage, dowry, Boksi, and Menstrual Seclusion (Chhaupadi) customs (SIqr2) shows the strongest social impact within QR. Thus, implementing the principle of inclusion in society, through the effective design of programs and activities, even at the local level, fosters peace, justice, equity, and equality among people. Study results show that most local governments have actively engaged in disaster management. Since local governments face the first trigger of disasters, the Local Disaster Management Committee, provisioned in the LGOA 2017, has been functional and fruitful for the plan of actions. The EPDMta1 (0.109, C.R. = 19.38) is significant and has positive relationship. Similarly, EPDMpo1 (0.087, C.R. = 16.314), EPDMpo2 (0.032, C.R. = 9.94), and EPDMpo3 (0.155, C.R. = 21.673) also has statistical significance on EPDM. Likewise, EPDMqr1 (0.109, C.R. = 16.623), EPDMqr2 (0.168, C.R. = 24.767), EPDMqr3 (0.092, C.R. = 16.988), EPDMqr4 (0.154, C.R. = 21.134), and EPDMqr5 (0.093, C.R. = 14.297) have positive relationship with EPDM. Identifying and mapping hazard prone areas (EPDMpo3) has strongest coefficient among sub-indicators of PO. Similarly, involvement of private sector, community organization and citizens for environment protection (EPDMqr2) shows highest impact on EPDM within QR. These results show the similarities with the findings of Rose, A.D., 2014; Dalisay, S.N.M., 2014 and Jimee et. al., 2015. Similarly, Devas and Alam (2008, pp. 78-80) mention management of disasters as one of the objectives of intergovernmental fiscal transfers, but allocation of budget should be limited to real emergencies. There is nothing worse than paper plan syndrome or it's modern digital equivalent: where plan is formulated and dumped into a desk drawer or into a hard drive; such plans may harm more when they are eventually put to the test by a crisis time (Alexander, 2015). Due to global warming and climate change, mountainous countries like Nepal have been suffering for decades. The agenda of environmental protection and sustainable development for the resilience has reached at an alarming stage, demanding urgent action. Thus, disaster management activities, identifying hazard-prone areas, and involvement of the private sector, community organizations, and citizens in environmental protection highlight the areas of priority for local governments. The appropriate collaboration and

coordination among the tiers of government is a key approach in newly established federal system in Nepal. The constitutional and legal provisions ensure cooperation between the federal, provincial, and local level along with non-state actors. Aligning in this study, CCta1 (0.146, C.R. = 24.95), and CCta2 (0.168, C.R. = 31.305) have significance in CC. Similarly, coordination between or among local governments through the formation and operation of committees to address the issues affecting two or more local governments (CCpo1: 0.185, C.R. = 31.372) shows a significant relationship. Likewise, CCqr1 (0.164, C.R. = 26.602), CCqr2 (0.180, C.R. = 30.529), and CCqr3 (0.156, C.R. = 23.406) show positive statistical significance with CC. The partnership with other local governments (CCqr2) has strongest coefficient within QR. Devas and Alam (2008, pp. 133-146) quotes successful collaboration experiences within various dimensions in commonwealth countries such as Jamaica, Sierra Leone, Malta, Mauritius, Sri Lanka, Nigeria, Malaysia. Similar circumstances may also be applicable in case of Nepal. The processes of fiscal transfer from higher to sub-national governments; planning and budgeting sequences; financing the local governments; and the grand integration of officials recruited in the unitary system across the tiers of governments require effective coordination in the new governance structure of Nepal. Effective implementation of policies and programs relies on strong intergovernmental relationships, ensuring integrated balanced development and regional autonomy across the country. The indulgence of the federal system is expected to burgeon the governance and democracy in all tiers of governments. Local governments have been established on 10th March 2017, on a constitutional basis, increasingly follow a black-box approach to project management, where assemblies approve cumulative amounts without detailed program breakdowns. Monitoring and implementation are often weak, with evaluations largely superficial. This trend fosters gerrymandering, pork-barreling, over-politicization of development agendas, and administrative incompetence; all of which undermine meaningful public participation in governance. The growing malpractices in budgeting and project cycle management could significantly hinder development and erode public trust and satisfaction on public service delivery (Kattel, 2024). The policy analysis starts by taking the context into account, rather than beginning from a blank sheet of paper (Bardach and Patashnik, 2015; Cairney and Weible, 2017). Such contexts are geographical and socio-economic conditions, the government infrastructure and policies that are already in place, and the events that often seem to be out of the control of policymakers and prompt them to act (Cairney, 2019). National-level rule enforcement remains a key mechanism for effective multiscale governance, but blanket regulations often fail to meet local practical needs and may conflict with local judgment, leading to new challenges (Sidibé et al., 2018). In the new federal system, many laws and supporting bylaws related to local governance remain to be formulated and updated in Nepal (Kattel, 2023). Bridging the gap between planned and actual spending requires collaboration among various budget management partners and a consensual agenda to achieve meaningful progress (Goyal & Nash, 2017, p. 232). Successful policy execution and outcomes depend on information symmetry, timely assembly approval of a detailed budget, and effective implementation frameworks. Thus, for regional integrated balanced development, ceteris paribus, yardstick competition; through an approach of bottom-up (Salmon, 2019, pp. 1-7) has a decisive role in modeling the future of democratic local governance. Findings of this study align with most of the studies based on the local government's performance. Martini et al. (2022) found that local government performance in Indonesia is significantly influenced by the management of regional wealth, financial dependence, regional size, and spending efficiency in enhancing development and community services. Similarly, the review of 86 relevant articles on the effect of management on performance by Walker and Andrews (2015) investigated seven key approaches to local government management: strategy content, planning, personnel stability, staff quality, networking, representative bureaucracy, and size. The findings from the support score analysis point that moving toward strong positive performance outcomes, driven by effective planning, personnel stability, and staff quality, along with moderate support for the advantages of representative bureaucracy, networking, and strategic contents. Thus, by considering the appropriate heterogeneity, effective management practices enhance performance and yield positive dividends. Beyond collinearity, the causality between variables has been cautiously observed. The impact of one variable on another in governance outcomes ultimately guides policy implications. As causation precedes effects (Pearl et al., 2016, p. 1), the experimental design and focused study, accounting for theoretical and empirical heterogeneity in Nepalese local governance outcomes, should be carefully examined. Thus, understanding and interpretation of results, particularly in relation to Simpson's paradox, require careful consideration (Pearl et al., 2016, pp. 1-7).

4. Conclusion and Recommendations

This study reveals that ten dimensions are significant predictors of the LISA score for each local government. Additionally, the counts of sub-indicator variables also significantly predict these ten dimensions, although the

strength and direction of these relationships vary. Most of the management variables examined were found to be, on balance, beneficial to performance. However, analyzing the provisions of guideline: the weightage of each dimension through sub-indicator counts, their flow, sequence, and approach to delivery outputs appears fragmented and inconsistent in many places. Given the diverse approaches in local governance, policy interventions should be tailored accordingly, potentially leading to different governance outcomes. Overall meta-policies and focused, specific strategies should be developed based on the national or federal governance approach and the socio-economic framework. When the governance system changes, there is a risk of non-institutionalization of the new system (Cleaver, 2012). Since the LISA approach is a continuation and improvisation of the MCPM system established earlier, the sub-indicator counts in the latter seem to overlook already institutionalized local governance outcomes under the unitary system. Communities, organizations, and systems-of-systems had already been institutionalized in those governance landscapes, yet these facets have been repeated from the beginning in the new LISA assessment. The policy continuation gap may be due to the 'drafting inefficiency' of officials or the failure of political leaders to rationalize the 'Zoom Out' and 'Zoom In' approaches. Therefore, this gap inevitably calls for timely improvisation of evaluation approaches, dimensions, and sub-indicator counts in the guideline. For enriched local governance, it is essential to prioritize optimal public spending, clearly map roles and responsibilities, and ensure effective intergovernmental management with a focus on policy outcomes and yardstick competition. The highest governmental authority should ensure effective intergovernmental management, and make sure that all the activities are successfully accomplished by the designated organizations.

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Exploring Innovation Performance in OECD Countries: The Impact of Economic, Institutional, and Social Factors[1]

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Abstract

This study analyses the economic, institutional and social factors affecting innovation performance by using a panel data set covering 38 OECD countries between 2013-2023 with a Panel Quantile regression model. Innovation is recognised as one of the key drivers of economic growth and competitiveness; however, the factors determining this performance vary significantly from country to country. According to the results of the analyses, economic growth has a positive and significant effect on the global innovation index. In addition, carbon emissions, green technology diffusion and government stability also have positive and significant effects on innovation. In this context, it can be said that high levels of carbon emissions encourage the development of innovative technologies by increasing the need to find solutions to environmental problems. On the other hand, foreign direct investments and urban population ratio have negative and significant effects on innovation. Variables such as foreign trade deficit, logistics performance index and income inequality have no statistically significant effect on innovation. The Pseudo R^2 value of the model was calculated as 0.7169, which shows that 71.69% of the variance in the dependent variable is explained by the model. In conclusion, it is emphasised that economic, social and institutional dynamics should be addressed with a holistic approach in order to increase innovation performance. In particular, increasing investments in green technology, supporting economic growth and strengthening political stability can increase the effectiveness of innovation processes. Moreover, in order to reduce the negative effects of urban population on innovation, it is important to manage urbanisation with more innovative and sustainable policies.

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1. Introduction

The rapidly changing and increasingly competitive structure of the global economy has made innovation performance an indispensable element for economic growth, sustainable development, and social welfare. For instance, the World Economic Forum (2023) report states that the contribution of global innovation to economic growth is 25-30%. Innovation not only transforms production processes but also plays a crucial role in creating new markets, accelerating

[1] This study is based on the author's master's thesis titled "Factors affecting global innovation performance: A panel data analysis on OECD countries. Institute of Social Sciences, OSTIM Technical University, Ankara, Türkiye,

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technological progress, and ensuring the more efficient use of resources (Schumpeter, 1934). The vital role of innovation in economic growth is further underscored by the OECD (2022), where it is noted that OECD countries account for approximately 70% of global R&D expenditures and have patent applications per capita 50% higher than other nations.

The factors shaping innovation performance are multifaceted and closely tied to economic, institutional, and social structures. For instance, studies on the impact of education levels have shown that a 1% increase in the education index leads to a 0.8% increase in innovation outputs (Hanushek & Woessmann, 2010). Furthermore, global macroeconomic trends such as digital transformation, the shift to a green economy, and the fight against climate change have reshaped the dynamics of innovation. In 2022 alone, investments in green technology rose by 15%, reaching $1.1 trillion, emphasizing that innovation is critical for sustainable development (IRENA, 2023).

The Global Innovation Index (GII), published by the World Intellectual Property Organization (WIPO), INSEAD, and Cornell University, assesses the innovation capacity and performance of countries. It helps measure how countries use resources and the results achieved in their innovation processes. The GII is composed of two main components: Innovation Inputs and Innovation Outputs. Innovation Inputs evaluate resources and infrastructure, including institutional structures, R&D investments, education levels, technological infrastructure, and market complexity. Innovation Outputs, on the other hand, measure concrete results such as patents, scientific articles, and technology transfers, as well as outputs related to creativity and new designs.

The GII also highlights the importance of innovation in achieving sustainable development goals. The 2023 GII emphasized efforts to reduce carbon emissions and innovations in green technologies, which are essential for fostering both economic growth and environmental sustainability. Switzerland, Sweden, and the Netherlands lead the GII rankings, thanks to their high R&D investments, strong education systems, and innovative markets. Conversely, emerging economies like China and India have strengthened their innovation by ramping up R&D expenditures and accelerating digital transformation, positioning themselves more prominently in global innovation rankings.

The GII serves as an essential tool for both developed and developing countries. It provides concrete data for identifying strengths and weaknesses in innovation and helps guide policy decisions for improving competitiveness and fostering sustainable development. Moreover, it is a valuable resource for investors and policymakers to understand global innovation trends and opportunities.

The Innovation Input Sub-Index evaluates factors that facilitate innovation, including the Institutions pillar, which assesses political, regulatory, and business environments; the Human Capital and Research pillar, focusing on education and R&D activities; the Infrastructure pillar, which captures ICT, general infrastructure, and ecological sustainability; the Market Development pillar, examining financial systems and investment flows; and the Business Sophistication pillar, which highlights skilled labor and innovation collaboration. Meanwhile, the Innovation Output Sub-Index measures the tangible results of innovation, such as the Knowledge and Technology Output pillar, which looks at knowledge creation and technology diffusion, and the Creative Output pillar, which evaluates intangible assets like digital creativity and the production of creative goods and services.

In this context, the study aims to analyze the economic, institutional, and social factors influencing the innovation performance of OECD countries. For example, in 2023, the average GII value for OECD countries stood above 50, while it was around 35 for other nations (WIPO, 2023). The Education Index plays a critical role, as countries with higher education levels exhibit a 60% higher number of patents per capita (UNESCO, 2023). Additionally, R&D expenditures in OECD countries account for 2.4% of their GDP, compared to less than 1% in developing nations, which is considered a key factor behind the innovation performance gap (OECD, 2022). Foreign Direct Investment (FDI) also supports innovation by facilitating knowledge and technology transfer. For example, countries like China and South Korea have experienced more than a 10% increase in innovation output due to FDI (UNCTAD, 2022).

In studies on foreign direct investments, academic studies on the macroeconomic determinants of innovation capacity by Baykul (2022) generally focus on factors such as trade openness, infrastructure required for innovation, R&D activities, foreign direct investments, quality of human capital, supportive business environment and policy practices that encourage innovation. In this context, the impact of foreign direct investments on innovation has an important place in the literature. In this study, the relationship between these determinants and innovation performance is examined by using the Global Innovation Index (GII), which provides a comprehensive analysis in terms of inputs and outputs of innovation.

Özkul (2022), on the other hand, states that in the Turkish economy with limited natural resources, the inability of the public authority to provide sufficient domestic savings and to develop foreign exchange earning policies in a sustainable

manner severely restricts firms' access to cost-effective financing sources. This situation has made Turkey's need for external financing more evident. In this context, the study emphasises that foreign direct investment (FDI) is one of the most effective instruments to meet the foreign exchange need in a stable manner. FDI has a strategic importance not only in terms of providing financing but also in terms of its potential to increase the technological capacity, productivity and international competitiveness of the country. However, as Özkul underlines, not only the quantity but also the quality of FDI is of great importance. Investments concentrated especially in sectors such as mergers and acquisitions, construction and real estate have limited effects in terms of technology transfer and high value added creation. On the other hand, 'greenfield investments' in the manufacturing industry or R&D-oriented service sectors have more positive and lasting effects on the technological development and innovation capacity of domestic firms.

In another study, Gündüz (2022), when the result of his study is evaluated from an economic perspective, it is seen that foreign direct investments, which are included in the model to reflect the effects of globalisation, have a significant effect on economic growth. The economic development process directly affects the international competitiveness of countries. As frequently emphasised in the literature, FDI not only provides capital inflows to developing countries, but also creates long-term competitive advantage by contributing to technology transfer, knowledge accumulation and development of management skills. (Dunning, 1993; Borensztein et al., 1998). The fact that the country groups analysed in the scope of the analysis are still not among the developed economies limits the competitiveness of these countries on a global scale. While increasing competitiveness is a strategic priority for developed countries, the main objective for developing countries is generally to raise their level of development. In this context, every economic step taken towards development also contributes to the process of gaining competitive advantage over countries with similar levels of development. Foreign direct investments, especially in high value-added sectors, play a decisive role in this process. On the other hand, Akyol (2022) examined the effects of technological innovation, financial development, economic growth and foreign direct investments on renewable energy consumption. Khan et al. (2021). In the study using the data of 69 countries within the scope of the Belt and Road Initiative for the period 2000-2014, estimates were made with the Generalised Method of Moments (GMM) within the scope of dynamic panel data analysis. The findings reveal that technological innovation, economic growth and foreign direct investment have a statistically significant and negative effect on renewable energy consumption. On the other hand, financial development has a positive and significant effect on renewable energy consumption. These results indicate that the impact of FDI on environmental sustainability may vary depending on the nature of the investment. Bakkal (2022), on the other hand, aims to analyse the effects of economic development, foreign direct investments and financial development on environmental degradation. The findings reveal that more widespread use of environmentally friendly technologies and renewable energy sources in production processes can make significant contributions to sustainable global growth. The study was conducted with the data for the period 1980-2018; unit root tests, ARDL cointegration approach, Toda-Yamamoto and Fourier Toda-Yamamoto causality tests were used in the analysis process.

Kırıkkaleli and Adebayo (2021) analysed the environmental effects of financial development in a study conducted with global data covering the years 1990-2018. Econometric methods such as DOLS (Dynamic OLS) and FMOLS (Fully Modified OLS) were used in the study and the results showed that the development in the financial system can be effective in reducing carbon emissions In their study, Süt and Çetin (2018) evaluated the advantages and limitations of indicators commonly used in the measurement of innovation such as R&D expenditures, patent numbers and researcher employment. The extent to which these indicators accurately reflect the level of innovation is critically analysed, and alternative indices that can reflect innovation in a more inclusive manner are also discussed. In this framework, the European Innovation Index and the Global Competitiveness Innovation Index were used and it was emphasised that the selection of appropriate variables in innovation analyses is decisive for the results of the analysis.

In another study, Rahman et al. (2021) found that economic growth has a positive and statistically significant effect on carbon emissions. In addition, significant and positive relationships were also found between energy consumption, human capital and foreign trade. These findings indicate that sustainable development policies should be formulated by taking into account the environmental impacts of economic growth and energy use. Studies indicate that these factors affecting innovation performance vary across quantiles. For example, the Endogenous Growth Model developed by Grossman and Helpman (1991) posits that R&D investments directly boost economic growth and innovation output. Panel quantile regression analysis offers more precise insights in the presence of extreme values, thus providing clearer representations of innovation dynamics across countries.

Among previous studies, Çoban and Özkan (2022) examined the impact of globalization and economic growth on

the environment in Turkey using a dynamic ARDL simulation model with data from 1970 to 2020. The results indicate that as foreign direct investment (FDI) and energy use increase, environmental quality decreases, while trade openness positively affects the environment. Similarly, Sertçelik and Gökmen (2021) analyzed the impact of innovation and human capital on economic growth using data from OECD countries for the period 1991-2017 and found significant effects from these variables. Rahman et al. (2021) discovered that economic growth increases carbon emissions, and positive relationships exist between energy consumption, human capital, and foreign trade. Lastly, Bakkal (2022), using data from 1980 to 2018, emphasized the importance of environmentally friendly technologies and renewable energy in reducing environmental damage, applying ARDL and Toda-Yamamoto tests.

In this study, the focus is on analyzing economic, institutional, and social factors affecting innovation performance by using the panel quantile regression method with data from 38 OECD countries for the period 2013-2023. OECD countries, with their high income levels and developed infrastructures, play a significant role in innovation activities. However, there are notable differences in innovation performance across these countries. Understanding the underlying reasons for these differences and how they affect innovation is crucial for effectively guiding innovation processes and developing relevant policies.

The study aims to explore the economic, institutional, and social factors contributing to the disparities in innovation performance across countries. These factors include economic growth, education levels, research and development expenditures, government stability, foreign direct investment, urban population density, and environmental factors. The impact of these factors on innovation is shaped not only by economic variables but also by social structures and institutional practices.

The contribution of this study to literature lies in its multifaceted analysis of the factors influencing innovation performance. In particular, the use of the panel quantile regression method, quantile regression, unlike classical regression models, allows to estimate not only the mean of the dependent variable, but also its values in certain percentiles (e.g. 10%, 50%, 90%). This approach provides more detailed and robust results, especially in cases where the data set contains outliers or the distribution is not symmetric. This approach helps analyze how the determinants of innovation performance vary among countries and which factors are most pronounced in low, medium, and high-performing countries. This contributes to a more nuanced understanding of innovation, enabling policymakers to design more targeted strategies that consider varying economic and social structures. Ultimately, this study underscores the need for a deeper understanding of the interaction between economic, institutional, and social factors to promote and support innovation more effectively.

2. Data and Methodology

The main objective of this study is to investigate the impact of global innovation, which is the dependent variable, on the independent variables in 38 Organisation for Economic Co-operation and Development (OECD) member countries (Australia, Austria, Belgium, Canada, Chile, Costa Rica, Colombia, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States); global innovation index, economic growth, carbon emissions, education index, foreign direct investments, research and development (R&D) investments, green technology diffusion, government stability, urban population, foreign trade deficit, logistics performance index, income inequality index. Table 1 provides explanations and sources of the variables.

