SUSTAINABILITY ASSESSMENT OF MASTER PLANNING PROJECTS THROUGH EVALUATION OF PLANNING FIRMS OF PAKISTAN

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Thesis Supervisor: Dr. Abdul Waheed

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(2024)

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THESIS ACCEPTANCE CERTIFICATE

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No part of this thesis has been submitted anywhere else for any other degree. This thesis is submitted to the National University of Sciences and Technology (NUST) in partial fulfillment of the requirements for the degree of Master of Science in field of Urban and Regional Planning, Department of Urban and Regional Planning, School of Civil and Environmental Engineering (SCEE), National University of Sciences and Technology (NUST).

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DEDICATION

I dedicate this thesis to my parents, brothers, sister, and teachers, with special recognition to my late father, whose passing during my Master's degree was a profound loss. His unwavering support, encouragement, and belief in me have been the foundation of my academic journey. To my father, who always inspired me to strive for excellence, your love, wisdom, and strength continue to guide me even in your absence. To my mother and siblings, your constant encouragement and sacrifices have been my pillar of strength throughout this journey. This work is a testament to the values and life lessons you have all instilled in me. Thank you for being my guiding light and for your enduring belief in my potential.

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ABSTRACT

This study assesses the sustainability practices, community involvement, governance, and technical proficiency of urban planning firms, analyzing their conformity with sustainable development goals (SDGs) and pinpointing critical areas for enhancement. Despite advancements in technical proficiency, public safety, and community involvement, substantial deficiencies persist in trash minimization, green space conservation, and the incorporation of renewable energy technology. Marginalized groups, including low-income communities, racial minorities, and individuals with disabilities, frequently experience underrepresentation, resulting in planning outputs that fail to meet the varied requirements of urban populations. Moreover, governance difficulties, including inadequate policy alignment and insufficient oversight, further constrain the efficacy of urban planning initiatives. The study emphasizes the necessity for increased implementation of technology advancements and enhanced digital infrastructure to boost project efficiency. Moreover, insufficient client understanding of the long-term advantages of sustainability impedes the comprehensive implementation of sustainable practices. The report suggests establishing explicit waste reduction objectives, augmenting the utilization of renewable energy, improving environmental conservation, broadening involvement with marginalized communities, and promoting collaboration with cultural entities and academic institutions. Consistent project monitoring and auditing, together with client education on sustainability, are highlighted as crucial for attaining sustainable, inclusive, and resilient urban development.

Keywords: *Sustainability practices, governance frameworks, urban planning firms, environmental sustainability, Sustainable development goals (SDGs).*

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

1.1 Background

Over the years, the global population has experienced significant growth, posing numerous challenges to development and planning. From the early 20th century to the present, the world's population has more than tripled, reaching over 7.8 billion people. This rapid increase has been driven by advancements in healthcare, improved living conditions, and increased birth rates in many regions. However, this growth has not been uniform, with some areas experiencing explosive population increases while others face stagnation or decline.

The burgeoning population has strained resources and infrastructure, creating hurdles in various aspects of development. Urbanization has accelerated, leading to overcrowded cities with insufficient housing, transportation, and sanitation facilities. This urban sprawl has often outpaced the planning and development efforts, resulting in informal settlements and slums. Additionally, the demand for food, water, and energy has surged, putting pressure on agricultural systems and natural resources. The expansion of human activities has led to deforestation, loss of biodiversity, and increased greenhouse gas emissions, exacerbating climate change. These environmental impacts pose significant threats to sustainable development and require careful planning to mitigate.

Moreover, population growth has implications for social services such as education and healthcare. Many developing countries struggle to provide adequate services to their rapidly growing populations, leading to issues like overcrowded schools, insufficient healthcare facilities, and high unemployment rates.

Initially, planning for developments used to be based on the requirements needed at that time, regardless of its future implications. In 1987, the concept of sustainable development was brought to global prominence by the Brundtland Report, officially titled "Our Common Future." [This report was published by the World Commission on Environment and Development (WCED), chaired by Gro Harlem Brundtland 4]. The report defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." This definition has since become the cornerstone of international development policies and environmental efforts.

1.2 Population & Development Pattern of Pakistan

According to a World Bank report of year 2022, in the last ten years, the world population has increased by an average rate of 0.95 percent per year. However, the population in Pakistan increased from 1998 to 2017 with a growth rate of 2.40 percent per year. This means that the population of 145 million in 1998 jumped vigorously to the number of 207 million in 2017. The latest census of 2023 has shown that the population of Pakistan has risen to 241.49 million with a growth rate of 2.55 percent. In order to accommodate this exploding rate of population growth, development at the same pace is also a crucial need of the hour.

According to a report by the United Nations Development Programme (UNDP), Pakistan is going through the highest rate of urbanization in South Asia. The report highlights that the 2017 Population Census indicates that 36.4% of Pakistan's population resides in urban areas. Projections by the UN Population Division suggest that by 2025, nearly half of the population will be living in cities. Urbanization is often associated with economic growth, especially in developed nations where these processes typically occur simultaneously. Globally, cities are estimated to generate over 80% of the world's GDP, with more urbanized regions showing higher per capita income and increased employment opportunities. Urbanization also positively influences technological innovation and economic advancement.

However, recent studies indicate that urbanization does not automatically translate into growth, jobs, and productivity, especially in developing countries. Unplanned and poorly managed urbanization has often led to the proliferation of slums, environmental degradation, poverty, and inequality. Pakistan faces significant urban challenges, including a substantial housing deficit of nearly 10 million units. The growth in urban population has not been matched by an increase in housing or equitable access to land, resulting in housing shortages and the expansion of slums.

The current urban housing approach has led to various challenges, including the consumption of fertile agricultural lands by urban sprawl. The government's recent policy to encourage vertical housing may help address urban sprawl. However, due to Pakistan's vulnerability to earthquakes and other natural hazards, an effective regime for building codes and their enforcement is necessary to mitigate potential risks associated with vertical housing.

1.3 Research Questions

This research aims to address the key questions given below:

1. How do PCATP-registered planning firms incorporate sustainability into their planning projects?
2. To what extent do firms prioritize sustainability and SDGs in master planning?
3. What role do PCATP firms play in promoting sustainable development?
4. What are the main challenges in implementing sustainable planning in Pakistan?
5. What are the weak areas in the planning process, and how can they be improved?

1.4 Research Objectives

This study aims achieve following research objectives:

1. To assess how PCATP-registered firms incorporate sustainability into planning projects.
2. To assess how much priority is given by the firms towards sustainability and SDGs into projects of master planning.
3. To evaluate the role of PCATP firms in promoting sustainable development.
4. To identify challenges and barriers to implementing sustainable planning in Pakistan.
5. To identify weak areas in the overall planning process incurred by the firms and propose actionable steps to improve the process.

1.5 Overview of Methodology

Methodology, or study design, is an essential framework that establishes the reliability and validity of a research study. It serves a crucial function in delivering tangible and pragmatic

outcomes. A meticulously selected methodology serves as a framework that directs the research and guarantees the attainment of the desired objectives.

The approach employed in this study consists of multiple parts, beginning with the selection of the research issue and a comprehensive literature evaluation of both local and worldwide contexts. The research uses exclusively primary data collection techniques sourced from PCATP-registered planning firms, subsequently analyzing the data with Excel and SPSS software. The data is subsequently analyzed, leading to the derivation of relevant results and conclusions. The concluding task entails report writing, executed with all other components of the study technique.

1.6 Scope of Study

The scope of the research is to find out how much emphasis is being put on achieving sustainability by the planning firms of Pakistan for their respective master planning projects. In our case, these planning firms were the ones registered with PCATP. The study also investigates the best key performers and the worst key performers, which are respectively highly and least prioritized by the firms.

1.7 Limitations of the Study

During the research, different elements can impede task performance, complicating the fulfilment of our expectations in specific areas. During our thesis, we encountered obstacles that hampered our work, compromising our research. The subsequent challenges significantly impeded our efforts:

1. Secondary data missing in methodology
2. No feedback or input from PCATP was considered in the research.
3. No feedback or input from the Client was considered in the research.
4. No feedback or input from the Government or Development Authority was considered in the research.

CHAPTER 2: LITERATURE REVIEW

2.1 State of Town Planning Profession in Pakistan

The article "State of Town Planning Profession in Pakistan" provides an insightful analysis of the current scenario of the town planning profession in the country, which holds significant relevance for the sustainability assessment of master planning projects—a key focus of this research. The findings and conclusions drawn from the article offer a critical understanding of the challenges and opportunities faced by town planners in Pakistan, particularly in the context of sustainable urban development.

2.1.1 Overview of the Town Planning Profession in Pakistan

The profession of town planning in Pakistan is undergoing significant evolution, as highlighted by the survey's demographic data, which indicates that a large portion of the practitioners are relatively young and have graduated within the last decade. This youthfulness within the profession underscores both the potential for innovation and the challenges related to experience and expertise in sustainable planning practices.

2.1.2 Challenges in Professional Practice

In the context of sustainability, the article reveals that while a majority of town planners are aware of sustainable design considerations, only a fraction of them actively implements these practices in their work. This disconnect between awareness and practice is a critical issue, especially when considering the broader objectives of sustainable urban development in Pakistan. Furthermore, the low levels of awareness and implementation of Health and Safety (H&S) standards among town planners indicate a significant gap that needs to be addressed to ensure that urban environments are safe and sustainable.

The article also points out the limited understanding and application of energy efficiency standards among town planners. Despite a general awareness of renewable energy considerations, only a small percentage of planners could correctly identify relevant regulations, which raises concerns about the effectiveness of sustainability initiatives in urban planning projects.