Table 1. Variable Descriptions

Variables	Definitions	Source
Global Innovation Index	Average of input and output sub-indices	World Intellectual Property Organisation (WIPO)
Economic Growth	GDP per capita growth (annual %)	World Bank
Carbon Emissions	Carbon emissions (metric tonnes per capita)	World Bank
Foreign Direct Investment	Foreign Direct Investment, net (Balance of Payments, current US$)	World Bank
Green Technology	Diffusion Diffusion of environmentally relevant technologies, % all technologies (%)	OECD Statistics
Government Stability	Index values between 1 and 10	Political Risk Services (PRS) Group
Urbanisation	Urban population (% of total population)	World Bank
Trade Deficit	Trade (% GDP)	World Bank
Logistics Performance Index	Total LPI score	World Bank
Income Inequality Index	Share of TOP1 income (%)	World Income Database (WID)

Source: Author

In this study, the Global Innovation Index (GII) is taken as the dependent variable. Independent variables are selected to cover economic, environmental, social and governance dimensions. The variables used in the model and their definitions are presented below:

- LGII (Global Innovation Index): It is the dependent variable of the study. It is a comprehensive index that measures the innovation capacity and output of countries.
- LGDP (Economic Growth): It is represented by taking the logarithm of real Gross Domestic Product per capita.
- LCO (Carbon Emissions): Per capita carbon dioxide emissions (in metric tonnes) expressed logarithmically.
- LFDI (Foreign Direct Investment): Logarithmic value of foreign direct investments received as a percentage of GDP.
- LGTD (Green Technology Diffusion): It is an index expressing the level of adoption of green technologies and is included in the model by taking its logarithm.
- GOV (Government Stability): It is a composite indicator reflecting political stability and government effectiveness.
- LURB (Urban Population): It is the logarithm of the ratio of urban population in total population.
- LTO (Foreign Trade Deficit): Reflects the impact of trade in goods and services on external balance; expressed in logarithmic terms.
- LPI (Logistics Performance Index): An index based on World Bank data that measures the trade logistics infrastructure and efficiency of countries.
- INEQ (Income Inequality Index): It is an index that measures the inequality in income distribution; it is generally based on the Gini coefficient.

Through these variables, the impact of economic, environmental, institutional and social dynamics determining innovation capacity has been empirically analysed.

Table 2. Variable Abbreviations

Variable Type	Variable Abbreviations	Description
Dependent Variable	LGII	Global Innovation Index
Independent Variable	LGDP	Economic Growth
Independent Variable	LCO	Carbon Emissions
Independent Variable	LFDI	Foreign Direct Investment
Independent Variable	LGTD	Green Technology
Independent Variable	GOV	Government Stability
Independent Variable	LURB	Urbanisation
Independent Variable	LTO	Trade Deficit
Independent Variable	LPI	Logistics Performance Index
Independent Variable	INEQ	Income Inequality Index

Source: Author

This study utilizes a panel dataset encompassing 38 OECD countries from 2013 to 2023, enabling a long-term assessment of economic, environmental, social, and innovation performance across nations. By integrating data from multiple years, the panel structure allows for a more comprehensive analysis, capturing both temporal trends and cross-country variations.

The regression of this model is expressed as follows:

$$LNGII_{1_{it}} = \alpha_{it} + \alpha_{2i}LNGDP_{it} + \alpha_{3i}LNCO_{it} + \alpha_{4i}LNFDI_{it} + \alpha_{5i}LNGTD_{it} + \alpha_{6i}GOV_{it} + \alpha_{7i}LNURB_{it} + \alpha_{8i}LNTO_{it} + \alpha_{9i}LPI_{it} + \alpha_{10i}INEQ_{it} + \varepsilon_{it} \quad (1)$$

Including LNGII, except for the GOV and INEQ variables, which are taken at the natural logarithmic level. The error term is denoted as ε_it, with i and t representing countries and time, respectively. This paper builds an empirical model by combining the form of the quantile approach as follows:

$$Q_{\tau}(LNGII_{1_{it}}) = \alpha_{\tau} + \alpha_{2\tau}LNGDP_{it} + \alpha_{3\tau}LNCO_{it} + \alpha_{4\tau}LNFDI_{it} + \alpha_{5\tau}LNGTD_{it} + \alpha_{6\tau}GOV_{it} + \alpha_{7\tau}LNURB_{it} + \alpha_{8\tau}LNTO_{it} + \alpha_{9\tau}LPI_{it} + \alpha_{10\tau}INEQ_{it} \quad (2)$$

Table 3, presents the descriptive statistics of the variables used in the study, including the mean, standard deviation, minimum, and maximum values. The logarithmized dependent variable, the Global Innovation Index (GII), has an average value of 1.55 across the 38 OECD countries during the study period, with a minimum of 1.46 and a maximum of 1.65. Among the independent variables, the Economic Growth Index (GDP) shows an average of 2.29, ranging from a low of -11.16 to a high of 24.47.

Table 3. Descriptive Statistics

Variable	Number of Observations	Average	Standard Deviation	Min.	Max.
LGII	418	1.553	0.0395	1.4684	1.6457
LGDP	418	2.298	3.3185	-11.167	24.475
LCO	418	0.805	0.2347	0.2265	1.335
LFDI	418	9.889	0.7583	7.7364	11.538
LGTD	418	1.943	0.8331	0.301	3.7840
GOV	418	7.008	0.9224	4.75	10.333
LURB	418	1.888	0.0650	1.726	1.9921
LTO	418	4.493	0.5386	3.140	5.9769
LPI	418	3.611	0.3671	2.612	4.2259
INEQ	418	0.3743	0.0844	0.249	0.6419

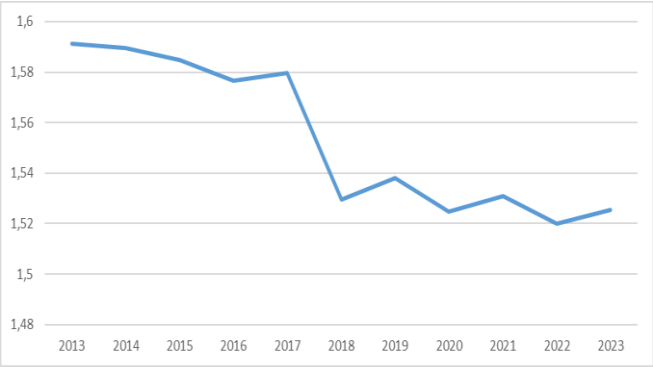
Source: Author

Figure 2 illustrates distinct trends in the Global Innovation Index (GII) averages of OECD countries between 2013 and 2023. During the 2013-2017 period, the index exhibited a slight decline, starting at approximately 1.59, followed by a partial recovery in 2017. This trend suggests that innovation performance in OECD countries remained relatively stable throughout these years. However, a sharp drop in the index is observed in 2018, indicating a major shift or shock in the factors influencing innovation. Potential reasons for this decline include economic slowdowns, political instability, or reductions in R&D investments.

After 2018, the index continued to fluctuate at lower levels. Although a temporary recovery was seen in 2019, the index declined once again in 2020, largely due to the effects of the COVID-19 pandemic. The pandemic significantly disrupted innovation activities, slowing down investments and research efforts. The index remained subdued until 2022, after which it began to show signs of recovery in 2023. However, despite this recent improvement, innovation performance in OECD countries has yet to fully return to pre-decline levels.

Overall, to gain deeper insight into these trends, a detailed examination of economic growth, R&D expenditures, environmental factors, political stability, and technology policies during this period is essential.

Figure 1. Global Innovation Index, 2013-2023



The results of the correlation analysis, presented in Table 3, provide insights into the linear relationships between variables and their interaction (positive or negative). Additionally, Table 4 displays the correlation coefficients, illustrating the strength and significance of these relationships.

A positive and significant correlation was found between the Global Innovation Index (GII) and economic growth (LGDP), suggesting that economic expansion is associated with higher innovation performance. Conversely, the negative and significant relationship between GII and carbon emissions (LCO) implies that innovation may contribute to reducing environmental degradation.

The results also indicate a positive and significant correlation between GII and government stability (GOV), highlighting that a stable political environment fosters innovation. However, the negative and significant relationship between GII and trade openness (LTO) suggests that higher trade openness might constrain local innovation capacities. Similarly, a negative and significant correlation between GII and the Logistics Performance Index (LPI) indicates that logistical challenges may hinder innovation progress.

Furthermore, urbanization (LURB) and green technology diffusion (GTD) both exhibit negative correlations with GII, suggesting that rapid urbanization and certain aspects of green technology adoption may not directly translate into enhanced innovation performance. The negative relationship between foreign direct investment (FDI) and GII implies that foreign capital inflows might have adverse effects on domestic innovation capacity, potentially due to dependency on external technologies rather than fostering indigenous R&D.

Also, a positive and significant relationship is observed between GII and income inequality (INEQ), indicating that while innovation drives economic advancements, it may also contribute to widening income disparities, emphasizing the need for inclusive policies. Lastly, the correlation analysis underscores the potential risk of multicollinearity among independent variables, which must be carefully addressed in further econometric modeling

Table 4. Correlation Test

	LGII	LGDP	LCO	LFDI	LGTD	GOV	LURB	LTO	LPI	INEQ
LGII	1.000									
LGDP	0.092*	1.000								
LCO	-0.293*	-0.068	1.000							
LFDI	-0.232*	-0.021	0.230*	1.000						
LGTD	-0.208*	-0.102*	0.445*	0.574*	1.000					
GOV	0.143*	0.038	0.066	0.114*	0.047	1.000				
LURB	-0.159*	-0.074*	0.041	0.289*	0.343*	0.057	1.000			
LTO	-0.113*	0.142*	0.122	-0.254*	-0.349*	-0.054	-0.225*	1.000		
LPI	-0.322*	-0.097	0.316*	0.343*	0.330*	0.100*	0.333*	-0.071	1.000	
INEQ	0.338*	0.067	-0.352	0.168*	-0.136*	0.116*	0.201*	-0.451*	-0.170*	1.000

Notes: *, ** and *** indicate 1%, 5% and 10% significance levels, respectively

3. Empirical Findings

In this study, the horizontal cross-sectional dependence test is first conducted to determine whether there is interdependence among countries in the panel dataset. The presence of such dependence suggests that economic, social, or policy-related factors in one country may influence others, potentially affecting the predictive accuracy of the model. If cross-sectional dependence exists, failing to account for it could lead to biased estimations and reduced model reliability.

Table 5 presents the test statistics and probability values for the Pesaran CSD Test, Friedman CSD Test, and Frees CSD Test, which are used to assess cross-sectional dependence. Since the p-values of all tests are below 0.05, the null hypothesis of cross-sectional independence is rejected. This confirms the existence of cross-sectional dependence among the countries

Table 5. Cross Sectional Dependence Test

CSD Test			
Model*	**Pesaran CSD Test**	**Friedman CSD Test**	**Frees CSD Test**
Test statistic	29.231	126.263	6.961
Probability Value	0.000	0.000	0.000

Notes: Model indicated by *; LGII=f (LGDP, LCO, LFDI, LGTD, GOV, LURB, LTO, LPI, INEQ).

Following the detection of cross-sectional dependence, the study proceeds with second-generation unit root tests to enhance analytical accuracy by accounting for heterogeneity and common shocks. Given the presence of cross-sectional dependence, the Pesaran CADF and CIPS tests, which belong to the second-generation unit root testing methods, are applied to assess the stationarity of the variables. Table 6 presents the results of these tests, evaluating the stationarity levels of the panel dataset variables. The analysis considers the results under both the Constant and Constant & Trend model specifications, ensuring a comprehensive assessment of the unit root properties of the variables.

According to the unit root test results, most variables are stationary under constant and trend models. According to the CADF test level results, LFDI, LGTD are stationary only at constant level. According to the results of both unit root tests, LFDI, LURB, and LTO variables contain unit root (I(1)) at level. However, LGII, LGDP, LCO, LGTD, GOV, LPI, and INEQ variables are stationary (I(0)) when both unit root tests are evaluated together. According to the results of the second generation unit root test, all variables are stationary when the first difference is taken in the constant and in the constant and trend. Therefore, the findings indicate that all series are stationary in their first differences. From these findings, it is seen that the variables in the model have a mixed stationary level (I(0) and I(1)).

Table 6. Unit Root Test Results

Variable	Model	CIPS[a]	CIPS[b]	CADF [a]	CADF [b]
LGII	Fixed	-2.495***	-3.790***	-2.787***	-3.589***
	Fixed & Trend	-2.964***	-3.673***	-3.528***	-3.751***
LGDP	Fixed	-2.334**	-3.311***	-1.388	-2.310***
	Fixed & Trend	-2.594*	-3.325***	-1.978*	-3.088***
LCO	Fixed	-2.563**	-2.925***	-3.239***	-2.895***
	Fixed & Trend	-2.517	-2.863**	-3.001***	-3.082***
LFDI	Fixed	-1.269	-3.624***	-2.110	-2.342***
	Fixed & Trend	-1.931	-3.329***	-2.084	-2.960***
LGTD	Fixed	-2.975***	-3.743***	-2.008*	-2.724***
	Fixed & Trend	-2.938***	-3.707***	-1.757	-2.689***
GOV	Fixed	-2.368***	-3.363***	-2.107**	-2.203***
	Fixed & Trend	-2.614**	-3.563***	-2.383	-2.860***
LURB	Fixed	-1.624	-2.934***	-1.416	-2.556***
	Fixed & Trend	-2.050	-4.071***	-1.634	-2.601***
LTO	Fixed	-1.518	-2.493***	-1.469	-2.169***
	Fixed & Trend	-1.881	-2.597**	-2.395	-2.878***
LPI	Fixed	-1.508	-3.235***	-2.031**	-2.432***
	Fixed & Trend	-1.388	-4.105***	-2.884***	-2.962***
INEQ	Fixed	-2.459***	-3.406***	-1.956*	-2.487***
	Fixed & Trend	-2.924***	-3.510***	-2.408***	-3.070***

Notes: a denotes the unit root test model at level and b denotes the unit root test model at first difference level. *, ** and *** denote 10%, 5% and 1% significance level, respectively.

Table 7 presents the results of the panel cointegration test, confirming the presence of a long-run relationship between the

variables. In all cointegration tests, p-values below 0.05 (here 0.0000) lead to the rejection of the null hypothesis of no cointegration, providing strong evidence that the variables move together in the long run. The Pedroni, Kao, and Westerlund tests yield consistent results, further reinforcing the existence of a long-run equilibrium among the variables. This finding indicates that the economic, environmental, and innovation-related factors examined in the study are interconnected over time. The confirmation of a cointegration relationship suggests that additional analyses, such as error correction models (ECM) or causality tests, can be employed to explore the long-run dynamics in greater depth.

Table 7. Panel Co-integration Tests Results

Test	Statistic Value	Probability Value
Phillips–Perron t (Pedroni)	-10.0761	0.0000
Dickey-Fuller t(Kao)	4.0517	0.0000
Augmented Dickey-Fuller t (Kao)	6.0366	0.0000
Modified Dickey–Fuller t (Kao)	4.7585	0.0000
Variance ratio (Westerlund)	7.4430	0.0000

Notes: Model indicated by *; LGII=f (LGDP, LCO, LFDI, LGTD, GOV, LURB, LTO, LPI, INEQ).

In Table 8, the results of the panel quantile regression highlight the effects of explanatory variables across different quantiles of the dependent variable. Quantile regression enables the examination of how independent variables influence the dependent variable at various levels of distribution, such as low, medium, and high values. It also reveals how the impact of these independent variables changes from quantile 10 to quantile 90.

According to McFadden (2000), Pseudo R^2 values between 0.2 and 0.4 indicate a very good model fit. Pseudo R^2 measures the explanatory power of the quantile regression model. For instance, in the 10th quantile, the Pseudo R^2 is 0.2018, and in the 90th quantile, it is 0.3387. These values suggest that the model's explanatory power improves as the quantile values increase. Specifically, the model can account for 20% of the variability in the dependent variable at the 10th quantile, indicating a moderate fit at lower quantiles, while it performs better at higher quantiles.

The results show that LGDP (Economic Growth) is positively and significantly related to the dependent variable at all quantiles (at the 1% significance level). The coefficients range from 0.0011 at the 10th quantile to 0.0016 at the 90th quantile, indicating a positive effect that slightly strengthens as the quantile value increases. Similarly, LCO (Carbon Emission) also exhibits a positive and significant effect across all quantiles (at the 1% significance level). The coefficients for LCO are 0.1853 at the 10th quantile and 0.1201 at the 90th quantile. While LCO maintains a strong positive influence on the dependent variable, its effect diminishes slightly as the quantile increases, suggesting that the impact of carbon emissions on innovation performance is more pronounced at lower quantiles.

LFDI (Foreign Direct Investment) has a negative and significant effect on the dependent variable across all quantiles at the 1% significance level. The coefficients range from -0.0101 at the 10th quantile to -0.0133 at the 90th quantile, indicating a slight yet consistent negative influence. LGTD (Green Technology Investment), on the other hand, shows a positive and significant effect at all quantiles. Coefficients increase from 0.0068 at the 10th quantile to 0.0163 at the 90th quantile, demonstrating a stronger impact of green technology investment on innovation, especially in higher quantiles. This suggests that green technology investments have a positive effect on the dependent variable, with their impact intensifying at higher quantile levels.

LGOV (Government Stability) shows a positive effect on the dependent variable, but it is only significant at the 10% level in the medium and high quantiles. The coefficients for government stability are 0.0015 at quantile 10 and 0.0039 at quantile 90. These results imply that government stability becomes a significant factor in influencing innovation performance at higher levels of the distribution, but its impact is not substantial at lower quantiles. LURB (Urban Population Ratio) is negative and significant at the 1% level across all quantiles. Coefficients range from -2.4439 at the 10th quantile to -2.3756 at the 90th quantile, suggesting that a higher urban population has a consistent negative impact on innovation, which is somewhat consistent across quantiles. LTO (Trade Deficit), however, exhibits a negative but insignificant effect at all quantiles. The coefficients are -0.0109 at quantile 10 and -0.0226 at quantile 90, indicating a small, statistically insignificant effect of trade deficit on innovation performance.

LPI (Logistics Performance Index) shows insignificant effects across both low and high quantiles. The coefficients are -0.0104 at quantile 10 and 0.0171 at quantile 90, indicating that logistics performance does not have a statistically significant impact on innovation. This may suggest that the effect of logistics performance on innovation is either limited or mediated by other factors.

Finally, INEQ (Income Inequality) shows a positive but statistically insignificant effect on the dependent variable across all quantiles, with coefficients ranging from 0.0041 at the 10th quantile to 0.0058 at the 90th quantile. This indicates that while income inequality may have a positive impact, its direct effect on innovation performance is weak and insignificant.

In the panel fixed effects (FE) model, economic growth (LGDP) shows a positive and significant effect on innovation, confirming its importance for fostering innovation at the 1% significance level. Both carbon emissions (LCO) and green technology diffusion (LGTD) also have significant positive effects, suggesting their roles in enhancing innovation performance. Government stability (GOV) positively influences innovation but with a lesser impact at the 5% significance level. In contrast, foreign direct investment (LFDI) and urban population ratio (LURB) have negative and significant effects on innovation. The negative coefficient of urban population suggests that dense urbanization may hinder innovation, possibly due to overcrowded or inefficient urban systems. The effects of foreign trade (LTO), logistics performance index (LPI), and income inequality (INEQ) are not statistically significant in the model. The Pseudo R^2 value of 0.7169 indicates that the model explains 71.69% of the variation in the dependent variable, showing a strong explanatory power.