2.1.3 Professional Development and Education

The findings indicate that town planners in Pakistan face significant challenges related to professional development, particularly in terms of Continuing Professional Development (CPD) opportunities. The survey results show that many town planners are dissatisfied with the frequency and quality of workshops, conferences, and competitions, which are crucial for professional growth and keeping up with the latest developments in sustainable urban planning.

Moreover, the article highlights the weaknesses in town planning education in Pakistan, particularly the lack of strong links between education and practice, poorly funded departments, and outdated curricula. These educational challenges are compounded by a shortage of qualified faculty and the high cost of education, which further hampers the development of a well-equipped workforce capable of addressing the sustainability challenges in urban planning.

2.1.4 Gaps for Improvement

The article concludes with several recommendations aimed at addressing the identified gaps in the profession of town planning in Pakistan. These include the need for capacity building through enhanced CPD courses, workshops, and conferences that focus on essential areas such as building codes, H&S standards, and sustainable design practices. The article also emphasizes the importance of lobbying with government authorities to improve regulations and policies related to the built environment, which is crucial for the effective implementation of sustainable urban planning practices.

In summary, the "State of Town Planning Profession in Pakistan" article provides a comprehensive overview of the current challenges and opportunities within the profession. Its findings are particularly relevant for the sustainability assessment of master planning projects in Pakistan, as they highlight the critical areas where improvements are needed to ensure that urban planning practices contribute positively to sustainable development goals. The recommendations offered in the article serve as a valuable guide for policymakers, educators, and professionals seeking to advance the field of town planning in Pakistan.

2.2 Eco-City Concept & Pre-Project Planning Sustainability Requirements

The concept of eco-cities and sustainable urban development has gained significant attention in recent years due to the growing need for sustainable practices in urban planning

and construction. This literature review synthesizes key findings from various sources to explore the development of sustainable practices in construction projects, particularly focusing on the pre-project planning (PPP) phase and its application to eco-city projects.

2.2.1 Eco-City Development

Eco-cities are urban developments designed with sustainability at their core, integrating environmental, economic, and social dimensions (Kenworthy, 2006; Roseland, 1997). The goal is to create urban spaces that minimize environmental impact, reduce carbon emissions, and promote sustainable living (Joss, 2011). Various case studies, such as the Changxing eco-city in China and the Sino-Singapore Tianjin eco-city, provide insights into how eco-cities are planned and the challenges they face in achieving sustainability objectives (Yip, 2008; Qiang, 2009).

2.2.2 Pre-Project Planning (PPP) in Sustainable Construction

The PPP phase is critical in construction projects, as it sets the foundation for project success by defining objectives, aligning stakeholders, and identifying key sustainability criteria (Gibson & Gebken, 2003). The literature emphasizes the importance of tailoring the PPP process to incorporate sustainability from the earliest stages. Tools like the Project Development Rating Index (PDRI) and frameworks like the IDEF0 model are often used to guide this process, though they need adaptation to address sustainability objectives explicitly (Weerasinghe et al., 2007; Gibson et al., 2006).

2.2.3 Role of Design Managers in Sustainable Projects

The design manager plays a crucial role in ensuring that sustainability objectives are integrated into the project from the PPP phase. This includes coordinating multidisciplinary teams, managing stakeholder involvement, and maintaining a focus on sustainability throughout the project (Rekola et al., 2012). The design manager's responsibilities extend to the development of a sustainability agenda, which involves setting clear sustainability goals, prioritizing them, and using decision-support tools to evaluate design alternatives (Mills & Glass, 2009; London & Cadman, 2009).

2.2.4 Stakeholder Involvement in Sustainable Construction

Effective stakeholder involvement is essential in sustainable construction projects. Stakeholders, including clients, architects, engineers, and sustainability advisors, must be

engaged early in the PPP phase to ensure their values and sustainability objectives are integrated into the project (Gibson & Bosfield, 2012; Scanlon & Davis, 2011). Value management workshops are recommended as a means to align stakeholders on sustainability issues and minimize conflicts (Thyssen et al., 2010; Zainul Abidin & Pasquire, 2007).

2.2.5 Use of Decision-Support Tools and Value Management

Decision-support tools are critical for evaluating design alternatives against sustainability criteria during the PPP phase. These tools range from process guides and appraisal tools to sustainability assessment tools, which help quantify the sustainability performance of different design options (Jensen & Elle, 2007; Fernandez-Solis et al., 2011). Value management, involving structured workshops and multi-disciplinary collaboration, is also emphasized as a practice to ensure that sustainability objectives are effectively incorporated into the design process (Shen & Yu, 2012).