Table 8. Panel Quantile Regression Results

Variable	FE	Quantile Regression								
		10th	20th	30th	40th	50th	60th	70th	80th	90th
C	6.884*** (0.537)	1.908*** (0.142)	1.967*** (0.101)	2.010*** (0.123)	1.993*** (0.146)	2.059*** (0.118)	2.112*** (0.105)	2.132*** (0.076)	2.060*** (0.068)	1.997*** (0.107)
LGDP	0.0013*** (0.0003)	0.0011** (0.001)	0.0011** (0.001)	0.0012*** (0.001)	0.0013*** (0.001)	0.0013*** (0.001)	0.0014*** (0.001)	0.0015*** (0.001)	0.0015*** (0.002)	0.0016*** (0.001)
LCO	0.1535*** (0.035)	0.1853*** (0.050)	0.1778*** (0.040)	0.1722*** (0.042)	0.1634*** (0.031)	0.1536*** (0.031)	0.1422*** (0.033)	0.1355*** (0.041)	0.1284*** (0.052)	0.1201*** (0.061)
LFDI	-0.011*** (0.003)	-0.0101** (0.001)	-0.0105*** (0.001)	-0.0108*** (0.001)	-0.0112*** (0.005)	-0.0117*** (0.003)	-0.0122*** (0.002)	-0.0125*** (0.003)	-0.0129*** (0.004)	-0.0133*** (0.001)
LGTD	0.0114*** (0.005)	0.0068** (0.012)	0.0079** (0.002)	0.0087** (0.001)	0.0100** (0.007)	0.0114*** (0.001)	0.0131** (0.006)	0.0140** (0.004)	0.0151*** (0.007)	0.0163** (0.011)
GOV	0.0027** (0.005)	0.0015 (0.001)	0.0018 (0.002)	0.0020 (0.001)	0.0023 (0.007)	0.0027* (0.001)	0.0031* (0.004)	0.0033* (0.004)	0.0038 (0.005)	0.0039 (0.003)
LURB	-2.410*** (0.292)	-2.4439 (0.432)	-2.4360*** (0.371)	-2.4302*** (0.332)	-2.4209*** (0.288)	-2.4107*** (0.262)	-2.3987*** (0.307)	-2.3917*** (0.353)	-2.3843*** (0.414)	-2.3756*** (0.493)
LTO	-0.0166 (0.011)	-0.0109 (0.012)	-0.0122 (0.011)	-0.0132 (0.013)	-0.0148 (0.017)	-0.0166 (0.012)	-0.0186 (0.015)	-0.0198 (0.012)	-0.0211 (0.015)	-0.0227 (0.025)
LPI	0.002 (0.011)	-0.0104 (0.011)	-0.0073 (0.011)	-0.0049 (0.0141)	-0.0012 (0.013)	0.0029 (0.012)	0.0077 (0.014)	0.0106 (0.012)	0.01360 (0.015)	0.0172 (0.023)
INEQ	0.0049 (0.102)	0.0041 (0.161)	0.0043 (0.142)	0.0044 (0.122)	0.0047 (0.103)	0.0049 (0.102)	0.0052 (0.114)	0.0054 (0.132)	0.0056 (0.156)	0.0061 (0.183)
Pseudo R^2	0.7169	0.2018	0.2105	0.2111	0.2155	0.2517	0.2273	0.2633	0.2898	0.3387
Observation	418	418	418	418	418	418	418	418	418	418

Notes: *, ** and *** indicate 1%, 5% and 10% significance levels, respectively.

Table 9 shows the results of Dumitrescu-Hurlin panel causality test to investigate the causal relationship between the variables. The probability value for the causal relationship of the global innovation index on economic growth: 0.0906, which indicates a significant causal relationship at the 10% significance level. However, there is no significant causal relationship between economic growth and global innovation index as the probability value is 0.4759.

There is a significant bidirectional causality effect between the global innovation index and carbon emissions. On the contrary, while there is a causality from the global innovation index to FDI, there is no causality from FDI to the global innovation index. The global innovation index is not a cause of green technology diffusion, while green technology diffusion is a cause of global innovation. Similarly, there is no significant causal relationship between government stability and global innovation, while global innovation is a cause of government stability. Moreover, there is a bidirectional causality between global innovation and urbanization rate. There is a significant bidirectional causal relationship between global innovation and foreign trade deficit and logistics performance index and income inequality at 10% significance level

Table 9. Panel Causality Test Results

Null Hypothesis	W-istat.	Zbar-istat.	Probability Value
LGII → LGDP	0.5852	-1.8081	0.0906
LGDP → LGII	0.8365	-0.7129	0.4759
LGII → LCO	1.6384	2.7827	0.0054
LCO → LGII	3.7643	12.0492	0.0000
LGII → LFDI	1.7908	3.4470	0.0006
LFDI → LGII	1.3298	1.4374	0.1506
LGII → LGTD	1.1969	0.8583	0.3907
LGTD → LGII	3.0842	9.0848	0.0000
LGII → GOV	1.8230	3.5875	0.0003
GOV → LGII	1.2554	1.1134	0.2655
LGII → LURB	1.6620	2.8854	0.0039
LURB → LGII	4.4685	15.1190	0.0000
LGII → LTO	1.4865	2.1206	0.0540
LTO → LGII	0.5408	-2.0016	0.0653
LGII → LPI	1.4077	1.7769	0.0756
LPI → LGII	2.1745	5.1196	0.0000
LGII → INEQ	4.7164	16.1993	0.0000
INEQ → LGII	2.4244	6.2087	0.0000

Notes: *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

4. Conclusion and Recommendations

This study examines the factors influencing global innovation performance using a panel quantile regression model, utilizing data from OECD countries. The analysis explores the impact of economic growth, carbon emissions, foreign direct investment (FDI), green technology investments, government stability, urbanization, trade deficit, logistics performance, and income inequality on innovation.

The results indicate that economic growth (LGDP) and green technology investments (LGTD) positively and significantly enhance global innovation. The consistently positive impact of LGDP across all quantiles highlights the crucial role of economic expansion in fostering innovation. Additionally, green technology investments demonstrate a strong positive effect, particularly in higher quantiles, suggesting that the advancement and diffusion of environmental technologies contribute significantly to innovation.

Conversely, FDI exhibits a negative effect on innovation, implying that foreign investments may not always support technological advancement, especially if they do not target high-value-added sectors. While green technology investments strongly influence innovation at higher quantiles, the urban population ratio negatively affects innovation, possibly due to infrastructure constraints or urban congestion. Moreover, trade deficit and logistics performance do not show significant impacts, indicating that innovation dynamics in OECD countries may be less sensitive to these factors.

To foster a more dynamic innovation ecosystem, governments should enhance collaboration between public institutions, private enterprises, and research organizations. Public-private partnerships (PPPs) can drive innovation by facilitating technology transfer, commercialization of research, and industry-academia linkages. Governments should establish innovation hubs and technology clusters where firms, universities, and startups can co-develop cutting-edge solutions. Moreover, regulatory frameworks should be designed to encourage venture capital investment in high-tech and green sectors, ensuring that innovative ideas receive sufficient funding to reach commercialization.

Access to funding remains a critical barrier to innovation, particularly for startups and small- and medium-sized enterprises (SMEs). In addition to traditional R&D grants and tax incentives, policymakers should introduce alternative financing models such as green bonds, innovation funds, and impact investment programs that support sustainable innovation. Governments can also incentivize corporate R&D investments by offering tax credits for companies that engage in research collaborations with universities or invest in emerging green technologies.

The digital economy plays an essential role in driving innovation across industries. Policymakers should prioritize investments in digital infrastructure, artificial intelligence (AI), and big data analytics to accelerate innovation. Expanding access to high-speed internet, 5G networks, and cloud computing services will create an enabling environment for businesses to adopt data-driven innovation strategies. Additionally, governments should support digital upskilling programs to equip workers with the necessary skills to thrive in an increasingly technology-driven economy.

The negative impact of urbanization on innovation suggests the need for smarter urban planning. Governments should implement smart city initiatives that leverage renewable energy, IoT-enabled infrastructure, and sustainable transport solutions to enhance urban innovation potential. Policies should focus on reducing congestion, improving air quality, and expanding green spaces, creating a healthier and more innovation-friendly environment. Public investments in sustainable urban infrastructure can further support the development of innovation districts, where research institutions and technology firms collaborate on new solutions.

A well-functioning intellectual property (IP) rights system is crucial for encouraging innovation, particularly in high-tech and knowledge-intensive industries. Policymakers should focus on enhancing IP laws, streamlining patent registration processes, and providing stronger legal protections for innovators. Additionally, international collaboration on IP protection agreements will help ensure that technological advancements are safeguarded across borders, promoting global knowledge sharing while maintaining fair competition. The study finds that trade openness can sometimes create constraints on domestic innovation. To address this, policymakers should design trade policies that protect emerging industries while still encouraging global knowledge exchange. Governments can implement strategic industrial policies that support local R&D efforts, incentivize domestic firms to adopt advanced technologies, and facilitate innovation-driven exports. Additionally, participation in international research collaborations should be encouraged to integrate local innovations into global supply chains.

Innovation should not only drive economic growth but also contribute to social equity and sustainable development. Policymakers should implement inclusive innovation policies that ensure marginalized communities, small businesses, and underrepresented groups have access to technology and funding opportunities. Encouraging women's participation in STEM fields, supporting entrepreneurs from disadvantaged backgrounds, and creating regional innovation hubs in less-

developed areas can help bridge the innovation gap and create a more inclusive economy.

One promising avenue for future research is the exploration of the role that artificial intelligence (AI) and machine learning play in driving innovation, especially in the context of green technologies and sustainable industries. Given the transformative potential of AI in various sectors, future studies could investigate how the integration of AI into R&D processes, product development, and decision-making contributes to innovation. Research could also explore how AI can enhance resource efficiency and reduce the environmental impact of industrial activities. Understanding the ways in which AI interacts with existing innovation ecosystems and policy frameworks would provide valuable insights into how to leverage technological advancements to achieve sustainable development goals.

Another important direction for future research is the relationship between technological innovation and social equity. While innovation can drive economic growth, it is essential to explore how it can also promote social inclusion. Studies could examine the impact of inclusive innovation policies on reducing inequality, particularly in developing regions or among underrepresented groups. Future work could investigate how social innovation and technological inclusion policies can be designed to ensure that the benefits of innovation are widely distributed, contributing to both economic and social development.

Moreover, the positive and significant effect of carbon emissions and green technology diffusion on innovation may be considered as a counter-intuitive or unexpected finding at first glance. However, there are some structural and political dynamics underlying this finding. Firstly, in countries with high carbon emissions, the pressure for environmental sustainability becomes a trigger for innovation in public policies and private sector strategies. High emission levels drive firms and governments towards cleaner production technologies, energy efficiency practices and environmentally friendly process innovations. In this context, environmental degradation can actually act as a "trigger stress factor" for innovation.

Similarly, the positive impact of green technology diffusion on innovation shows that the search for solutions to environmental problems is not only limited to technology transfer, but also encourages R&D activities at the local scale. Green technologies are often adopted in line with external pressures, international environmental norms and carbon emission targets, and this process may result in the introduction of new policies and incentive mechanisms to increase the innovation capacity of both the private sector and public institutions.

Therefore, this can be said that both variables represent structural dynamics that mobilise innovation indirectly rather than directly. This indicates that innovation is shaped not only by technological progress but also by environmental and institutional imperatives.

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Are the Fast-Fashion TNCs Locomotive of Development

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Abstract

The global business of fashion today requires advanced, fair and sustainable mechanism of governance instead of irresponsible mass production and consumption. This goal could be achieved by investing more in national law of trade in LDCs developing more balanced relationships with all actors in the industry to be protected from exploitative behaviour and to increase national production and export capacities of the LDCs to prevent exploitative behaviours of the TNCs. In this regard, dependency theories put forward by critical development economists to explain the dynamics of economic growth in core and peripheral countries still maintain their validity today and are important in the literature on fast fashion mainly through two streams of thought. One explains the dominant role of globally powerful TNC's which establish economic and cultural dependency bonds between developed and underdeveloped countries, paving the way for exploiting the resources of weak countries in line with historical facts. The opposite view rejects the idea of dependency theories and blame the domestic institutional weaknesses in these countries for causing underdevelopment. In addition to dependency theories, theories of international trade and capitalism are also linked to the behavioural patterns of the TNC's by questioning whether the fast-fashion business actors act as the locomotives of consumption based global capitalism. This approach strives to analyse the role of global major fashion brands' operating facilities or subcontracting strategies in underdeveloped countries. Unlike dependency theories, theoretical approaches that stress economic rationality and efficiency of any business enterprises and regulation environments have been dominant driving the logic of industry in today's world. Today's businesses mentality praises this mind and behaviour of the TNCs to engage in FDI in order to gain competitive advantage by setting up production units as well as retail networks in different countries for organizing from production to distribution through a chain of agreements with the subcontracting firms. It is also common practice to organize different stages of design with physical and human aspects of economic activities. This article first identifies the theories of dependency and institutional growth with reference to dominant behaviours of TNCs operating in the LDC's. It then explores how underdeveloped countries can regulate these dependency relations caused by asymmetric power and capital resources of the TNCs in the light of international trade theories. The fast fashion TNC's are perceived as the key agents and discussed as one of the main engines of the expansion of global capitalism in the light of the constantly changing nature of fashion as well as hidden tools of global hegemony. As these TNC's act as engines of desires of novelty, alteration and newness of fashion commodities they can be seen as catalysts of increased international trade and signifiers a of global cultural hegemony by the Western world on the basis of exploitative economic relations.

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1. Introduction

Economic development is generally described as a process in which sustained growth in production and output levels lead to income increases over long periods of time (Yülek and Santos, 2022: 158). Although developing countries designed various strategies of economic development in order to catch-up with the industrialized countries and to eliminate the

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productivity as well as income gaps, most of them found themselves in low- and middle-income traps (Felipe, Abdon and Kumar, 2012: 46) This study presents a brief literature review and theoretically informed analysis into modern corporate capitalism in the light of dependency theories applied to fast-fashion industry by putting the spotlight on fast-fashion production in underdeveloped countries. By arguing that underdeveloped countries are left to fall systematically dependent on the superiors, it evaluates different perspectives on the causes of underdevelopment and dependency in the periphery of the world system. It also underlines various approaches to the poverty trap and forms connections with the Transnational Corporations (TNCs) which are perceived as the main agents of the current forms of fast-fashion business. Defining these large corporations as the pioneers of neo-imperialism in the today's world of globalization, the study highlights how the fashion industry is dominated by various powerful actors and how the fast fashion corporate companies foster relations of economic dependency in the Least Developed Countries (LDCs). To start the literature review on the causes of underdevelopment; renown American economist Paul A. Samuelson (1915-2009) who developed positive economics has underlined that uniting the four main components of economic progress namely labour, capital, resources and innovation present significant difficulties for developing countries. He stated that challenges related to each component reinforce one another in a vicious poverty cycle, that shows how one obstacle can lead to another in underdeveloped countries through a negative multiplier effect in a sense. Low-income levels cause low levels of savings which slow the expansion of capital across many industries. Limited investment also limits the introduction of new machinery and quick increases in output as inadequate output results in inadequate income which fuels poverty. Poverty is accompanied by a self-enforcing cycle of lack of academic achievement and talent which in turn restricts the implementation of cutting-edge innovations and hinders increases in productivity. Due to these structural obstacles, it is impossible to obtain the ideal development equilibria for countries plagued by such a vicious cycle because it leads to various equilibria that results in poverty (Samuelson and Nordhaus, 2010). On the other hand, Paul Rosenstein-Rodan (1902-1985) who represents the Austrian tradition, developed the Big Push Theory of growth to break this vicious cycle and argued that overcoming the poverty trap requires coordinated effort on many fronts. As known after the end of the World War II many underdeveloped countries in Asia, Latin America and Africa gained formal national independence from their former colonial masters. The persistence of chronic poverty in these countries raised the need for special and coordinated economic development strategies so as to support the new political regimes with strong legitimacy. In this context, Rosenstein-Rodan's (1943) groundbreaking article on the "Problem of Industrialisation of Eastern and South-Eastern Europe" claimed to provide a solution to low investment equilibria by suggesting that governments should fill the investment vacuum for industrial development. Accordingly, if a country is fortuitous, synchronized actions to increase investment, modernize health and education support talented skills, and reduce population growth can end the vicious cycle of poverty and stimulate accelerated economic development (Kartika, 2014). Likewise, Estonian American economist Ragnar Wilhelm Nurkse (1907-1959) identified the "vicious circle of poverty" as the main obstacle to economic development in underdeveloped countries. This circle suggests a set of forces that interact and feed off one another in a way that retains an underdeveloped country in a condition of acute poverty. However, for each country in question, a large portion poverty can also be explained by the absence of sufficient machinery and equipment, which can be caused by a lack of incentives to invest as well as a limited national capacity to save. The issue of capital formation in the world's most impoverished regions is a circular one that affects both demand and supply sides of the economic structure equally. From the perspective of supply, there is a limited national capacity for savings due to the limited level of real income, which is a consequence of low productivity and the shortage of capital. As one aspect that unites both circles is the limited real income, which in turn reflects limited productivity in the concerned cases. In the development literature discussions of the supply side typically gets all the attention, however capital issues do not indicate the whole picture. There seems to be a widespread perception that in order to break the vicious cycle and increase productivity and real income to a level that allows for any substantial margins of saving, underdeveloped countries must first increase their capacity for domestic savings. This initial increase in productivity and real income is thought to be necessary in order to break the vicious circle of development (Katte, Kregel, and Reinert, 2009). In the same analytical tradition, German-American economic historian Andre Gunder Frank (1929-2005) who is seen as one of the founding fathers of dependency theory focused on issues of poverty and underdevelopment in Latin America in his ground breaking article "Latin America: Underdevelopment or Revolution" (1969). Frank questioned both FDI and foreign aid as different forms of exploitation which resulted in economic imperialism. According to his view, economic resources were moved from the "periphery" of the world system, i.e. underdeveloped and impoverished countries to the centre (core) of developed countries, while

benefiting the latter at the disadvantage of the former. He examined the metropolis-satellite structure at the global level and claimed that the core countries absorb capital or economic surplus from the satellites and reroute some of it the global metropolis hubs. As known most of the former colonies gained their formal independence by the 1960s, and yet proponents of dependency theory like Frank claimed that Western powers seemed to have no desire to support economic independence in developing countries. On the contrary, they had a fear of development of underdeveloped countries as they continued to take advantage of poverty by continuing to use these countries as a source of cheap labour and raw materials. Because of this intention, the affluent countries have a desire to maintain underdeveloped nations in a subservient place so they can continue to profit from their weak economies. Frank also explains by the term "the Emperor's Clothes" that promoting the development of underdeveloped countries does not only rely on economic intentions but is done in the context of a cultural change strategy (Frank, 1969). In another popular book titled "Development of Underdevelopment" (1978) Frank followed a neo-Marxist perspective and questioned "Who is going to get the economic surplus?" explaining the process of capital accumulation, exchange relations between the core metropolis and the periphery in the light of changing production relations (Frank, 1978). Dependency theories represent a conceptual approach based on global relations of economic domination and exploitation by more powerful countries over the less powerful countries. They generally argue that as a result of the unequal distribution of power and resources, some countries have developed at a faster pace than others. Dependency authors believed that underdevelopment results from the unequal distribution of material resources and exploitation of the less developed countries by the more developed countries through the so-called "metropolis-satellite relations" (Chew and Lauderdale, 2010). From the same standpoint, economic historian and sociologist Immanuel Maurice Wallerstein (1930-2019) argued that a world capitalist system which began to take shape in the 1600s gradually bound less affluent regions to the more wealthy European nations as its heart in an unjust and exploitative relationship. The wealthy metropolis/core nations, which have the metropolitan power are at the one end of this interconnecting web of capitalism, while the underdeveloped satellite/periphery nations are at the other end. He explained how affluent countries accumulated enormous wealth by exploiting the natural resources of underdeveloped countries with investment and human capital. This in turn supported their industrialization, economic and social growth at the expense of the developing nations who were left in a state of poverty as result. For the purposes of this article, dependency and world system theorists saw the textile and fashion industries as exploitation hubs. Near the end of the eighteenth century, the importance of cotton as the source of raw material for western textile industry played a very important role in establishing networks for satellite or peripheral nations. The major textile corporations which emerged in Western Europe bought raw materials and formed channels of control over vast areas of cotton production in India, Ottoman Empire and China and manufactured goods were sold to these eastern lands (Wallerstein, 1988). American historian Sven Beckert, in his book "Empire of Cotton" emphasised cotton as the key material to understanding the origins of modern capitalism in the context of colonial imperialism. Beckert formed bonds between development of the world's most significant manufacturing industry and its imperialist expansion and argued that Western industrial capitalists used the raw material to create imperialist networks in underdeveloped countries as a reservoir of cheap workers. At the end these exploitative behaviours of Western corporations crucially reshaped global industrial capitalism in the cotton industry and gave birth to a cotton empire while this corporate behaviour of capitalists class transformed the World system (Beckert, 2014). However, according to Masson, today the structure of this world system does not conform to the unipolar model of centre-periphery relations, but rather we observe a multipolar centre-periphery relations on a global scale. Therefore, the world system is not viewed as having always been composed of a single core and single periphery, but rather of an interlinked set of centre-periphery complexes and also including a "hinterland" joined together in an overall ensemble or whole (Chew and Lauderdale, 2010). American economic historian and modernization theorist Walt Whitman Rostow (1916-2003), in his famous book "The Stages of Economic Growth: A non-Communist Manifesto" in the 1960s, criticized dependency theorists and recognised that countries advance as they transform from traditional to modern economies and as they absorb the norms, attitudes, values and practices of the industrialized world. He asserted that economies grow in five linear stages as a result of innovative activities and identified the prerequisites of development from traditional society for take-off. He argued that a country must follow a plain linear path and development was viewed as a modernisation process (W. W. Rostow, 1960) The failure of the development theories was due their weakness in taking into account the working mechanisms of the capitalist system that actually cause underdevelopment by establishing and maintaining dependency networks. Although dependency theory has been criticised for its exaggeration of western colonism; it was right to indicate that there were reasons beyond a country's political economy, socio-cultural

elements, environmental concerns that undermine mutual development. Another dependency theorist, namely a Neo-Marxian American economist Paul Baran (1926-2001) argued in 1973 that Western capitalism harmed self-sufficiency of rural populations by undermining the centuries-old patterns of agricultural economy and dividing shifts to the cultivation of exportable commodities. He added that Western capitalism in all the nations where it had penetrated, immeasurably altered the fundamentals of pre-capitalist order and quickly enlarged and deepened the extent of commodity mobility. According to Baran industrial markets were created by eliminating all rural skills like apparel production in order to accelerate industrial development under the rule of capitalism. There would have been much less suffering if developed countries interacted differently with the underdeveloped world than they did, if they were involved in legitimate collaboration and indicate true support rather than just getting involved in oppressive trade. A fair transfer of Western cultural, scientific and technological advancement to the less advanced nations would have acted as a potential economic stimulus worlwide. However, their development was greatly and extensively disturbed by the Western capitalism's aggressive, catastrophic, opportunistic expansion to weak countries (Baran, 1973). Dependency scholars asserted that peoples and governments of underdeveloped countries have nothing to blame for their failure and lack of development, as the biased intentions of industrialized Western nations deliberately prevented these countries from development. This exploitative relationship was evident by the Western countries' dominance of international trade, creation of TNCs and the dependency of less-developed countries on Western aid. Indeed, most of the export products of developing countries include low value-added items such as primary goods with no manufacturing input; or assembled industrial products with considerably low technological, design nad branding levels. Moreover, the majority of global pricing mechanisms operate in monopolistic, rather than perfectly competitive markets. Hence, countries with monopolistic producers and exporters with price-setting power receive wealth transfers from developing countries (Yülek and Santos, 2022: 160). In fact, as argued dependency today took a different shape whereby exploitation continues via neo-colonialism which uses TNCs as a tool and takes advantage of underdeveloped countries in more subtle ways and through weak institutions. Owing to their worldwide impact or global reach and mobility, these giant-sized massive corporations can place pressure on developing countries to engage in a wage race where they give ever-lower salaries to win business. However this unfair competition has drawn widespread criticism since it does not promote development.