2.2.6 Challenges and Best Practices in Sustainable Eco-City Projects

The literature identifies several challenges in integrating sustainability into large-scale eco-city projects, including project complexity, market dynamics, and conflicting stakeholder values. To address these challenges, best practices such as appointing a sustainability advisor, synchronizing business planning with master planning, and developing a tailored sustainability agenda are recommended (Boyko et al., 2010; Mulligan et al., 2011). The case study of a newly planned eco-city in the Middle East illustrates these challenges and provides practical insights into the application of these best practices.

2.2.7 Gaps for Improvement

This research contributes to the body of knowledge on sustainable construction and urban planning by proposing a structured PPP process specifically tailored for eco-city projects. It also highlights the need for further research to refine sustainability criteria, develop more comprehensive decision-support tools, and validate the proposed processes through additional case studies (Joss & Molella, 2013; Tanguay et al., 2010).

2.3 A Systemic Framework for Sustainability Assessment

This article by Sala, Ciuffo, and Nijkamp (2015) presents a systematic framework for sustainability assessment (SA), which is highly relevant to sustainability evaluations in various fields, including urban planning. In connection with my research topic, "Sustainability

assessment of master planning projects through evaluation from planning firms in Pakistan," this framework can be instrumental in addressing the complexities inherent in assessing large-scale urban planning projects.

The primary contribution of this work lies in its effort to bridge gaps in current sustainability assessment methods, particularly in differentiating integrated assessments from sustainability assessments (SA). The framework outlined in this study can be applied to evaluate the sustainability of master planning projects, especially considering the social, economic, and environmental dimensions of urban development, which are critical in the context of Pakistan's evolving urban landscape.

2.3.1 Key Elements of the Framework for Master Planning Projects in Pakistan

a) Holistic and Interdisciplinary Approach: The proposed framework emphasizes moving beyond a purely multidisciplinary evaluation to adopt inter- and transdisciplinary approaches. For master planning projects in Pakistan, where urban issues are complex and multifaceted, the need for a holistic approach is paramount. The integration of various disciplinary perspectives—such as environmental sustainability, economic viability, and social equity—aligns with the need to address interconnected urban challenges like spatial planning, infrastructure development, and housing shortages. The framework's emphasis on stakeholder participation ensures that the socio-cultural contexts and concerns of local communities are considered, which is vital in the culturally diverse urban settings of Pakistan.

b) Sustainability Principles and Targets: The sustainability principles laid out in the paper, such as the precautionary principle, intergenerational equity, and the polluter-pays principle, are relevant for urban planning firms in Pakistan as they navigate the environmental impacts of rapid urbanization. For instance, the use of sustainability targets, informed by both scientific and policy-driven thresholds, can provide a robust guideline for planning firms to evaluate whether master planning projects contribute to sustainable development goals (SDGs), particularly in addressing issues like environmental degradation and urban sprawl.

c) Uncertainty Management: A critical challenge in sustainability assessment, particularly in urban planning projects, is dealing with uncertainties—such as future economic growth, population changes, and environmental impacts. The framework stresses the importance of incorporating uncertainty management into decision-making processes, an essential aspect for Pakistani cities, which face unpredictable urban growth patterns. For

example, addressing uncertainties related to climate change impacts on urban infrastructure or the effectiveness of policy interventions can enhance the resilience of master planning projects.

d) Scalability and Multi-Temporal Considerations: The framework accounts for scalability, allowing assessments to be performed at different spatial scales, from local to global. This aspect is particularly useful in the context of urban planning in Pakistan, where sustainability assessments may vary in scale—from neighbourhood-level projects to city-wide master plans. Multi-temporal considerations are also crucial, as master planning projects need to account for both short- and long-term impacts, such as changes in land use, infrastructure durability, and environmental conservation.

2.3.2 Methodological Implications for Urban Planning Firms in Pakistan

The proposed SA framework calls for a robust methodological approach, particularly in terms of identifying suitable tools and indicators that are context-specific. For planning firms in Pakistan, the framework's emphasis on comprehensive sustainability indicators that address the "three pillars" of sustainability—environmental, social, and economic—can help streamline the evaluation process of urban master plans. Indicators such as resource use, environmental impact, social equity, and economic benefits can be integrated into sustainability assessments, ensuring that master planning projects are evaluated comprehensively.

Moreover, the framework advocates for the integration of stakeholder input throughout the assessment process. This is highly relevant to Pakistan's urban planning context, where local stakeholders, including government bodies, civil society, and community groups, play a crucial role in urban development projects. Engaging these stakeholders in a meaningful way can lead to the co-creation of solutions, ensuring that urban master plans reflect the needs and aspirations of local communities while adhering to sustainability principles.

2.3.3 Conclusion and Relevance to Master Planning in Pakistan

The systemic framework for sustainability assessment presented by Sala, Ciuffo, and Nijkamp provides a well-structured and comprehensive approach that is directly applicable to the sustainability assessment of master planning projects in Pakistan. By adopting this framework, urban planning firms can enhance the comprehensiveness, transparency, and robustness of their sustainability evaluations, ensuring that urban development aligns with the principles of sustainable development and the broader goals of urban resilience, environmental conservation, and social equity.