2. Are Global TNC's Tools in LDCs? The Aesthetic Face of Colonial Imperialism

According to H. See (1924), capital, in its modern sense, emerged at a time when stock/multi- partner companies developed and the birth of multi-partner companies is seen to provide substantial capital to commercial ventures and wealth, the most characteristic event of modern capitalism (See, 2021). In this regard today, it is critically important to understand whether fashion corporations in the current world maintain Western ancestors' corporate heritage in the case of Cotton Empires and use fashion as a modernized tool of exploitative behaviour. Alternatively the global fashion TNCs could be seen as corporations or rational actors in the international context of that development theories argued. As dependency theories argued, many Western fast fashion companies set up production facilities in underdeveloped countries in order to reduce labour costs and benefit from the reservoir of cheap labour and low production costs. Several economic dynamics could also trigger or prevent FDI decisions, thereby encouraging certain types of TNC behaviour. In this regard, there is a huge literature to explain the investment decisions and economic behaviours of the TNCs which are perceived among the most powerful actors of the world economy. However here we will consider a few of them. In the literature, the American economist Raymond Vernon's (1913-1999) article called "International Investment and International Trade in the Products Cycle" (1993) developed the international product cycle theory Vernon explained international movement of various products in the context of the process of change and defined the stages of change in domestic and foreign markets under certain conditions. Then he identified how production processes and FDI decisions by the US firms are made and how the TNCs are created. Accordingly in the first stage of the product cycle, a firm invests in Research and Development, design and manufacturing to create technologically sophisticated new products. In the next stage, the finished products are exported to other high-income markets and the firms become TNCs as they establish sales offices, production and distribution facilities around the world. In the final stage, as the product or the design and technology become more standardized and it seems more efficient to conduct production abroad, the production facilities are shifted to the target countries in order the benefit from the cheap labour costs they offer. In other words, the basic assumption of the theory is that an innovative product produced with a new technology emerge in a developed country and then spread to the market according to the development level of countries. The product comes from the country of origin and is sold to other developed counties, then to developing and then less developed countries and

started to be produced in these countries. It would shift to other countries according to the level of development and meet the demand of that country (Vernon, 1966). However, the assumptions of the theory are criticized due to the emergence of three ideal firms and the countries other than the US which also carried out the innovation flag. Alternatively, the American economist Richard Caves (1931-2019) in his book called "Multinational Enterprise and Economic Analysis" analysed the FDI behaviours of third-world multinationals which fear to loose intangible assets that gave them competitive advantages and argued that the vertical and horizontal integration methods are used to create a TNC structure and keep the valuable know-how inside. The extent to which multinational enterprises tend to keep their innovational activities close to headquarters can be exaggerated. Multinational enterprises commonly do maintain some research and development facilities in countries other than the home territory (Caves, 2007). Canadian economist Stephen Herbert Hymer (1934-1974) explained the behaviour and the real intentions of TNCs which engage in FDI operations to gain monopoly position and monopolistic control of the industry in their international operations by exploiting foreign markets. However, he also argued that the TNCs' desire is mainly to gain monopoly power, exploit foreign markets depending on the strategic commodities such as oil. In other commodities such as cotton textiles, clothing, leather etc. there was no direct investment by the American TNCs. Since an American company concentrates on translating its international profits into dollars to pay its shareholders, this will influence how it behaves financially (Hymer, 1960). However, in the global retail and fast-fashion (FF) industry, it is argued that some brands monopolize the industry by various strategies to control a centralized production hub. Production and sales chain of the monopoly, produces and offers to the market with contracted subcontractors in countries such as Cambodia, Bangladesh and Vietnam where there are cheap labour pools. Such networks are often criticised by inhumane working conditions, employment of child labour and exploitation of its contracted subcontractors. In this regard, large-sized TNCs which act in global markets as a major economic force have generated vibrant academic debate since the 1950's focusing on whether the TNCs were among the main engines of expansion for global capitalism or the tools of global hegemony. The role of Western fast fashion and mass production corporations are perceived as the aesthetic face of colonial imperialism shifting from textile (cotton) to fashion (design), with diverse operations in the underdeveloped countries. It is also important to analyse the global fashion industry in the light of mainstream economic theories of trade and development.

3. The Nature and Logic: Economic Theories of Fashion

The essence of the industry has altered as clothing has progressed over time from being a basic human need to an artificial desire created by the vast fashion industry corporations for purely economic purposes such as increasing sales and profits. Because the term fashion is highly convenient to use as an economic tod for maximising profit, in addition to its historical development from political and socio-cultural distinction theories, its economic function needs to be taken into account beyond mere aesthetics of textile products. From the above-mentioned perspective all fashion products including wallets, glasses, skirts, t-shirts, shoes etc. were invented as very lucrative trade commodities rather than just pieces of clothing. For instance, a haute couture fashionable product such as a designed shirt or a suit could be sold for extremely high prices. In another example, a fast-fashion product such as a mass production skirt can be sold in large quantities because their distinctive designs set them apart from similar products utilising TNCs' market strategies. Regarding the relationship between economy and fashion, we primarily consider two schools of thought. In terms of the economic function of fashion, British physician and mercantilist N. Barbon (1640-1698) focused on the supply and demand effects thereby discovering the economic power of fashion as a change tool to stimulate trade. He argued that "the dress alters" and continued "...fashion or the alteration of dress is a great promoter of trade because…. the old ones are worn out: It is the spirit and life of trade. It makes a circulation and gives value by turns to all sorts of commodities…vanity of the new fashion and at the same time, commend the decency of the old one, forget that every old fashion was once new…the promoting of new fashion ought to be encouraged, because it provides a livelihood for a great part of mankind..." As seen, he stressed that the value of the commodities are primarily determined by the rules of demand and supply and fashion constantly creates demand for new commodities. Another crucial issue in his theory of fashion and trade concerns the reference to law of change. The fundamental economic driver for the fashion industry, in his perspective, was the demand for novelty and change. Therefore, in certain locations and times, the dress change was the engine of the economic dynamism. In that occasion he defined liberty as a free use of everthing created by the industry of the poor for the benefit of the body and mind the rich, describing liberty of fashion in the shape or form of apparel. Barbon (1690) was a rare economist to refer to unlimited wants or desires of the mind arguing that they permit a beneficial enhancement to the markets and mankind notwithstanding the potential ethical consequences. While he utilized the concept of "unlimited

desires" to analyse fashion and luxury goods, he classified clothes in the context of body's restricted needs (wants) and fashion as the mind's endless wants. As a result, he discovered the economic theory underlying the fashion industry, which holds that the economics of fashion derive from the use, advantages and true value of fashion products as well as from continued consumption driven by limitless desires of the mind that encourage trade. He rightly stressed that constant demand was generated by the constant product purchases stimulated by the mind's desires for enhancing senses and making them more refined and capable of appreciating pleasure regardless of morality. In other words, he emphasised desires aimed at refined pleasure with no regard to morality. Regardless of nationality and cultural traits he argued that everyone desires "novelties" and that human minds function in a similar way. He also stressed the importance of international trade from the standpoint of local and foreign fashion products, stressing that consumers place a larger value on imported goods than those domestically produced overall. So, the consumption of domestic wares will be more advantageous for the nation and big companies will be able to easily increase the the supply of the same sort of products since the market would be oversaturated with foreign products (Barbon, 1690). Current research supports his viewpoint because constantly evolving consumers' desires of novelty introduced by new fashion trends and artificial scarcity generated by fast-fashion in the post-modern marketing era improve overall sales by continuously providing new goods at predetermined intervals. (Aksu, Bektaş and Karaboğa, 2011). Although Barbon's view on fashion based on constant change as an engine of trade is still valid today, ethical issues regarding mechanisms of mass production, marketing and consumption are still being questioned. From the consumption perspective, the German economist and sociologist Werner Sombart (1863-1941) in this book titled "Economy and Fashion" asserted that fashion has a crucial role in the economic system and is more than just aesthetics and sociological currents. He claimed that industry uses fashion as a tool to promote consumerism. Fashion is one of the main forces behind the capitalist system since it has an increasing impact on all spheres of economic life and continually generates innovation, destruction, more innovation and even more destruction. According to his claim, the emergence of the bourgeoisie, who set themselves apart from the lower classes by indulging in higher levels of luxury, was what caused the excessive expansion for luxuries. As a result, new markets were created and the demand for luxury goods surged even more. Modernism and capitalism both rose to prominence at the same time as material luxury, including fashion, did as well. In brief, he claims that because fashion encourages purchasing, capitalism promotes fashion; fashion supports capitalism as one of the greatest factors and fashion in turn, constantly provides capitalism with new energy. Fashion currents generate structured attraction for more mass purchasing and capitalist forms of individual prosperity maximizes consumption to enjoy novelty (Wubs and Blaszczyk, 2018). From almost the same perspective, the Austrian economist Joseph Schumpeter (1883-1950), in his book called "Capitalism, Socialism and Democracy", portrayed the ongoing process of "creative destruction" as having fashion as a component or even at its core by emphasising his theory of the entrepreneur. Because creative destruction is the fundamental mechanism of change in capitalism (Schumpeter, 1943/1976) the essence of fashion and capitalism intertwined both. In the opinions of Werner Sombart and Joseph Schumpeter, change or creative destruction constitute the driving forces of capitalism and the fashion industry. The commercial culture which is based upon the continuous creation of new products, fashions, stiles and tastes fuels economic dynamism. The economists who linked the fashion industry with economic structure and capitalism stress that both depend on innovation and change to succeed. Among these views, the Marxist tradition have diverged with its critiques of fashion and has connected it to economic subordination. It argued that the alterations and newness of fashion commodities as the catalyst of trade stimulate a circulation of consumption and gives a value by turning to all sorts of commodities. Karl Marx believed that the capitalist system needed endless stimulus to production and consumption and therefore required constant invention, novelty to maintain sales and profits which was described by the term "commodity capitalism". In this regard, it is necessary to make reference to research that examines labour exploitation in the Western World rather than peripheral countries to bring a different perspective to the arguments above. Issues of poverty and underdevelopment have also been addressed nearly a century ago in the literature on exploitation in the Western industrial societies. In this regard, political theorist and a Manchester mill owner Frederick Engels (1820-1825) was born as a son of large-sized cotton and textile factory owner and spent most of his life working in various branches of the cotton industry and family business. Engels worked with middle-class cotton producers (imperials) and conflicted with the Victorian mind of industrial modernity and criticized female and child exploitation in the cotton industry. Afterwards he began to explain the distinction between fixed capital (machinery) and variable capital (labour), presenting an early version of the "surplus value" hypothesis of employee exploitation that would later become a central idea in Das Kapital for fairly compensated labour-wage rates. Engels supported the critiques of capitalism in

"Das Kapital" written by German economist Karl Heinrich Marx (1818-1883) who explained the origins of capitalism with economic determinism. Both Marx and Engels linked capitalism which relied on the exploitation of industrial workers to boost profits and calculated the value of a factory worker's labour, explaining the economic law of modern society and the poverty trap from the perspective of surplus value. They contended that the workers only obtain a very little percentage of the product created by their labour, whilst the capitalists continue to amass more wealth (Hunt, 1974/2010). H. Eugene See, conversely argues that capital accumulation does not simply result in capitalism's existence because the coexistence of financial, commercial and industrial forms of capitalism characterizes modern market society. He also disagrees with the Marxian view that modern capitalism may be quickly overthrown due to the myriads of reasons given for its long-term resilience (See, 1926/2021). In the light of the developed country illustrations produced by Engels, we might claim that the underlying nature and logic of the fashion industry is suitable to produce exploitation-friendly behaviour no matter in which country it operates and what kind of organizational tools it uses. From the mass production of textiles to the modern fashion TNCs there are strong parallels between the underlying actors of fashion and the capitalist system to reach their own goals. Both aim to achieve maximum surplus through creating artificial needs, stimulating human desires and then inducing people constantly to produce and consume in mass volumes. Thereby, both fashion and capitalism place more importance on the sales value rather than the usage value and sales value is more important to ensure greater capital accumulation which is perceived as key for development.

4. For a Better World: The Fashion Industry's Role in Development and Underdevelopment

In recent years, a rich literature emerged in the context of endogenous growth theory indicating strategic development policies to improve long term growth and productivity performance. Accordingly, systematic policies to support research and development, innovation, entrepreneurship and human capital are recommended to developing countries to improve their productivity levels (Yülek and Santos, 2022: 156). One of the indispensable pillars of the capitalist system is *constant innovation and change* to sustain its economic legitimacy. However, it is clear that massive development differences between countries and nations whose historical roots go as far back as colonialism also create what Romer (1993) calls "idea gaps" and what Stiglitz and Greenwald (2015) describe as "knowledge gaps". Therefore, the nature and logic of fashion and capitalism contradicts the realities of the physical world. Thus, mass production of the modern fast-fashion industry, in the countries where the TNCs set up production facilities cause environmental sustainability and other problems. If the country's legal framework and institutional structures are weak, the problem is exacerbated. It does not seem conceivable to leave a sustainable world in the wheel of continuous and even endless mass novelty and consumption in a finite universe to satisfy unlimited wants for a better future. Examples of the TNCs operations give critical insight about clash or harmony between theory and practice, while indicating different factors such as the power of stakeholders, strong organisations and trade laws which eliminate the undesirable consequences of TNCs operations and dependency. For instance, Sudrajat (2018) in article on *"Indonesian Textile Exports Up Raising Competitiveness"* argued that the latest years have seen an increase in attention paid to the textile sector and significant impact emerged on the underdevelopment of some LDCs. Moreover Johansson, Karlsson and Ranweg (2019) also emphasized the importance of internal and external stakeholder power to remove obstacles. Another crucial issue at point is the issue of sweatshops and poor workplace security operated by global fashion brands. For instance, according to the Internation of Labour Organization (ILO)'s news report titled "Rana Plaza Accident and Its Aftermath", serious events happened in 2013 in Dhaka, Bangladesh, A massive production facility called *Rana Plaza* which comprised five textile companies collapsed as a result of ranging fire and at least 1,132 people lost their lives who were producing global fashion TNCs. The Rana Plaza disaster followed by the burning of *Tazreen Fashions factory* tragedy in Dhaka indicated the poor labour conditions and loss of lives by employees in the fast-fashion industry. The global TNCs did not paid Rana Plaza survivors any compensation as application of the Labour Code provisions on employer liability was voluntarily cancelled by local authorities. The lowest paid child and women workers in the world were also exposed to an unsafe workplace condition with a *high rate of workplace accidents and illnesses and fatalities.* Majority of the factories in these LDCs do not adhere to the requirements set by the legislation governing construction. Although the TNCs are quite price sensitive and focus on self-interest maximization, they are double-faced actors for underdeveloped countries. In some countries they tolerate the use of child labour and illegal refugees, in others they play safe and reject them which means that they have political strategies beyond pure economics. Following the catastrophic collapse of the Rana Plaza, a number of stakeholders such as labour unions and activists, exerted significant pressure on the government of Bangladesh to endorse The International Accord for Health and Safety in the

Textile and Garment Industry. The Commitment of the TNCs brands to protecting the labour rights of the garment industry was ensured by this Agreement which enabled to improve the safety of the working environment. The new Accord (2021) which is a binding legal contract between the TNCs brands and unions that can be enforced in courts if businesses do not fulfil their duties, enhance conditions on health and safety in the manufacturing regions (Chan, 2021). This Accord proved the importance of the significant role of the pressure from internal stakeholders such as Worker Unions and campaigners as actors of collective action to protect and raise self-confidence of the LDCs. As a result of political and economic developments, after the 1990's many giant-sized TNCs acquired the capacity to influence market dynamics and developed mutually beneficial relations with states because while the TNCs aim profit maximization through less regulation states bear responsibility to simultaneously protect their national interests and to offer a conducive investment environment. For instance, government rules offer a set of guidelines for the TNC behaviour to stop violations of labour laws and rules on corporate taxation, high or low tax rates are critical for creating satisfactory profit gains (Balaam and Dilman, 2014). This shows the importance of robust FDI regulations and strong public and civil organizations in the LDCs in order to balance the business plans of the TNCs. Although the fashion industry is frequently recognised as one of worst pollutants among the industries, worse secret of all is probably that some of fashion TNCs regularly destroy by burning their new or unsold goods. The new pretty usable products are burned or deconstructed into pieces as a business strategy whether in order to maintain brand reputation, preserve exclusivity through scarcity, or to protect merchandise from illegal sellers. To boycott this wastefulness is also the responsibility of external as well as internal shareholders (Lieber, 2018). However more important than boycotting is to raise the environmental awareness of the TNCs through enforceable public measures. The waste and exploitation of human efforts, material wealth and environmental sustainability should be prevented via collective resistance. Developing countries could attain more equitable terms of dealing with the global fashion TNCs if they act together and form alliances on international platforms such as the WTO and the ILO. However, As Balaam and Dilman (2014) emphasized there must be national and international regulations which might hold the TNC managements accountable in relation to the production methods and social responsibilities of their subcontractors. The NGO's efforts as stakeholders are targeting to improve working conditions in the supply chains of the TNCs to prevent sweatshops and unfair working practices. These should be supported through systemic, coordinated legal reforms aimed at proper regulation.