This literature review highlights the relevance of the framework to my research, as it addresses the need for a structured and scientifically sound approach to assessing the sustainability of master planning projects, particularly in the rapidly urbanizing context of Pakistan.

2.4 Sofia Master Plan & Master Planning Projects in Pakistan

The research article "The Challenges of Implementing Sustainable Development: The Case of Sofia's Master Plan" by Slaev and Nedovic-Budic presents a case study on how master planning can either support or hinder sustainable urban development. This study can offer important insights and a comparative perspective relevant to the "Sustainability Assessment of Master Planning Projects in Pakistan," particularly regarding challenges related to the implementation of sustainability goals in urban planning.

2.4.1 Urban Form and Sustainability in Master Planning

The article highlights the importance of urban form—specifically polycentricism and compactness—in promoting sustainable development. Sofia's General Urban Development Plan (GUDP) emphasizes a polycentric urban structure with low-density suburban expansion to balance the city's monocentric dominance. While the plan aims to reduce mono-centricity and foster sustainable development, it struggles to achieve these goals due to inconsistencies between planning provisions and actual urban growth patterns.

For Pakistan, where rapid urbanization is leading to environmental degradation and infrastructure strain in major cities, these findings underscore the significance of establishing clear urban development patterns that prioritize both sustainability and growth. Similar to Sofia, cities in Pakistan may experience pressures related to suburbanization and urban sprawl, exacerbated by a lack of robust planning tools and inadequate zoning regulations. This highlights the need for a coherent strategy to promote sustainable urban growth, which is relevant to the evaluation of master planning projects in Pakistan.

2.4.2 Planning Goals Versus Implementation

The study draws attention to the challenges in translating master planning goals into reality. Sofia's GUDP sets ambitious targets for polycentric development and low-density suburban expansion, but the lack of effective zoning regulations and inadequate public transportation infrastructure has hindered progress. In particular, the plan's failure to protect

green areas while promoting low-density housing shows how poor implementation can lead to unintended outcomes, such as the erosion of natural resources.

In the context of master planning in Pakistan, similar issues can arise where plans are ambitious but lack the necessary regulatory or infrastructural support for successful implementation. This often results in urban sprawl and environmental degradation. Therefore, ensuring that planning frameworks are backed by appropriate implementation tools—such as zoning laws, infrastructure development, and green space preservation—is crucial for achieving sustainability in urban development.

2.4.3 Transportation Infrastructure and Urban Sustainability

One of the key elements discussed in the article is the role of transportation networks in shaping urban growth. In Sofia, the plan prioritized road networks over public transport, which inadvertently reinforced monocentric development patterns and hindered the shift toward a polycentric urban form. This demonstrates the critical role of transportation planning in achieving sustainable urban growth.

This aspect is particularly relevant to Pakistan's cities, where the absence of comprehensive public transportation systems in urban master planning has contributed to increased car dependency, traffic congestion, and environmental pollution. A sustainability assessment of master planning projects in Pakistan should thus emphasize the integration of sustainable transportation options, such as mass transit systems, to support more balanced and environmentally friendly urban growth.

2.4.4 Stakeholder Involvement and Governance

The article points to the limited success of Sofia's master plan in engaging stakeholders, which further hindered the realization of its sustainability goals. This lack of stakeholder involvement weakened the plan's effectiveness in addressing local concerns and integrating sustainable practices.

In Pakistan, the role of stakeholder engagement in the planning process is often overlooked, leading to mismatches between planning objectives and on-ground realities. This reinforces the need for participatory approaches in master planning to ensure that sustainability assessments are grounded in the needs and priorities of local communities, businesses, and governments.

2.4.5 Conclusion

The case study of Sofia's master plan offers valuable lessons for assessing the sustainability of master planning projects in Pakistan. It highlights the importance of aligning planning goals with implementation tools, the role of transportation infrastructure in sustainable urban growth, and the need for stakeholder involvement. As Pakistan grapples with rapid urbanization and environmental challenges, these insights can inform a more effective and contextually appropriate approach to sustainability assessments in master planning. Addressing these challenges early on can ensure that master planning projects contribute positively to sustainable development goals in Pakistan, promoting urban environments that balance growth, livability, and ecological preservation.

For master planning projects, particularly in Pakistan, where socioeconomic and environmental factors are critically interlinked, this approach provides a robust framework for converting subjective survey data into quantifiable metrics. By employing a similar method, researchers can analyze how well sustainability goals are being met in the planning stages of large-scale urban development projects. This is particularly useful in identifying areas where sustainability measures may fall short or where stakeholder satisfaction is lower than expected.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Study Area

The study focuses on the sustainability assessment of master planning projects across Pakistan, using data collected from planning firms registered with the Pakistan Council of Architects and Town Planners (PCAT). Pakistan is a diverse country with a wide range of geographic and environmental conditions, including urban, semi-urban, and rural areas. This diversity makes it an ideal context for assessing the sustainability of master planning projects, as projects may face different challenges and opportunities depending on the specific location. The research covers planning firms that operate across various regions of Pakistan, with a particular focus on urban centers where most master planning activities occur. These include major cities such as Karachi, Lahore, Islamabad and smaller regional cities where PCAT-registered firms are active. The geographical diversity reflects the different socioeconomic, environmental, and urbanization pressures in various regions.

The study specifically targets firms registered with PCAT, which ensures that the sample includes professional and qualified entities responsible for urban planning and development projects. Currently, there are 25 firms registered with PCATP, out of which 20 firms were targeted. The firms involved in the study vary in size and capacity, from large national firms handling multi-billion-rupee projects to smaller local entities managing regional developments.

3.2 Justification of Study Area

Pakistan is undergoing rapid urbanization, with major cities like Karachi, Lahore, and Islamabad experiencing unprecedented growth. This urban expansion puts considerable pressure on local resources, infrastructure, and environmental sustainability. As cities grow, the importance of sustainable master planning becomes increasingly critical to ensure that urban development is balanced with the preservation of natural resources, public welfare, and long-term environmental resilience. Given the urgent need for sustainable planning in these urban centers, Pakistan provides a fertile ground for evaluating the effectiveness of current master planning practices in achieving sustainability goals.

Secondly, the focus on PCAT-registered planning firms ensures that the study is grounded in professional practice. PCAT-registered firms are responsible for designing and

implementing the majority of large-scale urban development projects in Pakistan. These firms are bound by national regulatory standards and have a direct role in shaping the urban environment. By targeting these firms, the study captures expert insights into how sustainability is incorporated into master planning at a professional level. This focus on certified planners provides the research with credibility, as it relies on firms that are both regulated and directly involved in urban planning across the country.

Additionally, Pakistan's diverse geography, ranging from arid zones to mountainous regions and coastal areas, offers an ideal case study for sustainability in master planning. Different regions present unique sustainability challenges, such as water scarcity, air pollution, and resource management. This diversity allows the research to explore how planning firms address region-specific sustainability concerns while adhering to broader national and international sustainability guidelines.

Finally, there is a significant research gap in the literature concerning sustainability in the context of master planning in Pakistan. While international frameworks such as the UN's Sustainable Development Goals (SDGs) offer general guidance, there is limited localized research that assesses how these global principles are being implemented at the national level. By focusing on Pakistan, the study contributes to filling this gap, providing localized insights into how sustainable urban planning practices are being adopted in a developing country context.

3.3 Research Design

The research design for this study is a quantitative, descriptive, and evaluative approach aimed at assessing the sustainability of master planning projects in Pakistan through the evaluation of PCATP-registered planning firms. This study utilizes a structured questionnaire as the primary data collection tool, supported by statistical analysis, to evaluate the alignment of master planning projects with sustainability principles, particularly in relation to the United Nations' Sustainable Development Goals (SDGs).

3.3.1 Study Population and Sample

The population for this study comprises 20 out of 25 PCATP-registered planning firms across Pakistan. These firms are directly involved in the design and implementation of master planning projects and are key stakeholders in promoting sustainability in urban development. The sample was selected based on the firms' active involvement in urban planning, ensuring

that their experience aligns with the study's objectives. Each firm that participated in the study was approached to respond to a comprehensive questionnaire designed to capture a wide range of sustainability indicators. The names of the 20 targeted firms are given in Table-1 below

Table 1 – Names of Targeted PCATP-Registered Planning Firms

1	M/s. Architecture & Planning Division of NESPAK
2	M/s. MM Pakistan (Pvt) Ltd
3	M/s. Innovative Development Consultants (Pvt) Limited
4	M/s. Resilience Gateway Pvt Ltd
5	M/s. HP Consultant Planners (SMC - Private) Limited
6	M/s. Izhar & Associates Consulting
7	M/s. Urban Planning & Management Consultant
8	M/s. The Urban Solution Pvt Limited
9	M/s. Sheher Saaz
10	M/s. Shah & Associates
11	M/s. Multi Node Planners and Consultants (Private) Limited
12	M/s. Contemporary Associates
13	M/s. Urban Community Housing (Pvt) Limited
14	M/s. City Pulse Private Limited
15	M/s. Projection Consultant Plus
16	M/s. 4th Dimension Consulting
17	M/s. SEDCO
18	M/s. Urbano Consultants
19	M/s. Planner and Designer (P&D) Associates
20	M/s Ashrafi Associates

3.3.2 Data Collection Instrument

The primary data collection tool is a structured questionnaire comprising 100 questions. The questionnaire is divided into six key dimensions of sustainability, which are evaluated on a 5-point Likert scale (1 representing "Strongly Disagree" and 5 representing "Strongly

Agree"). These dimensions include:

- Environmental sustainability
- Economic sustainability
- Social sustainability
- Institutional sustainability
- Governance sustainability
- Cultural sustainability

The questionnaire was designed to evaluate the planning firms' practices and perceptions regarding the integration of sustainability principles into master planning projects. In particular, the questions assess how these projects align with the Sustainable Development Goals (SDGs), such as clean energy, responsible consumption, sustainable cities, and climate action.