5. Conclusion

The fashion industry connects commerce and aesthetics by stimulating newness and continuous change. The continuation of the capitalist system is considered to be dependent on the same fundamentals as driving forces namely constant innovation and change when examined with the same logic as the fashion system works. So, fashion is in the heart of the economic system and recognized as a significant economic, commercial phenomenon as well as a social force. From the industrial revolution to the 20th century and today's digital fast-fashion (FF) movements, its relationships to both business strategies and economics have always been critical (Wubs and Blaszczyk, 2018). After all, a business enterprise is as important as its effect. The fashion industry has been subject to strong criticisms from various disciplines since the development of the global fashion system. From the vicious cycle of poverty to the surplus value theories it was recognized as a barrier to economic progress in underdeveloped countries and later linked to capitalism, leading to unequal distribution of resources and exploitation of LDCs. According to world system analyses, historically capitalism continually transfers wealth from the underdeveloped countries to serve the interest of the core countries and favors the Western economies over the rest of the world. The modernisation theorists, on the other hand criticised the conceptions of uneven development for not taking into account how the global capitalist system was a contributing factor to development citing examples from the Western TNCs. While the dependency theorists advocated harsh and destructive criticisms of Western capitalism for eroding the ability of rural communities to function independently and dramatically curbing independent development from material interests. In this context, giant sized global fashion corporations had been perceived as the locomotives of the expansion of capitalist relations in line with Western trade strategies. Their exploitative investment behaviours were seen as among the causes of acute underdevelopment in the LDCs. Because the major TNCs engage in FDI operations due to their desire to take advantage of their dominant monopoly position by using valuable resources like trademarked techniques. This leads to a form of imperialist pattern of conduct that does not promote local economic growth, but rather galvanizes of underdevelopment via monopolistic control, market manipulation, excessively low wages and abusive profits. These patterns of economic activity by the TNCs also apply to fashion brands operating in underdeveloped countries. The firms and economic relations are changing over time. In the course of history, the TNCs

were the trade organizations which were perceived as a continuation of colonial imperialism because of their FDI patterns. Against exploitation and dependency approaches, new theories developed overtime about the FDI decisions of the TNCs which asserted that they take purely rational decisions such as cost minimization, profit maximization, ex-post success, transaction-costs and many other rational motives for their FDI decisions. However, these approaches were not enough to camouflage the fact that through the global fashion industry material and human sources of the developing world were exploited in all regions. Last but not least, it must be underlined that the very concept of "fashion" became the target of critical thinking from a political economy standpoint. The fashion criticisms aim to explain economic function of fashion which has been used by the Western TNCs as a vehicle for profit maximization and exploitation, as well as for cultural and ideological expansion. This also helps the Western fashion corporations to exploit resources and human capital in underdeveloped countries under the guise of international trade. This exploitative behaviour of global fast-fashion brands opens a door for the Western hegemonic states to remain in control of economic power and see underdeveloped countries, which were their old colonies, as garment manufacturing hubs. Nonetheless, despite the fact that textile industry is crucial for employment prospects in the developing world, the above-mentioned problems remain as the underlining caveats of working with the fast-fashion TNCs. Although the economic and political dynamics are constantly changing and as a result, the theoretical frameworks strive to generate assumptions about them, they sometimes conflict with the realities of the changing world over time. Moreover, sometimes they become insufficient to explain the phenomena of the real world and loose their validity. Based on the literature review elaborated throughout this article, it can be concluded that when it comes to evaluating the exploitation conducted by fast-fashion TNCs in underdeveloped countries, it is evident that the theoretical premises put in place by the Dependency School and Critical Theory in general are still significant to understand dependency relations but are not sufficient to grasp the whole picture. As a result, the proposal of the article is to focus on domestic institutional and legal reforms as a solution to manage the problems experienced in the LDCs. Developing country governments are ought to empower domestic legal systems and receive support from international institutions such as the ILO in order to empower their regulatory frameworks concerning the global fashion TNCs. In turn, improved rules might enable honest competition and prevent systematic exploitative behaviours by the giant corporations helping to generate fair trade agreements and transforming the industry with a common consensus. Accordingly, the global business of fashion today requires advanced, fair and sustainable governance instead of constant mass production and consumption by investing more to supress national trade laws of the LDCs. Developing countries must pursue product differentiation by focusing on high value-added areas through research and development, design and branding strategies. Positive spill over impact from learning by doing and learning by exporting will support these strategies (Yülek, 2018). Thus, raising their economic power and political autonomy against the global business interests via improved legal system might protect the LDCs from persistent dependency relations and facilitate more egalitarian partnerships with these corporations. The fashion industry should be willing to give up its exploitative habits and arrogant behaviour patterns characterized by the lack of principles. Therefore, only a joint initiate between company managements, governments of the LDCs and international institutions can bring a solution to the acute problems of the industry with vibrant civil society support. Otherwise, the imperialistic corporate culture of the fashion industry, will continue to stimulate the structural deficiencies of global capitalism as the cotton industrialists did in history. "The Emperor's Clothes" which Andre Gunder Frank used as a symbol of the transformation process, encourages not only material progress for societies but also a plan for cultural transformation across the board.

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Corporate Wealth and Socioeconomic Conditions: How Globalization Affects Domestic Economies

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Abstract

This study concludes that the use of the Internet, the arrival and departure of tourists, and the quantum of external trade play significant in alleviating poverty, improving decent employment, and improving domestic businesses. The volume of external trade, use of the internet, and international traveling are considered components of globalization. In this way, this study favors the promotion of globalization. The major contribution of foreign direct investment is derived through improvement in local businesses. Growth in the merchandising trade alleviates vulnerable employment. The effectiveness of monetary policies has also been confirmed in this analysis. The fixed and random effects models of the panel least square technique have been applied to estimate the effects of explanatory variables. The choice of the appropriate techniques was based on the preliminary statistical tests to identify the appropriateness of the selected techniques. This research is based on 14 years of data from 187 countries.

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E51, I32, J64, O21

1. Theory of Globalization and Economic Welfare

The globalization theory believes that greater economic welfare can be achieved by informational efficiency, people-to-people interactions, and frictionless movement of people, merchandizing goods, services, and capital. Economic liberalization and free trade are the offshoots of globalization. Consequently, those will be the developed nations that have more knowledge and information sources. The role of bankers, economists, engineers, programmers, business executives, and military personnel will increase. Countries with a higher number of these professionals will advance more because such people will play an important role in economic management, technological advancement, trade facilitation, and socio-economic and political security. One of the desirable objectives of globalization is reducing the global disparities in human welfare and development through the interaction of people in a free world. This theory supports the strong mutual dependency, participation, and relations among the nations. Some experts have considered globalization an important way for the transition from today's world to a world without extreme poverty and characterized by universal health care, education, water, and sanitation. There is one premise in the reasoning: if global integration is feasible, transaction costs will be reduced and economies of scale will emerge (Jaime Pozuelo-Monfort: 2018). The recent literature on globalization covers different dimensions. The effects of recessions, wars, and the COVID-19 pandemic on globalization are common areas in recent literature. The revolution in information and communication technology is also a relevant area in the literature. Interestingly, Steger (2020) described that the study of globalization extends beyond any single academic discipline. Global Studies has emerged as a new field of academic study that cuts across

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traditional disciplinary boundaries in the social sciences and humanities. This strong emphasis on transdisciplinarity requires students of global studies to familiarize themselves with the vast literature on related subjects that are usually studied in isolation from each other. Komlos (2024) has criticized globalization and free trade and considered these as populism and right-wing approaches. According to him, globalization is not a solution to contemporary problems. He emphasized the reforms in capitalism. Contrary to classical liberalism, Komlos (2023) argues that the Dot-Com bubble, the 2008 financial crisis, and the COVID-19 pandemic cannot be understood with conventional economic processes. He criticized globalization, deregulation, small government, and tax-cutting policies. According to Contractor (2022) proposed that the changes induced by heightened nationalism and protectionism will be marginal rather than fundamental in nature. These marginally higher risks can easily be handled and ameliorated by multinational enterprises through alternate cross-border business strategies and emerging technologies. Moreover, the paper gives reasons why the future world economy will need even more globalization. In the context of a perceived crisis of globalization, Flew (2020) outlined key features of the globalization paradigm that bore influence in media and communication studies. The rise of populism could lead to a post-global era, but it is more likely that it marks a reassertion of national policy and political priorities into the operations of global corporations and multilateral institutions. Mearsheimer described that it is widely believed in the West that the United States should spread liberal democracy across the world, foster an open international economy, and build international institutions. The policy of remaking the world in America's image is supposed to protect human rights, promote peace, and make the world safe for democracy. According to him, the United States has become a highly militarized state fighting wars that undermine peace, harm human rights, and threaten liberal values at home. In this major statement, the renowned international relations scholar John Mearsheimer argues, "Liberal hegemony-the foreign policy pursued by the United States since the Cold War ended- is doomed to fail". According to O'Neil (2022), a case for why regionalization, not globalization, has been the biggest economic trend of the past forty years. The conventional wisdom about globalization is wrong. Over the past forty years as companies, money, ideas, and people went abroad, they increasingly looked regionally rather than globally. O'Neil (2022) details this transformation and the rise of three major regional hubs in Asia, Europe, and North America. Current technological, demographic, and geopolitical trends look only to deepen these regional ties. Though the ultimate goal of a free trade regime is global participation; it encourages regional integration also. In this paradigm, the regionalization can be considered as the initiation of ultimate globalization. In this way, the regionalization is a subset of globalization. It is widely considered that economic integration and mutual dependency on economic resources may diffuse political tensions and divert the Cold War or a war-like situation. The quantum of trade in goods and services (particularly health, education, tourism, and transportation) and cross-border mobilization of labor and capital lead to interactions among the peoples of participant countries (Mehar: 2021b).

Globalization is also considered a major cause of augmented growth in the global economy during the last three decades. The growing use of the internet, increasing traveling and tourism activities, flourishing e-commerce, and enhanced volume of cross-border investment are the visible components of globalization. However, the coronavirus pandemic in 2020-21 has forced the countries to adopt those measures which escorted de-globalization in the short term. The barriers in tourism activities, disruption in international flight operations, and restrictions in the trade of goods and services are those measures that escorted the short-term de-globalization. The interruption in supply chains and large-scale withdrawal of capital are the outcomes of those short-term measures. Traveling and tourism are classified as the most affected sector of the coronavirus pandemic. The other badly affected areas are merchandising trade, trade in services, value of shareholders' equities, and GDP growth. The decline in these activities has restricted globalization. A sharp decline in global economic growth was observed during this quite obvious period. It is quite obvious that today's global economy is entirely based on global linkages. De-globalization was not a way or possible in the long term. Globalization may be a catalyst of the pandemic – not a cause. So, instead of stopping globalization, the policymakers have engaged to remove the causes of the pandemic. Despite these de-globalization measures, the rapid enhancement in the use of information technology has accelerated globalization. The growing use of the internet and online services were the only activities that provided compensation to some extent. A rapid growth in the businesses of e-commerce companies has been reported. World Trade Organization (2020) has mentioned that online e-commerce platforms have registered significant growth since the start of the pandemic. The monetary authorities in different countries have encouraged electronic payments and mobile money transfers by waiving transaction charges on electronic payments (Mehar: 2021a, Mehar: 2022). Though the coronavirus pandemic was a temporary crisis, the countermeasures have initiated a new era in the use of information technology. Based on a survey, McKinsey & Company (2020) has mentioned that 75% of people who used

digital modes of payment for the first time during the pandemic crisis have indicated that they will continue to use these modes even after the crisis. These are the signals of rapid globalization in the post-pandemic world. Mehar (2024) has explained that the collapse of communism diverted the world economies to a liberalization regime, where economic freedom and globalization became the most powerful and popular philosophies of economic welfare and development. Mehar (2025) considered the neoclassical economic liberalism in American and British economies as one of the extreme versions of Anglo-Saxon capitalism. Though globalization has reduced the gap between the countries but enhanced the rich-poor gaps within the countries. The exorbitant concentrations of wealth and dire symptoms of poverty have been observed all over the world. This unfortunate concentration of wealth is an outcome of the uneven distribution of the benefits of globalization, cultural transformation, and free trade. Guy (2023) has described globalization and deglobalization in the context of COVID-19, Protectionism, the Russia–Ukraine conflict, Regionalization, and the new world order. According to him, one aspect of globalization should be considered in the context of technological advancement, which can affect globalization negatively. One example of this negative effect is the banning of Huawei from 5G networks in Australia, Canada, Japan, the United States, and the United Kingdom. Several other countries are restricting Chinese investment in critical infrastructure, and this attempt to limit China in the high-tech area is one of the few policies in the United States that has attracted bipartisan support. Antras (2020) evaluated the extent to which the world economy has entered a phase of deglobalization, and it offers some speculative thoughts on the future of global value chains in the post-COVID-19 age. He finds little systematic evidence indicating that the world economy has already entered an era of deglobalization. Instead, the observed slowdown in globalization is a natural sequel to the unsustainable increase in globalization experienced in the late 1980s, 1990s, and early 2000s. He concluded that the main challenge for the future of globalization is institutional and political in nature rather than technological, although new technologies might aggravate the trends in inequality that have created the current political backlash against globalization. Zooming in on the COVID-19 global pandemic. L. Ciravegna and S. Michailova (2022) argued that the coronavirus outbreak only had temporary effects on the global economy and that post-COVID-19 globalization will resume. Their arguments are based on three observations: First, the pandemic has increased inter- and intra-country inequalities and has reversed trends in poverty reduction, which will intensify anti-globalization sentiments in the future. Second, the pandemic has fueled populism, nationalism, and the return of the interventionist state in the economy, which has paved the way for a rise in protectionism. Third, governmental responses to the COVID-19 crisis have undermined the multilateral institutions that have thus far facilitated globalization. These forces have resulted in growing global uncertainty and higher costs in international transactions. The core purpose of this analysis is to assess the effects of globalization on socioeconomic conditions. The desirable effects of those variables which are phenomena of globalization on targeted variables will justify the globalization policies. Figure: 1 shows the list of targeted variables and indicators of globalization. The next section of this study describes the interaction and measurements of the factors of globalization. The statistical methodology to quantify the impacts of globalization on socioeconomic and business conditions in domestic economies has been described in section 3. The empirical shreds of evidence and statistical results have been discussed in section 4, while section 5 mentions the policy implications and limitations of the study.

2. Indicators of Globalization and Socioeconomic Welfare

Several institutions construct the indexes of globalization and quantify their impacts by adopting different tools and techniques. The KOF Swiss Economic Institute is one of the leading institutions that measures the economic, social, and political dimensions of globalization. It constructs the KOFI index of globalization. This index is based on 43 variables including trade in goods and services, tourism, migration, catering to international students, foreign investment, uses of information technology, and working with international NGOs, etc. (Gygli, Savina, Florian, Niklas and Jan-Egbert: 2019). The magnitude of foreign direct investment, trade of goods and services, use of the internet, and arrival and departure of tourists are common factors that have commonly been considered as components of globalization. Globalization requires connectivity and relations among the people. Traveling and tourism for education and entertainment, the use of information technology, international trade in goods and services, foreign investment, and external financing are the components of globalization. The disposable income and exchange rate of local currencies in terms of internationally acceptable currencies determines the access of people to these components of globalization. The disposable income is derived through per capita income, tax burden, and rate of inflation. Access to credit facilities is another factor in improving global connectivity. These domestic factors have been considered in this study as controlled variables. Across the border movement of people,

capital, goods, and services are the indicators to measure the degree of globalization of a country in globalization. The substantial use of the Internet is also an indicator of globalization. In this study, the departure of people abroad from a country, arrival of people from abroad to a country, foreign direct investment, merchandising trade, and trade in services have been taken as indicators of the movement of peoples, capital, goods, and services. This study measures the impacts of globalization on end consumers, workers, income inequalities, and business entities. The rate of inflation based on consumer prices, poverty headcount ratio at the national poverty line, poverty headcount ratio at the international poverty line, level of multidimensional poverty, labor participation rate, share of lowest 20 percent population in national income, Gini-coefficient for income inequality, unemployment rate, vulnerable employment rate, creation of new business entities, corporate wealth and GDP growth are the indicators to measure the status of consumers, workers, and businesses in a country. The classification of these variables is mentioned in Table: 1, while their definitions have been shown in Appendix: 1 to 14.

3. The Methodology to Assess the Impacts of Globalization

The impact of globalization on socio-economic and business indicators is the main concern of this study. For this purpose, the socioeconomic and business indicators have been classified into 5 broad categories:

1. Employment of domestic labor
2. Magnitude of poverty
3. Income inequalities
4. Magnitude of business activities, and
5. Macroeconomic conditions

Three indicators have been taken to measure the employment of domestic labor: Unemployment as a percentage of the total labor force (UNEMPL), Vulnerable employment as a percentage of total employment estimates by the International Labor Organization (VULNR), and Labor force participation rate as a percentage of total population ages 15-64 (LABR). Vulnerable employment is not considered as unemployment, but it affects human life miserably. Some studies define it as 'Modern Slavery'. This modern slavery is categorized as victims of workplace abuse, debt bondage, forced marriage, and sex trafficking among other factors (Statista: 2018). This study examines the role of globalization in reducing this type of employment. Magnitudes of poverty have also been measured by three different indicators: Poverty headcount at national poverty lines as a percentage of total population (PVRTY), Multidimensional poverty headcount as a percentage of total population (PVRYMLT), and Poverty headcount as a percentage of total population at USD 2.15 a day based on 2017 purchasing power parity (HDCNT215). Estimates of multidimensional poverty must cover some non-monetary welfare aggregates. Education enrollment, adult education attainment, and access to basic infrastructure services are included in these non-monetary estimates of multidimensional poverty. These estimates are derived from household surveys (World Bank: 2023). The effect of globalization on this type of poverty is included in the study. Income inequalities have been measured through the Gini index for income inequality (GINI) and Income share held by the lowest 20 percent population (LWST20). Magnitudes of business activities have been captured by the business density in terms of the new business registration per thousand people ages 15-64 (DBUS) and market capitalization of joint stock companies as a percentage of GDP (MCGDP). The market capitalization of domestic listed (joint stock) companies reflects the value of listed equities or corporate wealth. This indicator is widely used in financial economics and reflects the business environment in the country. Macroeconomic indicators are reflected by the GDP growth rate (GROW) and rate of inflation based on consumer prices (INFLCPI). The rate of inflation based on consumer prices (INFLCPI) may also be considered as an indicator of socioeconomic conditions.

The following indicators have been taken as phenomena of globalization:

1. Use of information technology (internet) by the people in a country
2. The inflow of foreign direct investment
3. Departure and arrival of tourists in a country
4. Trade in services
5. Merchandizing trade

The trade-in services (TSG) and merchandising trade (MTG) have been taken separately because it was assumed in this study that the quantum and direction of their effects on socioeconomic and business indicators may be different. The trade-in services cover health, education, financial services, logistic services, transport, and tourism. The people-to-people interaction is required in such services. So, globalization may largely be promoted by such services as compared to merchandising trade (MTG). The use of information technology (INTRNT) is captured by the number of individuals using the internet as a percentage of the total population. Two indicators have been used to measure foreign direct investment: Net inflow of foreign direct investment in billion USD (FDINET) and net inflow of foreign direct investment as a percentage of GDP (FDIGDP). Merchandizing trade has been taken as a percentage of GDP (MTG). Similarly, trade in services has also been measured as

a percentage of GDP (STG). Departure of international tourists from the country (DPRTR) and arrival of tourists from abroad (ARVL) have been measured in thousands. In this study, we have explained how employment including labor participation rate (LABR), vulnerable employment (VULNR), rate of unemployment (UNEMPL), poverty headcount including poverty at the national scale (PVRTY), international scale (HDCNT215), and multidimensional scale (PVRTMLT), income inequalities (GINI), the share of lowest 20 percent population in national income (LWST20), GDP growth (GROW), rate of inflation based on consumer prices (INFLCPI), growth in the number of business entities (DBUS) and market capitalization of joint stock companies (MCGDP) are impacted by the use of the internet (INTRNT), merchandizing trade (MCG), trade in services (STG), net inflow of foreign direct investment in USD (FDINFL), inflow of foreign direct investment as percentage of GDP (FDIGDP), and arrival (ARVL) and departure (DPRTR) of international tourists. It has been mentioned that the role of globalization has been captured through the arrival (ARVL) and departure (DPRTR) of tourists, the inflow of foreign direct investment in billion USD (FDINFL), and as a percentage of GDP (FDIGDP), merchandizing trade as a percentage of GDP (MTG), trade in services as a percentage of GDP (TSG) and internet users as a percentage of total population (INTRNT). Theoretical justifications for these interactions have been discussed in past and recent economic literature (Dreher: 2006, Jaimi: 2018, Mehar: 2001, Mehar: 2005a, Mehar: 2005b, Mehar 2022, and Tang and Lean: 2009) The role of domestic policies has also been quantified by domestic credit to the private sector (DCPS), the interest rate on lending (INTRLND), interest rate spread (SPRED), non-performing loans (NPL), and subsidies (SUBSDS). Some control variables to estimate the impacts of globalization and monetary and fiscal policies have also been included in the estimations. The role of these explanatory variables in the determination of socioeconomic conditions can be expressed in the following 12 equations:

$$VULNR_{it} = \propto_i + \beta_1 INTRNT_{it} + \beta_2 DPRTR_{it} + \beta_3 MTG_{it} + \beta_4 DBUS_{it} + \beta_5 PVRTMLT_{it} + \beta_6 FDINFL_{it} + \varepsilon_{it} \quad (1)$$

$$UNEMPL_{it} = \propto_i + \beta_1 INTRNT_{it} + \beta_2 MTG_{it} + \beta_3 STG_{it} + \beta_4 DBUS_{it} + \beta_5 FDIGDP_{it} + \beta_6 DPRTR_{it} + \beta_7 GROW_{it} + \beta_8 EASE_{it} + \varepsilon_{it} \quad (2)$$

$$LABR_{it} = \propto_i + \beta_1 INTRNT_{it} + \beta_2 MTG_{it} + \beta_3 STG_{it} + \beta_4 DPRTR_{it} + \beta_5 FDIGDP_{it} + \beta_6 DBUS_{it} + \varepsilon_{it} \quad (3)$$

$$PVRTY_{it} = \propto_i + \beta_1 INTRNT_{it} + \beta_2 DCPS_{it} + \beta_3 STG_{it} + \beta_4 DPRTR_{it} + \beta_5 SUBSDS_{it} + \beta_6 MTG_{it} + \beta_7 FDIGDP_{it} + \beta_8 DBUS_{it} + \varepsilon_{it} \quad (4)$$

$$HDCNT215_{it} = \propto_i + \beta_1 INTRNT_{it} + \beta_2 DCPS_{it} + \beta_3 SUBSDS_{it} + \beta_4 DPRTR_{it} + \beta_5 MTG_{it} + \beta_6 STG_{it} + \beta_7 FDIGDP_{it} + \varepsilon_{it} \quad (5)$$

$$PVRTMLT_{it} = \propto_i + \beta_1 INTRNT_{it} + \beta_2 LABR_{it} + \beta_3 OWNHLTH_{it} + \beta_4 DCPS_{it} + \beta_5 SUBSDS_{it} + \beta_6 FDIGDP_{it} + \varepsilon_{it} \quad (6)$$

$$GINI_{it} = \propto_i + \beta_1 INTRNT_{it} + \beta_2 FDIGDP_{it} + \beta_3 MTG_{it} + \beta_4 STG_{it} + \beta_5 DBUS_{it} + \varepsilon_{it} \quad (7)$$

$$LWST20_{it} = \propto_i + \beta_1 INTRNT_{it} + \beta_2 DBUS_{it} + \beta_3 FDIGDP_{it} + \beta_4 MTG_{it} + \beta_5 STG_{it} + \varepsilon_{it} \quad (8)$$

$$INFLCPI_{it} = \propto_i + \beta_1 FOOD_{it} + \beta_2 STG_{it} + \beta_3 SUBSDS_{it} + \beta_4 MTG_{it} + \varepsilon_{it} \quad (9)$$

$$DBUS_{it} = \propto_i + \beta_1 FDIGDP_{it} + \beta_2 INTRNT_{it} + \beta_3 STG_{it} + \beta_4 DCPS_{it} + \beta_5 EASE_{it} + \beta_6 PCI_{it} + \varepsilon_{it} \quad (10)$$

$$MCGDP_{it} = \propto_i + \beta_1 DCPS_{it} + \beta_2 DBUS_{it} + \beta_3 (MTG + STG)_{it} + \beta_4 INTRLND_{it} + \beta_5 FDIGDP_{it} + \varepsilon_{it} \quad (11)$$

$$GROW_{it} = \propto_i + \beta_1 ARVL_{it} + \beta_2 MTG_{it} + \beta_3 STG_{it} + \beta_4 DPRTR_t + \beta_5 FDIGDP_{it} + \varepsilon_{it} \quad (12)$$

The abbreviations in the above-mentioned equations show the dependent and independent variables. The details of these variables have been described in Appendix: 1 to 14. '$_i$' denotes '$_i$th' country, '$_t$' indicates '$_t$th' year, and 'ε_{it}' is an independent disturbance term. The first 3 equations in the model identify the determinants of vulnerable employment (VULNR), unemployment (UNEMPL), and labor participation rate (LABR) of a country. It is postulated that the labor participation rate in a country is positively affected by more use of the internet (INTRNT) because the use of the internet (INTRNT) provides an opportunity to engage in business activity. For the same reason, the use of the Internet will alleviate unemployment (UNEMPL), vulnerable employment (VULNR), poverty headcount ratios (PVRTY and HDCNT215), and multidimensional poverty (PVRTYMLT). Similarly, labor participation (LABR) and unemployment (UNEMPL) can be affected by the higher number of business entities (DBUS), merchandizing trade (MTG), trade in services (TSG), foreign direct investment (FDIGDP) and departure of tourists (DPRTR). The fourth, fifth, and sixth equations explain the factors of poverty. Other than factors of globalization, the impacts of subsidies (SUBSDS) and domestic credit to the private sector (DCPS) on poverty at the national scale (PVRTY), poverty at the international scale (HDCNT215) and poverty at the multidimensional scale (PVRTYMLT) have been tested in these equations. The effects of out-of-pocket health expenditures (OWNHLTH) and labor participation rate (LABR) on multidimensional poverty (PVRTYMLT) have also been tested. Effects of globalization factors on income inequalities measured by the

Gini-index (GINI) and share of national income held by the lowest 20 percent (LWST20) have been explained in the 7th and 8th equations. Equation 9 explains the role of food production (FOOD), subsidies (SUBSD), merchandizing trade (MTG), and trade in services (TSG) in the determination of the inflation rate (INFLCPI). The explanatory factors of growth in the number of domestic business entities (DBUS) are measured in Equation 10. The effects of per capita income (PCI) and ease of doing business indicators (EASE) have also been explained in this equation. Equations 11 and 12 describe the determinants of corporate wealth (MCGDP) and GDP growth rate (GROW). The interest rate on lending (INTRLND) has been included in the determination of corporate wealth (MCGDP).

The list and types of variables have been mentioned in Table 1. The exogenous factors are those control variables that are not determined internally. The monetary and fiscal policy-related variables have been included in this analysis as control variables. The magnitude of domestic credit, interest rates, interest rate spread, subsidies, and tax revenues are included in these control variables. The economic theories explain the effects of monetary and fiscal policy on GDP growth, employment, and investment. So, the effects of these monetary and fiscal policy-related variables on employment, creation of business entities, corporate wealth, and GDP growth have been estimated in the above-mentioned equations. The data of 187 countries for 14 years (from 2008 to 2021) have been used in this research, which makes total observations of 2618. This is an unbalanced panel data. The data for some variables are not available from other countries. Data for this analysis was extracted from the World Development Indicators' Data Bank (World Bank: 2023). We applied panel least square (PLS) techniques to quantify the impacts of explanatory factors. To estimate the above-mentioned regressions, we applied the panel least square (PLS) technique. The Lagrange Multiplier Tests (Breusch-Pagan, Honda, and King-Wu) have been applied to determine the appropriateness of panel least squares. Furthermore, the Hausman Test for endogeneity (Cross-section random Chi-Square) has been conducted to determine the appropriateness of the fixed effect model. Notably, the Lagrange multiplier tests use only the residuals of the pooling model (Baltagi: 2013). King-Wu one-way statistics (time and cross-section) coincide with the respective Honda statistics. However, both are different for two-way statistics (Honda: 1985 and King-Wu: 1997). Based on these statistical tests the unemployment (UNEMPL), vulnerable employment (VULNR), poverty headcount ratio at international poverty line (PVRTY), multidimensional poverty (PVRTYMLT), Gini-coefficients for income inequality (GINI), rate of inflation based on consumer prices (INFLCPI), registration of new business entities (DBUS) and GDP growth (GROW) have been measured through fixed effect model. Because of borderline acceptance of the applicability of the random effect model by Lagrange Multiplier tests, every equation to identify the explanatory factors of labor participation rate (LABR) and market capitalization of joint stock companies (MCGDP) has been estimated through both the techniques: fixed effect model and random effect model. Based on suggestions by Lagrange Multiplier and Hausman tests, fixed effect models were applied in 1st and 2nd options while the random effect model was used in 3rd option to estimate the poverty headcount ratio at the national level (PVRTY). For the same reason, the fixed effect model was used in 1st option and the random effect model in 2nd and 3rd options to estimate the share of the lowest 20 percent in national income (LWST20). The model estimation techniques have been summarized in

Table: 2. The choices of appropriate statistical techniques are based on the preliminary statistical tests. It has been mentioned earlier that panel data was applied in this study, however, the decision to apply the panel least square, and then fixed or random effect models was based on the outcomes Lagrange Multiplier Test and Hausman Test. The results of these tests have been mentioned with the regression results of the above-mentioned equations.

Table 1. Classification of Variables

Target Variables
• Rate of inflation based on consumer prices • Poverty headcount rate based on national poverty line • Poverty headcount rate based on USD 2.15 • Multidimensional poverty rate • Gini-coefficient for income inequality • Share of lowest 20 percent in national income • GDP growth • Labor participation Rate • Unemployment rate • Vulnerable employment rate • Growth in domestic business entities • Market capitalization of joint stock companies
Globalization Variables
• Use of Internet • Merchandizing trade • Trade in services • The inflow of foreign direct investment • Foreign direct investment as a percentage of GDP • Departure of tourists abroad • Arrival of tourists from abroad
Monetary Policy Variables
• Domestic credit to the private sector • Interest rate on lending • Interest rate spread • Non-performing loans

Fiscal Policy Variables
• Subsidies • Taxes less subsidies • Tax to GDP ratio
Catalysts
• Ease of doing business • Logistic infrastructure
Instrumental Variable
• GDP growth • Growth in domestic business entities • Labor participation rate • Multidimensional poverty
Exogenous Factors
• Population growth rate • Per capita income • Food production index • Out-of-pocket health expenditures

Source: Author's depiction

Table 2. Model Estimation Techniques based on Lagrange Multiplier and Hausman Tests

Target variable	Option: I	Option: II	Option: III
Vulnerable employment rate	FEM	FEM	FEM
Unemployment rate	FEM	FEM	FEM
Labor participation rate	FEM+ REF	FEM+ REM	FEM+ REM
Poverty headcount rate based on national poverty line	FEM	FEM	REM
Poverty headcount rate based on USD 2.15	FEM	FEM	FEM
Multidimensional poverty	FEM	FEM	FEM
Gini-coefficient for income inequality	FEM	FEM	FEM
Share of lowest 20 percent in national income	FEM	REM	REM
Rate of inflation based on consumer prices	FEM	FEM	FEM
Growth in domestic business entities	FEM	FEM	FEM
The market capitalization of joint stock companies as % of GDP	FEM+ REF	FEM+ REM	FEM+ REM
GDP growth	FEM	FEM	FEM
# FEM= Fixed Effect Model; REM= Random Effect Model (			

Source: Author's depiction
(Pool Data of 187 Countries for 14 Years: 2008-21)

4. Results and Conclusion

The estimated parameters have been reported in Appendix: 1 to 14. To check the robustness of the parameters, every equation has been estimated in 3 alternative scenarios. These tables show the significance of parameters, overall goodness of fit, and model selection criteria. The criteria for selecting the fixed or random effect have also been mentioned. The associated betas show the impacts of explanatory variables. The adjusted R-squares and F-statistics indicate that explanatory variables included in the models significantly cover the sufficient effects. The statistical analysis of empirical pieces of evidence provides interesting results. The conclusions of statistical analysis can be summarized in the following points:

i) The importance of information technology for socioeconomic and business development has been confirmed in this study. Based on statistical analysis it is concluded that

higher use of the internet (INTRNT) by the people in a country improves the labor participation rate (LABR) and share of the lowest 20 percent of people in national income (LWST20). The use of the internet (INTRNT) is a significant factor in the alleviation of unemployment (UNEMPL), vulnerable employment (VULNR), poverty headcount rate at national and international levels (PVRTY and HDCNT215), multidimensional poverty (PVRTYMLT) and income

inequality (GINI). It accelerates the number of domestic business entities (DBUS) and decelerates the rate of inflation (INFLCPI).

ii) Surprisingly, merchandising trade (MTG) aggravates inflation (INFLCPI), however, trade in services (TSG) reduces the rate of inflation (INFLCPI). This phenomenon may reflect the focus of the trade policies on foreign exchange earnings which may affect the domestic supply of merchandizing goods. This situation can accelerate inflation in the domestic market. However, alleviating inflation (INFLCPI) by promoting trade in services (TSG) may be a consequence of informational efficiency. The instant availability of information about prices can reduce the rate of inflation. This corroboration is confirmed also by the impact of information technology on inflation. This study confirms that more use of the internet (INTRNT) reduces the rate of inflation (INFLCPI).

iii) Growth in merchandising trade (MTG) improves the GDP growth rate (GROW) and alleviates vulnerable employment (VULNR) and unemployment (UNEMPL).

iv) The alleviation of poverty (PVRTY), unemployment (UNEMPL), and inflation (INFLCPI) because of growth in trade in services has been noted. The growth of trade in services improves also GDP growth (GROW) and labor participation rates (LABR).

v) The positive impact of the arrival of tourists (ARVL) on GDP growth (GROW) and the negative impact of the departure of tourists (DPRTR) on vulnerable employment (VULNR) have also been noted.

vi) It is a strange phenomenon that out-of-pocket health expenditures push many households below the poverty line. It has been inferred by this study that out-of-pocket health expenditures are a significant cause of the increase in multidimensional poverty. The more drastic aspect of the conclusions is that multidimensional poverty (PVRTMLT) is a cause of vulnerable employment (VULNR). It pushes people to accept vulnerable employment (VULNR).

vii) The negative relation between GDP growth (GROW) and unemployment (UNEMPL) affirms the famous 'Okun's Law'.

viii) It is confirmed that growth in domestic business entities (DBUS) improves the labor participation rate (LABR). The conclusion for impacts of explanatory variables on labor participation rate is similar in both the scenarios: Fixed Effect Model and Random Effect Model. The growth in domestic business entities is also a cause of alleviation in the rate of unemployment (UNEMPL) and vulnerable employment (VULNR).

ix) Similarly, the ease of doing business (EASE) alleviates unemployment (UNEMPL).

x) There are some important aspects of domestic credit to the private sector (DCPS). It has been inferred that the poverty headcount ratio at the national poverty line (PVRTY), poverty headcount ratio at the international poverty line (HDCNT215), and multidimensional poverty (PVRTMLT) are alleviated by domestic credit to the private sector (DCPS). Domestic credit is a significant factor of growth in corporate wealth (MCGDP). However, its role is insignificant in the growth of domestic business entities (DBUS).

xi) The rate of interest on lending (INTRLND) is a significant cause of the reduction in market capitalization (MCGDP).

xii) Importantly, it is noted that a higher interest rate spread (SPRED) is a significant cause of higher multidimensional poverty (PVRTYMLT). However, the effect of spread (SPRED) and domestic credit (DCPS) on multidimensional poverty (PVRTYMLT) cannot be tested simultaneously because of multicollinearity in data. Similarly, the out-of-pocket spending on health is a significant cause of the increase in multidimensional poverty. However, the change in the sign of this explanatory variable in the presence of tax-to-GDP ratio and interest rate spread may reflect the multicollinearity between these independent variables.

xiii) Income inequality measured by Gini-coefficients (GINI) increased by non-performing loans (NPL). This fact is confirmed also by the negative impact of non-performing loans on the share of the lowest 20 percent population in national income (LWST20). The quantum of non-performing loans (NPL) leads the higher income inequality (GINI) and reduces the share of the lowest 20 percent population (LWST20).

xiv) Empirical pieces of evidence confirm that inflation (INFLCPI) can be controlled by subsidies but the effect of subsidies on poverty is insignificant. The growth in food production (FOOD) is a significant cause of deceleration in inflation (INFLCPI), which supports supply-side policies. However, the effect of the food production index (FOOD) becomes insignificant when it is tested simultaneously with the logistic infrastructure index (LGSTINF). Certainly, the logistic infrastructure index (LGSTINF) is positively correlated with the food production index (FOOD).

xv) In the determination of the shareholders' wealth, the market capitalization of listed joint stock companies (MCGDP) must be improved by enhancement in domestic credit to the private sector (DCPS) and growth in the number of domestic business entities (DBUS), while the higher interest on lending (INTRLND) affects the value of equities (MCGDP) negatively. Empirical pieces of evidence are against the common intuition that foreign direct investment (FDIGDP) improves the value of domestic equities (MCGDP)

instantly. Both, the fixed effect model and random effect model provide similar conclusions for the effects of explanatory variables on market capitalization of joint stock companies.

xvi) Foreign direct investment (FDIGDP) directly affects the poverty headcount (PVRT) ratio and growth in domestic business entities (DBUS). However, it indirectly affects the vulnerable employment rate (VULNR), unemployment rate (UNEMPL), labor participation rate (LABR), the share of the lowest 20 percent population in national income (LWST20), and corporate wealth (MCGDP) through the creation of new businesses. This effect of foreign direct investment (FDIGDP) can be expressed in the following mathematical notations:

$$\frac{dMCGDP}{dFDIGDP} = \frac{\partial MCGDP}{\partial DBUS} \cdot \frac{\partial DBUS}{\partial FDIGDP} \quad (13)$$

$$\frac{dLWST20}{dFDIGDP} = \frac{\partial LWST20}{\partial DBUS} \cdot \frac{\partial DBUS}{\partial FDIGDP} \quad (14)$$

$$\frac{dLABR}{dFDIGDP} = \frac{\partial LABR}{\partial DBUS} \cdot \frac{\partial DBUS}{\partial FDIGDP} \quad (15)$$

$$\frac{dUNEMPL}{dFDIGDP} = \frac{\partial UNEMPL}{\partial DBUS} \cdot \frac{\partial DBUS}{\partial FDIGDP} \quad (16)$$

$$\frac{dVULNR}{dFDIGDP} = \frac{\partial VULNR}{\partial DBUS} \cdot \frac{\partial DBUS}{\partial FDIGDP} \quad (17)$$

The effects of globalization indicators – foreign direct investment, use of information technology, merchandising trade, trade in services, arrival of tourists, and departure of tourists have been summarized with the help of flow charts in Figures: 1 to 5.