A quantitative research design was selected due to its ability to provide measurable and comparable results. This approach is particularly suited to assessing the extent to which sustainability is integrated into planning practices, as it allows for objective analysis of large data sets. By converting subjective responses into percentages, the study ensures a standardized evaluation across different firms and sustainability dimensions, which is critical for assessing alignment with the SDGs.

3.3.3 Research Validity and Reliability

To ensure the validity of the research instrument, the questionnaire was designed following a review of relevant literature on sustainability assessments and SDG-aligned urban planning. The six dimensions of sustainability were selected based on well-established frameworks, ensuring that the questions reflect key sustainability indicators. Few questions were included in the questionnaire whose answers were already anticipated to be the same in all firms, confirming if the firms answered professionally. The reliability of the data was tested through SPSS by examining internal consistency to ensure that the questions within each sustainability dimension were consistently measuring the intended constructs.

3.4 Data Analysis

The data collected from the 100-question survey were analyzed using Statistical Package for the Social Sciences (SPSS) software, with a specific focus on converting the Likert scale responses into a 100-point scale to facilitate a more detailed and nuanced analysis. This methodology enables the quantification of survey responses and the creation of composite index scores that reflect the overall sustainability performance of the master planning projects, as perceived by PCATP-registered firms.

3.4.1 Conversion of Likert Scale to 100-Point Scale

The study employed a conversion method similar to the FVQoL-Index'17 methodologies, which transforms the mean score of each indicator into a standardized score ranging from 0 to 100. Each question in the survey was initially rated on a 1-5 Likert scale, with 1 representing "Strongly Disagree" and 5 representing "Strongly Agree." To standardize the responses for comparison across different sustainability dimensions, the following formula was applied:

Table 2- Likert Scale Conversation Equation

Likert Scale	**Conversation**	**100 Point Score**
5= Strongly Agree	$\sum_{i=1} = \frac{M1 - M2}{R} x100$	100
4= Agree		75
3= Natural		50
2= Disagree		25
1= Strongly disagree		0

Where:

M1=Mean Score is the average score of responses for a particular question.

M2=Minimum Score is the lowest possible score on the Likert scale (i.e., 1).

R=Range is the difference between the maximum and minimum possible scores (i.e., 5 - 1 = 4).

SPSS software was used to calculate descriptive statistics, such as the M1, M2, R and

standard deviation, for each sustainability dimension. This was followed by factor analysis to identify any underlying patterns in the data. The standardized scores were also used in correlation analyses to examine the relationships between different sustainability dimensions and the overall sustainability performance of master planning projects.

By applying this formula, the Likert scale scores were transformed into standardized scores ranging from 0 (representing the lowest sustainability performance) to 100 (representing the highest sustainability performance). This conversion allowed for the development of a composite sustainability index, providing a more granular perspective on how various aspects of sustainability—such as energy efficiency, resource conservation, and social inclusivity—are perceived by the planning firms.

The standardized scores for each dimension of sustainability (environmental, economic, social, institutional, technological, and cultural) were aggregated to create a composite sustainability index. This index reflects the overall effectiveness of sustainability measures incorporated into master planning projects, allowing for easy comparison of performance across different sustainability dimensions.

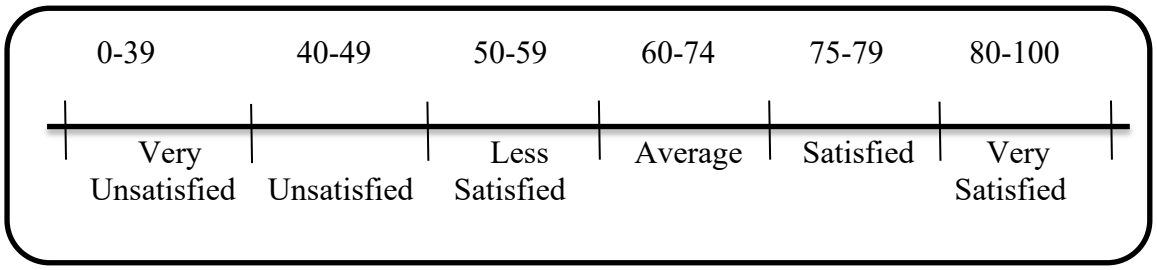

Figure 1 – Standardized Scale

3.4.2 Composite Sustainability Index

The conversion to a 100-point scale provided several analytical advantages:

- Comparison Across Dimensions: The standardized scores allowed for the direct comparison of different sustainability dimensions, identifying which areas (e.g., environmental vs. social sustainability) are more effectively integrated into master planning projects.