Figure 1. Effects of departure and arrival of tourists

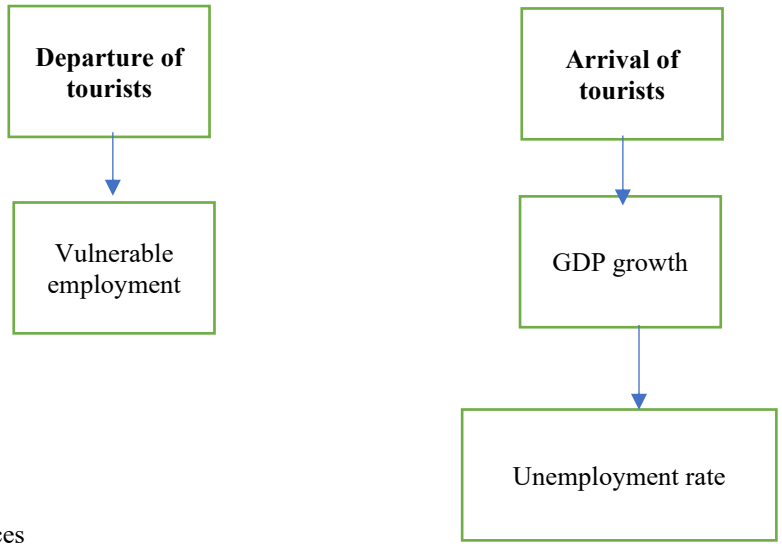


Figure 2. Effect of trade in services

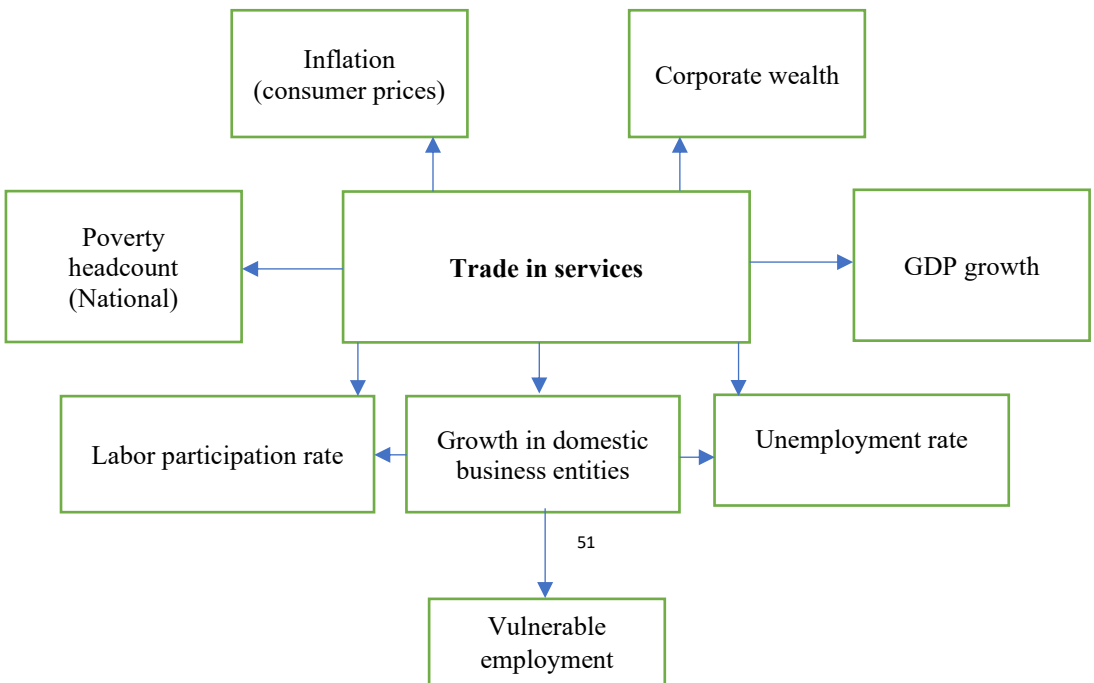


Figure 3. Effects of merchandizing trade

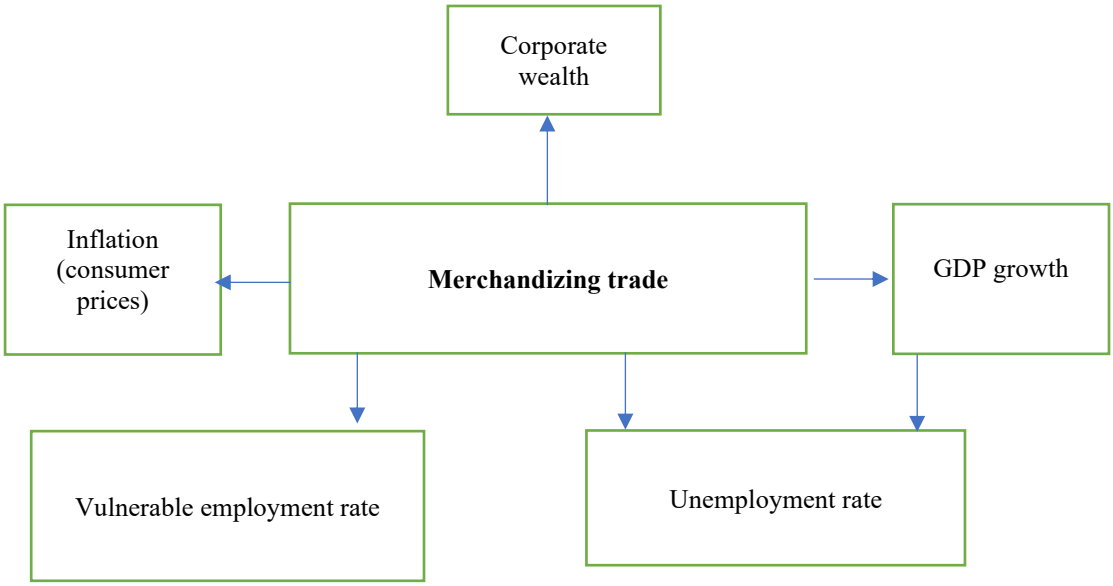


Figure 4. Effects of information technology

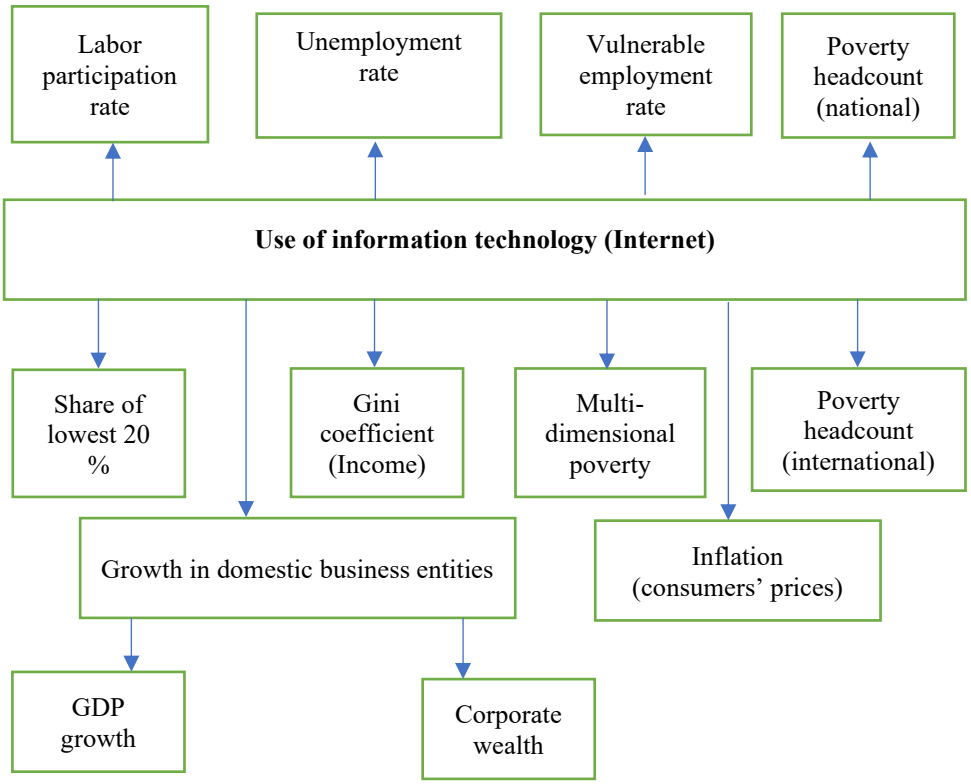
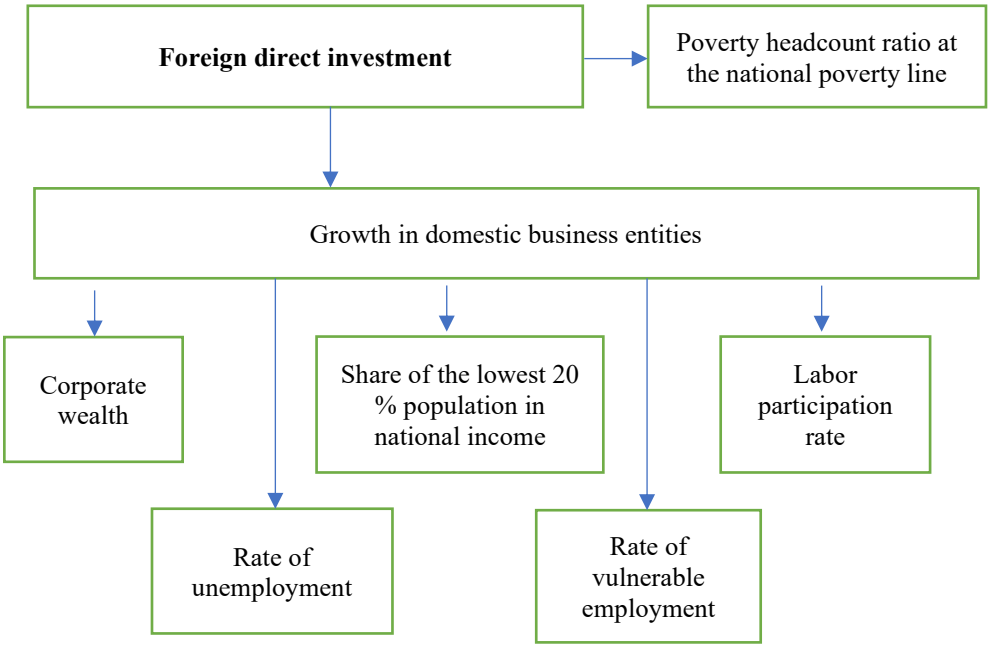


Figure 5. Effects of foreign direct investment



5. Policy Implications and Limitations

The scope of this study is limited to identifying the impacts of globalization on the socioeconomic and business environment of domestic economics. However, to identify the factors which derive the globalization is also an important area. This area is beyond the scope of this study. This research explores the various aspects of globalization for the determination of socioeconomic conditions in domestic economies. The quantum of merchandising trade, trade in services, use of the internet, and arrival and departure of tourists play significant and robust roles in improving socioeconomic conditions including alleviation of poverty, improving decent employment, reducing income inequalities, and improving domestic businesses. The major contribution of foreign direct investment is derived through improvement in local businesses. It implies that foreign direct investment improves socioeconomic conditions indirectly. More importantly, information technology plays a very important and significant role in the progress of the domestic economy. Information technology improves informational efficiency. The use of the Internet breaks the barriers in global transactions, business dealings, and communication. Based on empirical pieces of evidence, this study supports globalization. It concludes that factors of globalization play significant roles in the alleviation of poverty, unemployment, and income inequalities. Globalization is a cause of growth in domestic businesses and enhancement of corporate wealth. However, the role of domestic policies in improving socioeconomic conditions cannot be ignored. The effectiveness of monetary policies has also been confirmed in this analysis but the role of fiscal policies is insignificant. The effective use of domestic credit, determination of interest rates for lending, tuning of interest rate spread, and control over non-performing loans can certainly improve socioeconomic conditions. From a policy formulation point of view, economic growth, the creation of business entities, employment, and poverty must be the interconnected variables. The global economic factors including international trade, use of the internet, and tourism activities improve the socioeconomic factors, but the role of domestic policy is also important. The monetary and fiscal policies in terms of financial inclusion to expand the domestic credit, interest rates, and subsidies are import policy parameters that can protect the domestic social economy. In interpreting the statistical results, it is notable that a significant decline in the poverty headcount ratio at the international scale by an increase in the number of departures of tourists (DPRTR) was noted in the random effect model. However, the Hausman test has not validated the random effect model, while the impact of the departure of tourists on the poverty headcount ratio is not significant in the fixed effect model. Similarly, domestic credit to the private sector improves the number of domestic business entities significantly in the random effect model. However, the Hausman test does not validate the random effect model, while the effect of domestic credit on the number

of business entities was insignificant in the fixed effect model. The statistical results and interpretations are associated with the limitation of data. The availability and consistency of global data is one of the constraints to estimating the statistical model. The results can be further improved by applying other sophisticated statistical techniques in case of consistency in the data. The availability of data on other relevant variables including social and political factors can further improve the research. For future studies, it is highly recommended to incorporate the global changing scenario in the social and political environment. The restriction of global trade and migration under Trump regime, the Russia-Ukraine war, Israel's attacks on Gaza, and the proposed changes in the Middle East by the Trump administration are those factors that can change the global economic dynamics. The study can be extended after adding more data and incorporating these factors.

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Appendix: I
Dependent Variable: Vulnerable Employment Rate (VULNR)
Method: Fixed Effect Model (Panel Least Squares)
Sample (adjusted): 2010-19
Periods included: 12; Cross-sections included: 108
Total panel (unbalanced) observations: 1085

Independent Variable/ Option	I	II	III
Constant	33.999***	23.392***	21.050***
	(59.064)	(14.918)	(13.783)
INTRNT: Individuals using the Internet (% of the population)	-0.067***	-0.061***	-0.033***
	(-12.518)	(-5.438)	(-3.185)
DPRTR: Departure of international tourists from the country in thousand	-0.00003***	-0.00002	-0.00005**
	(-3.212)	(-1.095)	(-2.032)
MTG: Merchandise trade as % of GDP	-0.028***	-0.053***	-0.059***
	(-4.515)	(-5.943)	(-6.467)
FDINFL: Net inflows of foreign direct investment in billion USD	-0.001	-0.0001	-0.001
	(-0.748)	(-0.075)	(-0.342)
PVRTMLT: Multidimensional poverty headcount ratio (% of total population)		0.093***	0.132***
		(3.363)	(5.604)
DBUS: Business density (new business registrations per 1,000 people ages 15-64)		-0.116***	
		(-2.955)	
TXLESUBS: Taxes less subsidies on products (USD)			0.020*
			(1.873)
Overall Significance			
Adjusted R-squared	0.993	0.993	0.993
S.E. of regression	1.902	1.004	1.138
F-statistic	1315.073	990.860	975.471
Testing for Fixed/ Random Effect			
Lagrange Multiplier Test: Breusch-Pagan	3677.583***	444.290***	614.584***
Lagrange Multiplier Test: Honda	56.70761***	19.019***	22.127***
Lagrange Multiplier Test: King-Wu	41.21469***	15.182***	17.271***
Hausman Test (Cross-section random Chi-Square)	187.366***	103.623***	120.611***
Criteria for Model Selection			
Akaike info criterion	4.221	2.988	3.229

Schwarz criterion (BIC)	4.736	3.575	3.792
Hannan-Quinn criterion	4.416	3.222	3.453
#T-Statistics in parenthesis *p < 0.1; **p < 0.05; ***p < 0.01			

Source: Author's Estimations

Appendix: II
Dependent Variable: Unemployment Rate (UNEMPL)
Method: Fixed Effect Model (Panel Least Squares)
Sample (adjusted): 2010-20
Periods included: 11; Cross-sections included: 144
Total panel (unbalanced) observations: 1261

Independent Variable/ Option	**I**	**II**	**III**
Constant	11.112*** (16.936)	19.004*** (12.117)	(18.802*** (16.889)
INTRNT: Individuals using the Internet (% of the population)	-0.011* (-1.897)	-0.017* (-1.771)	(-0.015** (-2.344)
DPRTR: Departure of international tourists from the country in thousand	-0.000001 (-0.753)	-0.00002* (-1.802)	
MTG: Merchandise trade as % of GDP	-0.011* (-1.695)	-0.020** (-2.298)	(-0.014** (-2.274)
STG: Trade in services as % of GDP	-0.026** (-2.454)	-0.049*** (-3.962)	(-0.033*** (-3.856)
DBUS: Business density (new business registrations per 1,000 people ages 15-64)	-0.354*** (-7.832)	-0.353*** (-6.325)	(-0.132*** (-3.079)
FDIGDP: Net inflows of foreign direct investment as % of GDP	-0.005 (-1.006)	-0.004 (-0.721)	(-0.001 -0.305)
EASE: Ease of doing business score (0 for lowest to 100 for best)		-0.085*** (-3.221)	(-0.112*** (-5.976)
GROW: GDP growth (annual %)			(-0.083*** (-5.369)
Overall Significance)			
Adjusted R-squared	0.852	0.870	0.919

S.E. of regression	1.843	1.778	1.731
F-statistic	56.463	53.904	95.803
Testing for Fixed/ Random Effect			
Lagrange Multiplier Test: Breusch-Pagan	3178.852***	2315.970***	4207.803***
Lagrange Multiplier Test: Honda	41.749***	36.689***	47.881***
Lagrange Multiplier Test: King-Wu	22.465***	19.325***	19.884***
Hausman Test (Cross-section random Chi-Square)	21.424***	43.265***	67.588***
Criteria for Model Selection			
Akaike info criterion	4.160	4.107	4.047
Schwarz criterion (BIC)	4.668	4.698	4.663
Hannan-Quinn criterion	4.353	4.335	4.278
#T-Statistics in parenthesis *p < 0.1; **p < 0.05; ***p < 0.01			

Source: Author's Estimations

Appendix: III
Dependent Variable: Labor Participation Rate (LABR)
Method: Fixed Effect Model (Panel Least Squares)
Sample (adjusted): 2010-20
Periods included: 11; Cross-sections included: 143
Total panel (unbalanced) observations: 1167

Independent Variable/ Option	I	II	III
Constant	65.313*** (116.955)	65.552*** (52.143)	65.018*** (69.456)
INTRNT: Individuals using the Internet (% of the population)	0.049*** (9.317)	0.038*** (4.872)	0.045*** (8.462)
STG: Trade in services as % of GDP	0.017* (1.830)	0.033*** (3.110)	0.023*** (3.143)
MTG: Merchandise trade as % of GDP	0.006 (1.038)	-0.003 (-0.438)	-0.001 (-0.210)
DPRTR: Departure of international tourists from the country in thousand	-0.000003 (-0.276)	0.00006*** (3.018)	
FDIGDP: Net inflows of foreign direct investment as % of GDP	-0.007*	0.005	0.003

	(-1.647)	(1.208)	(0.801)
DBUS: Business density (new business registrations per 1,000 people ages 15-64)	0.123*** (3.070)	0.030 (0.642	0.117*** (3.242)
EASE: Ease of doing business score (0 for lowest to 100 for best)		0.003 (0.130)	0.003 (0.182)
GROW: GDP growth (annual %)			0.032* (1.914)
Overall Significance			
Adjusted R-squared	0.973	0.979	0.982
S.E. of regression	1.532	1.373	1.349
F-statistic	331.324	345.039	421.072
Testing for Fixed/ Random Effect			
Lagrange Multiplier Test: Breusch-Pagan	3214.299***	2201.317***	3788.886***
Lagrange Multiplier Test: Honda	38.934***	31.880***	42.220***
Lagrange Multiplier Test: King-Wu	17.855***	12.913***	13.700***
Hausman Test (Cross-section random Chi-Square)	11.408*	12.259*	11.273
Criteria for Model Selection			
Akaike info criterion	3.795	3.597	3.556
Schwarz criterion (BIC)	4.324	4.217	4.207
Hannan-Quinn criterion	3.998	3.836	3.802
#T-Statistics in parenthesis *p < 0.1; **p < 0.05; ***p < 0.01			

Source: Author's Estimations

Appendix: IV
Dependent Variable: Labor Participation Rate (LABR)
Method: Random Effect Model (Panel EGLS: Swamy and Arora Estimator of Component Variances)
Sample (adjusted): 2010-209
Periods included: 11; Cross-sections included: 143
Total panel (unbalanced) observations: 1167

Independent Variable/ Option	I	II	III
Constant	64.959*** (62.866)	64.662*** (42.766)	64.483*** (54.538)
INTRNT: Individuals using the Internet (% of the population)	0.050***	0.040***	0.045***

	(9.767)	(5.243)	(8.538)
STG: Trade in services as % of GDP	0.013 (1.453)	0.028*** (2.853)	0.021*** (3.012)
MTG: Merchandise trade as % of GDP	0.007 (1.205)	-0.002 (-0.234)	-0.001 (-0.239)
DPRTR: Departure of international tourists from the country in thousand	-0.000004 (-0.039)	0.00005*** (3.102)	
FDIGDP: Net inflows of foreign direct investment as % of GDP	-0.007* (-1.696)	0.005 (1.162)	0.003 (0.828)
DBUS: Business density (new business registrations per 1,000 people ages 15-64)	0.133*** (3.366)	0.050 (1.091)	0.124*** (3.482)
EASE: Ease of doing business score (0 for lowest to 100 for best)		0.010 (0.479)	0.011 (0.678)
GROW: GDP growth (annual %)			0.032* (1.950)
Overall Significance			
Adjusted R-squared	0.146	0.120	0.130
S.E. of regression	1.542	1.382	1.357
F-statistic	26.285	15.079	25.919
#T-Statistics in parenthesis *p < 0.1; **p < 0.05; ***p < 0.01			

Source: Author's Estimations

Appendix: V
Dependent Variable: Poverty Headcount at National Poverty Line (PVRTY)
Method (1): Fixed Effect Model (Panel Least Squares); Sample (adjusted): 2010-20
Periods included: 11; Cross-sections included: 33; Total panel (unbalanced) observations: 143
Method (2): Random Effect Model (Panel EGLS: Swamy and Arora Estimator of Component Variances)
Sample (adjusted): 2008-2020
Periods included: 13; Cross-sections included: 70; Total panel (unbalanced) observations: 409

Independent Variable/ Option	**Fixed Effect**		**Random Effect**
	I	**II**	**III**
Constant	27.463*** (11.318)	26.414*** (3.240)	31.569*** (16.226)

INTRNT: Individuals using the Internet (% of the population)	-0.054*** (-3.626)	0.011 (0.276)	-0.105*** (-8.876)
DCPS: Domestic credit to private sector (% of GDP)	-0.049*** (-5.115)	-0.181*** (-4.478)	-0.046*** (-4.820)
DPRTR: Departure of international tourists from the country in thousand	-0.00002 (-1.501)	-0.00005 (-0.988)	-0.00004 (-0.904)
SUBSD: Subsidies and other transfers (% of government expenditures)	0.037 (0.969)	0.113 (1.464)	-0.009 (-0.308)
FDIGDP: Net inflows of foreign direct investment as % of GDP	-0.005 (-0.711)	0.004 (0.204)	0.001 (0.099)
MTG: Merchandise trade as % of GDP	0.015 (0.898)	0.059* (1.731)	-0.023 -1.634)
STG: Trade in services as % of GDP	-0.146*** (-4.550)	-0.233*** (-4.321)	
DBUS: Business density (new business registrations per 1,000 people ages 15-64)	-0.098 (-1.379)	-0.282 (-1.117)	
SPRED: Difference between average lending and deposit rates of interest		0.106 (0.614)	
EASE: Ease of doing business score (0 for lowest to 100 for best)		-0.003 (-0.031)	
Overall Significance			
Adjusted R-squared	0.905	0.940	0.206
S.E. of regression	2.206	2.262	2.738
F-statistic	50.234	54.027	18.693
Testing for Fixed/ Random Effect			
Lagrange Multiplier Test: Breusch-Pagan	447.034***	36.842***	592.096***
Lagrange Multiplier Test: Honda	14.512***	5.052**	16.356***
Lagrange Multiplier Test: King-Wu	9.426***	4.321**	10.150***
Hausman Test (Cross-section random Chi-Square)	19.969**	23.115**	5.226
Criteria for Model Selection			
Akaike info criterion	4.595	4.714	
Schwarz criterion (BIC)	5.360	5.605	

Hannan-Quinn criterion	4.899	5.076	
#T-Statistics in parenthesis *p < 0.1; **p < 0.05; ***p < 0.01			

Source: Author's Estimations

Appendix: VI
Dependent Variable: Poverty Headcount at USD 2.15 (HDCNT215)
Method: Fixed Effect Model (Panel Least Squares)
Sample (adjusted): 2008-20
Periods included: 13; Cross-sections included: 80
Total panel (unbalanced) observations: 641

Independent Variable/ Option	I	II	III
Constant	3.505***	3.921***	1.039
	(3.558)	(3.378)	(0.498)
INTRNT: Individuals using the Internet (% of the population)	-0.048***	-0.037***	-0.016
	(-9.715)	(-5.825)	(-1.458)
DCPS: Domestic credit to private sector (% of GDP)	-0.013***	-0.012***	-0.022*
	(-3.316)	(-2.828)	(-1.879)
DPRTR: Departure of international tourists from the country in thousand	-0.00003	-0.00002**	-0.000009
	(-1.366)	(-2.155)	(-0.621)
SUBSD: Subsidies and other transfers (% of government expenditures)	0.059***	0.046***	0.074***
	(3.964)	(2.712)	(3.153)
FDIGDP: Net inflows of foreign direct investment as % of GDP	-0.001	-0.001	0.005
	(-0.172)	(-0.329)	(0.507)
MTG: Merchandise trade as % of GDP	-0.001	-0.003	-0.002
	(-0.109)	(-0.452)	(-0.164)
STG: Trade in services as % of GDP		-0.005	-0.046**
		(-0.490)	(-2.196)
DBUS: Business density (new business registrations per 1,000 people ages 15-64)		-0.058	-0.335***
		(-1.617)	(-3.830)
SPRED: Difference between average lending and deposit rates of interest			0.083**
			(1.967)
EASE: Ease of doing business score (0 for lowest to 100 for best)			0.025
			(0.897)

Overall Significance			
Adjusted R-squared	0.902	0.906	0.953
S.E. of regression	1.337	1.302	0.936
F-statistic	70.328	66.810	93.732
Testing for Fixed/ Random Effect			
Lagrange Multiplier Test: Breusch-Pagan	482.107***	287.662***	17.533***
Lagrange Multiplier Test: Honda	15.833***	12.235***	2.563
Lagrange Multiplier Test: King-Wu	9.113***	7.195**	1.581
Hausman Test (Cross-section random Chi-Square)	69.382***	64.754***	41.084***
Criteria for Model Selection			
Akaike info criterion	3.542	3.501	2.901
Schwarz criterion (BIC)	4.141	4.138	3.665
Hannan-Quinn criterion	3.775	3.750	3.209
#T-Statistics in parenthesis *p < 0.1; **p < 0.05; ***p < 0.01			

Source: Author's Estimations

Appendix: VII
Dependent Variable: Multidimensional Poverty Rate (PVRTYMLT)
Method: Fixed Effect Model (Panel Least Squares)
Sample (adjusted): 2010-19
Periods included: 10; Cross-sections included: 56
Total panel (unbalanced) observations: 380

Independent Variable/ Option	**I**	**II**	**III**
Constant	82.857*** (10.802)	86.444*** (11.050)	136.542*** (8.807)
INTRNT: Individuals using the Internet (% of the population)	-0.226*** (-10.309)	-0.237*** (-10.655)	-0.163*** (-3.940)
LABR: Labor force participation rate (% of total population ages 15-64)	-0.626*** (-6.265)	-0.644*** (-6.522)	-1.058*** (-6.104)
OWNHLTH: Out-of-pocket health expenditure (% of total current health expenditure)	0.210** (2.428)	0.219*** (2.547)	-0.395*** (-2.619)
DCPS: Domestic credit to private sector (% of GDP)	-0.024** (-2.174)	-0.018 (-1.550)	0.015 (0.275)

SUBSD: Subsidies and other transfers (% of government expenditures)	-0.00007 (-0.002)	-0.007 (-0.160)	-0.089 (-1.230)
FDIGDP: Net inflows of foreign direct investment as % of GDP		-0.012 (-1.411)	0.034 (1.300)
MTG: Merchandise trade as % of GDP		-0.043** (-2.135)	0.164*** (3.565)
STG: Trade in services as % of GDP		0.043** (2.107)	-0.625*** (-3.240)
SPRED: Difference between average lending and deposit rates of interest			-0.599** (-2.299)
TXTGDP: Tax revenue as % of GDP			-0.386 (-1.481)
Overall Significance			
Adjusted R-squared	0.940	0.942	0.964
S.E. of regression	2.633	2.594	2.362
F-statistic	100.460	98.767	98.654
Testing for Fixed/ Random Effect			
Lagrange Multiplier Test: Breusch-Pagan	415.701***	410.166***	123.663***
Lagrange Multiplier Test: Honda	13.606***	13.568***	7.133**
Lagrange Multiplier Test: King-Wu	7.532***	7.548***	5.756**
Hausman Test (Cross-section random Chi-Square)	17.013***	25.384***	32.596***
Criteria for Model Selection			
Akaike info criterion	4.920	4.897	4.790
Schwarz criterion (BIC)	5.553	5.560	5.602
Hannan-Quinn criterion	5.171	5.160	5.120
#T-Statistics in parenthesis *p < 0.1; **p < 0.05; ***p < 0.01			

Source: Author's Estimations

Appendix: VIII

Dependent Variable: Gini-Coefficient for Income Inequality (GINI)
Method: Fixed Effect Model (Panel Least Squares)
Sample (adjusted): 2008-20
Periods included: 13; Cross-sections included: 144
Total panel (unbalanced) observations: 920

Independent Variable/ Option	I	II	III
Constant	39.228***	38.702***	39.455***
	(77.383)	(64.075)	(40.361)
INTRNT: Individuals using the Internet (% of the population)	-0.056***	-0.049***	-0.040***
	(-11.356)	(-8.647)	(-4.868)
FDIGDP: Net inflows of foreign direct investment as % of GDP	-0.003	-0.004	-0.012
	(-0.720)	(-1.119)	(-0.836)
MTG: Merchandise trade as % of GDP	0.001	-0.004	0.025**
	(0.167)	(-0.550)	(2.168)
STG: Trade in services as % of GDP	0.016*	0.005	-0.069**
	(1.736)	(0.509)	(-2.440)
DBUS: Business density (new business registrations per 1,000 people ages 15-64)		-0.074*	-0.092
		(-1.901)	(-0.936)
SPRED: Difference between average lending and deposit rates of interest			-0.001
			(-0.023)
NPL: Bank nonperforming loans (recorded on the balance sheet, not just the overdue amount) to gross loans (%)			0.059**
			(2.257)
Overall Significance			
Adjusted R-squared	0.954	0.958	0.962
S.E. of regression	1.674	1.506	1.592
F-statistic	130.359	140.778	132.380
Testing for Fixed/ Random Effect			
Lagrange Multiplier Test: Breusch-Pagan	2917.255***	1541.560***	489.478***
Lagrange Multiplier Test: Honda	37.98656***	29.016***	15.307***
Lagrange Multiplier Test: King-Wu	17.62427***	15.555***	9.881***
Hausman Test (Cross-section random Chi-Square)	12.106*	16.485***	45.521***

Criteria for Model Selection			
Akaike info criterion	4.014	3.804	3.941
Schwarz criterion (BIC)	4.791	4.555	4.703
Hannan-Quinn criterion	4.311	4.094	4.244
#T-Statistics in parenthesis *p < 0.1; **p < 0.05; ***p < 0.01			

Source: Author's Estimations

Appendix: IX
Dependent Variable: Share of Lowest 20% Population in National Income (LWST20)
Method (1): Fixed Effect Model (Panel Least Squares); Sample (adjusted): 2008-20
Periods included: 13; Cross-sections included: 64; Total panel (unbalanced) observations: 363
Method (2): Random Effect Model (Panel EGLS: Swamy and Arora Estimator of Component Variances)
Sample (adjusted): 2008-2020
Periods included: 13; Cross-sections included: 144; Total panel (unbalanced) observations: 919

Independent Variable/ Option	**Fixed Effect**	**Random Effect**	
	I	**II**	**III**
Constant	6.378*** (26.728)	6.181*** (34.871)	6.155*** (30.627)
INTRNT: Individuals using the Internet (% of the population)	0.010*** (5.039)	0.013*** (10.888)	0.012*** (8.395)
FDIGDP: Net inflows of foreign direct investment as % of GDP	0.003 (0.777)	0.001 (0.935)	0.001 (1.203)
MTG: Merchandise trade as % of GDP	-0.005* (-1.710)	0.001 (0.575)	0.001 (0.796)
STG: Trade in services as % of GDP	0.002 (0.253)	-0.004* (-1.946)	-0.003 (-1.332)
DBUS: Business density (new business registrations per 1,000 people ages 15-64)	0.049** (2.031)		0.025*** (2.555)
SPRED: Difference between average lending and deposit rates of interest	-0.003 (-0.275)		
NPL: Bank nonperforming loans (recorded on the balance sheet, not just the overdue amount) to gross loans (%)	-0.020*** (-3.146)		
Overall Significance			
Adjusted R-squared	0.961	0.111	0.099

S.E. of regression	0.389	0.415	0.394
F-statistic	129.585	29.645	17.358
Testing for Fixed/ Random Effect			
Lagrange Multiplier Test: Breusch-Pagan	785.353***	3414.892***	2121.962***
Lagrange Multiplier Test: Honda	18.694***	40.449***	32.543***
Lagrange Multiplier Test: King-Wu	11.662***	18.218***	16.245***
Hausman Test (Cross-section random Chi-Square)	34.728***	5.875	8.765
Criteria for Model Selection			
Akaike info criterion	1.121		
Schwarz criterion (BIC)	1.883		
Hannan-Quinn criterion	1.424		
#T-Statistics in parenthesis *p < 0.1; **p < 0.05; ***p < 0.01			

Source: Author's Estimations

Appendix: X
Dependent Variable: Inflation Rate Based on Consumer Price Index (INFLCPI)
Method: Fixed Effect Model (Panel Least Squares)
Sample (adjusted): 2008-20
Periods included: 13; Cross-sections included: 133
Total panel (unbalanced) observations: 1492

Independent Variable/ Option	I	II	III
Constant	8.244*** (4.655)	8.162*** (4.599)	-3.017 (-0.631)
MTG: Merchandise trade as % of GDP	0.068*** (5.913)	0.068*** (5.880)	0.081*** (3.528)
STG: Trade in services as % of GDP	-0.033** (-2.218)	-0.032** (-2.141)	-0.053 (-1.490)
FOOD: Food production index (2014-2016 = 100)	-0.056*** (-4.782)	-0.056*** (-4.795)	0.043 (1.474)
SUBSD: Subsidies and other transfers (% of government expenditures)	-0.056** (-2.341)	-0.054** (-2.281)	0.059 (1.300)
FDIGDP: Net inflows of foreign direct investment as % of GDP		0.007 (0.750)	-0.006 (-0.539)

INTRNT: Individuals using the Internet (% of the population)			-0.059** (-2.271)
LGSTINF: Logistics performance (Quality of trade and transport-related infrastructure) index (1=low to 5=high)			-0.141 (-0.138)
ARVL+DPRTR: Arrival plus the departure of international tourists in thousand			0.000 (-0.753)
Overall Significance			
Adjusted R-squared	0.428	0.428	0.478
S.E. of regression	4.317	4.318	3.099
F-statistic	9.199	9.133	4.504
Testing for Fixed/ Random Effect			
Lagrange Multiplier Test: Breusch-Pagan	1310.675***	1309.036***	59.567***
Lagrange Multiplier Test: Honda	33.474***	33.392***	5.868**
Lagrange Multiplier Test: King-Wu	23.182***	23.043***	2.292
Hausman Test (Cross-section random Chi-Square)	29.328***	28.803***	19.120*
Criteria for Model Selection			
Akaike info criterion	5.850	5.851	5.321
Schwarz criterion (BIC)	6.338	6.342	6.337
Hannan-Quinn criterion	6.032	6.034	5.726
#T-Statistics in parenthesis *p < 0.1; **p < 0.05; ***p < 0.01			

Source: Author's Estimations

Appendix: XI
Dependent Variable: Registration of New Businesses per Thousand Adults (DBUS)
Method: Fixed Effect Model (Panel Least Squares)
Sample (adjusted): 2010-2020
Periods included: 11; Cross-sections included: 151
Total panel (unbalanced) observations: 1279

Independent Variable/ Option	I	II	III
Constant	2.292*** (2.774)	1.831* (1.954)	1.953** (2.001)
INTRNT: Individuals using the Internet (% of the population)	0.029*** (6.821)	0.028*** (6.222)	0.028*** (5.934)

FDIGDP: Net inflows of foreign direct investment as % of GDP	0.007** (2.088)	0.008** (2.367)	0.008** (2.369)
DCPS: Domestic credit to private sector (% of GDP)	0.0002 (0.058)	0.002 (0.649)	0.002 (0.610)
EASE: Ease of doing business score (0 for lowest to 100 for best)	-0.005 (-0.408)	-0.006 (-0.416)	-0.006 (-0.399)
PCI: Per capita income in USD		0.000 (0.362)	0.000 (0.333)
STG: Trade in services as % of GDP		0.013** (2.465)	0.013** (2.434)
MTG: Merchandise trade as % of GDP			-0.001 (-0.248)
Overall Significance			
Adjusted R-squared	0.914	0.914	0.913
S.E. of regression	1.256	1.268	1.272
F-statistic	89.252	87.220	87.033
Testing for Fixed/ Random Effect			
Lagrange Multiplier Test: Breusch-Pagan	3972.092***	4098.943***	4045.894***
Lagrange Multiplier Test: Honda	43.207***	43.979***	43.475***
Lagrange Multiplier Test: King-Wu	14.381***	14.897***	14.592***
Hausman Test (Cross-section random Chi-Square)	42.612***	29.234***	32.330***
Criteria for Model Selection			
Akaike info criterion	3.407	3.427	3.434
Schwarz criterion (BIC)	4.032	4.060	4.066
Hannan-Quinn criterion	3.642	3.665	3.672
#T-Statistics in parenthesis *p < 0.1; **p < 0.05; ***p < 0.01			

Source: Author's Estimations

Appendix: XII
Dependent Variable: Market Capitalization as Percentage of GDP (MCGDP)
Method: Fixed Effect Model (Panel Least Squares)
Sample (adjusted): 2008-20
Periods included: 13; Cross-sections included: 56
Total panel (unbalanced) observations: 457

Independent Variable/ Option	I	II	III
Constant	49.030***	32.053***	36.874***
	(6.062)	(2.701)	(2.895)
DCPS: Domestic credit to private sector (% of GDP)	0.173*	0.210**	0.184*
	(1.857)	(2.178)	(1.833)
INTRLND: Interest rate of lending (%)	-0.944***	-0.886***	-0.771**
	(-2.722)	(-2.551)	(-2.086)
DBUS: Business density (new business registrations per 1,000 people ages 15-64)	2.127***	2.087***	1.945**
	(2.578)	(2.529)	(2.360)
FDIGDP: Net inflows of foreign direct investment as % of GDP	0.051	0.057	0.050
	(0.608)	(0.679)	(0.598)
STG+MTG: Merchandise trade plus trade in services as % of GDP		0.157**	0.110
		(2.022)	(1.362)
INTRNT: Individuals using the Internet (% of the population)			0.013
			(0.170)
Overall Significance			
Adjusted R-squared	0.910	0.911	0.914
S.E. of regression	16.624	16.607	16.384
F-statistic	79.121	78.034	78.566
Testing for Fixed/ Random Effect			
Lagrange Multiplier Test: Breusch-Pagan	1654.893***	1391.605***	1367.717***
Lagrange Multiplier Test: Honda	28.274***	25.967***	25.549***
Lagrange Multiplier Test: King-Wu	17.816***	16.424***	16.021***
Hausman Test (Cross-section random Chi-Square)	7.986*	10.164*	11.011*
Criteria for Model Selection			
Akaike info criterion	8.581	8.582	8.559
Schwarz criterion (BIC)	9.123	9.135	9.131
Hannan-Quinn criterion	8.795	8.800	8.785

#T-Statistics in parenthesis *p < 0.1; **p < 0.05; ***p < 0.01

Appendix: XIII
Dependent Variable: Market Capitalization as Percentage of GDP (MCGDP)
Method: Random Effect Model (Panel EGLS: Swamy and Arora Estimator of Component Variances)
Sample (adjusted): 2008-20
Periods included: 13; Cross-sections included: 56
Total panel (unbalanced) observations: 457

Independent Variable/ Option	I	II	III
Constant	36.227***	19.614*	21.926**
	(4.026)	(1.866)	(1.961)
DCPS: Domestic credit to private sector (% of GDP)	0.288***	0.319***	0.314***
	(3.581)	(3.991)	(3.765)
INTRLND: Interest rate of lending (%)	-0.905***	-0.802**	-0.736**
	(-2.743)	(-2.434)	(-2.124)
DBUS: Business density (new business registrations per 1,000 people ages 15-64)	1.915***	1.717**	1.669**
	(2.549)	(2.302)	(2.234)
FDIGDP: Net inflows of foreign direct investment as % of GDP	0.046	0.036	0.033
	(0.559)	(0.432)	(0.399)
STG+MTG: Merchandise trade plus trade in services as % of GDP		0.159***	0.133**
		(2.744)	(2.242)
INTRNT: Individuals using the Internet (% of the population)			-0.005
			(-0.061)
Overall Significance			
Adjusted R-squared	0.077	0.093	0.081
S.E. of regression	16.532	16.579	16.341
F-statistic	10.573	10.301	7.500
#T-Statistics in parenthesis *p < 0.1; **p < 0.05; ***p < 0.01			

Source: Author's Estimations

Appendix: XIV
Dependent Variable: GDP Growth (GROW)
Method: Fixed Effect Model (Panel Least Squares)
Sample (adjusted): 2008-20
Periods included: 13; Cross-sections included: 170
Total panel (unbalanced) observations: 2010

Independent Variable/ Option	I	II	III
Constant	-7.326***	-9.451***	-14.456***
	(-10.960)	(-10.687)	(-9.046)
MTG: Merchandise trade as % of GDP	0.093***	0.115***	0.096***
	(10.536)	(11.033)	(8.101)
STG: Trade in services as % of GDP	0.108***	0.084***	0.087***
	(9.342)	(5.681)	(5.048)
ARVL: Arriva of international tourists in the country in thousand	0.0001***	0.00009***	0.0001***
	(7.034)	(5.449)	(5.817)
DPRTR: Departure of international tourists from the country in thousand		0.000006	-0.00001
		(0.292)	(-0.647)
FDIGDP: Net inflows of foreign direct investment as % of GDP	0.009	-0.004	0.005
	(1.080)	(-0.500)	(0.604)
DBUS: Business density (new business registrations per 1,000 people ages 15-64)			0.330***
			(4.127)
TXTGDP: Tax revenue as % of GDP			0.203***
			(2.883)
Overall Significance			
Adjusted R-squared	0.273	0.280	0.304
S.E. of regression	3.843	3.409	3.263
F-statistic	5.354	5.089	4.986
Testing for Fixed/ Random Effect			
Lagrange Multiplier Test: Breusch-Pagan	5559.826***	3281.759***	1863.485***
Lagrange Multiplier Test: Honda	63.186***	46.830***	33.954***
Lagrange Multiplier Test: King-Wu	74.511***	56.467***	41.718***
Hausman Test (Cross-section random Chi-Square)	250.553***	201.228***	195.020***
Criteria for Model Selection			

Akaike info criterion	5.613	5.382	5.307
Schwarz criterion (BIC)	6.098	5.864	5.829
Hannan-Quinn criterion	5.791	5.564	5.508
#T-Statistics in parenthesis *p < 0.1; **p < 0.05; ***p < 0.01			

Source: Author's Estimations