- Benchmarking Against SDGs: The 100-point scale offered a practical way to benchmark project performance against the Sustainable Development Goals (SDGs), as each dimension could be assessed in terms of its alignment with specific SDG targets.

- Detailed Analysis: This approach enabled a more detailed and nuanced understanding of the contribution of various factors to overall project sustainability. It allowed for the identification of strengths and weaknesses in the sustainability efforts of PCATP-registered firms.

By employing this data analysis approach, the study was able to produce a clear, quantifiable assessment of how well master planning projects in Pakistan align with sustainability principles and the SDGs.

CHAPTER 4: RESULTS AND DISCUSSION

This chapter delineates the principal findings of the questionnaire survey and examines various facets of these findings to underscore the strengths and weaknesses of the overall planning process. The results are divided into categories respective to their dimensions:

4.1 Environmental Dimension

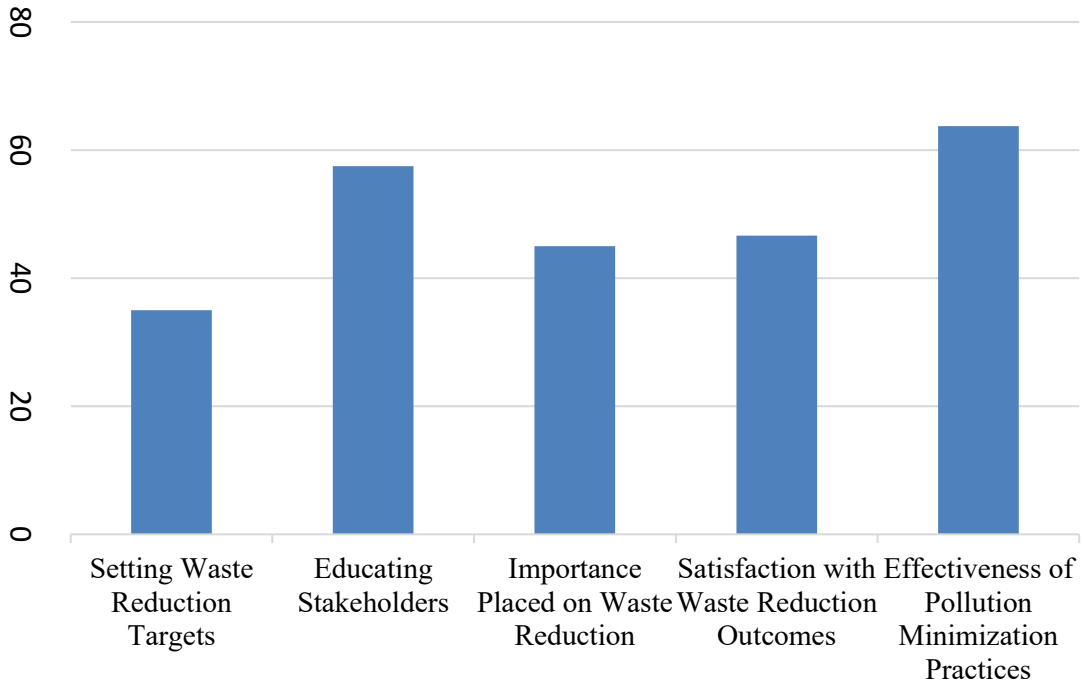

Figure 2 – Approaches and Perceptions of Waste Management Practices

Setting Waste Reduction Targets (35%): This score falls into the very unsatisfied category, indicating that firms are generally not satisfied with their efforts to set clear waste reduction targets. There is a need for stronger goal-setting and strategic planning in this area.

Educating Stakeholders (55%): This score is in the less satisfied category, suggesting that while some efforts are being made to educate stakeholders, there is still room for improvement to enhance the impact of these initiatives.

Importance Placed on Waste Reduction (45%): Falling in the unsatisfied range, this indicates that firms recognize the importance of waste reduction but are not placing a strong enough emphasis on it within their operations.

Satisfaction with Waste Reduction Outcomes (50%): This score lies in the less satisfied range, showing that while firms are achieving some results, they are not fully content with the

outcomes of their waste reduction efforts.

Effectiveness of Pollution Minimization Practices (65%): This score is in the average category, indicating that firms perceive their pollution minimization practices as reasonably effective, though there is room to elevate these efforts to a higher satisfaction level.

The results indicate mixed satisfaction with waste management practices, with firms dissatisfied with clear waste reduction targets, indicating the need for structured planning and goal-setting. Stakeholder education and waste reduction importance are also unsatisfied. Pollution minimization practices are moderately effective.

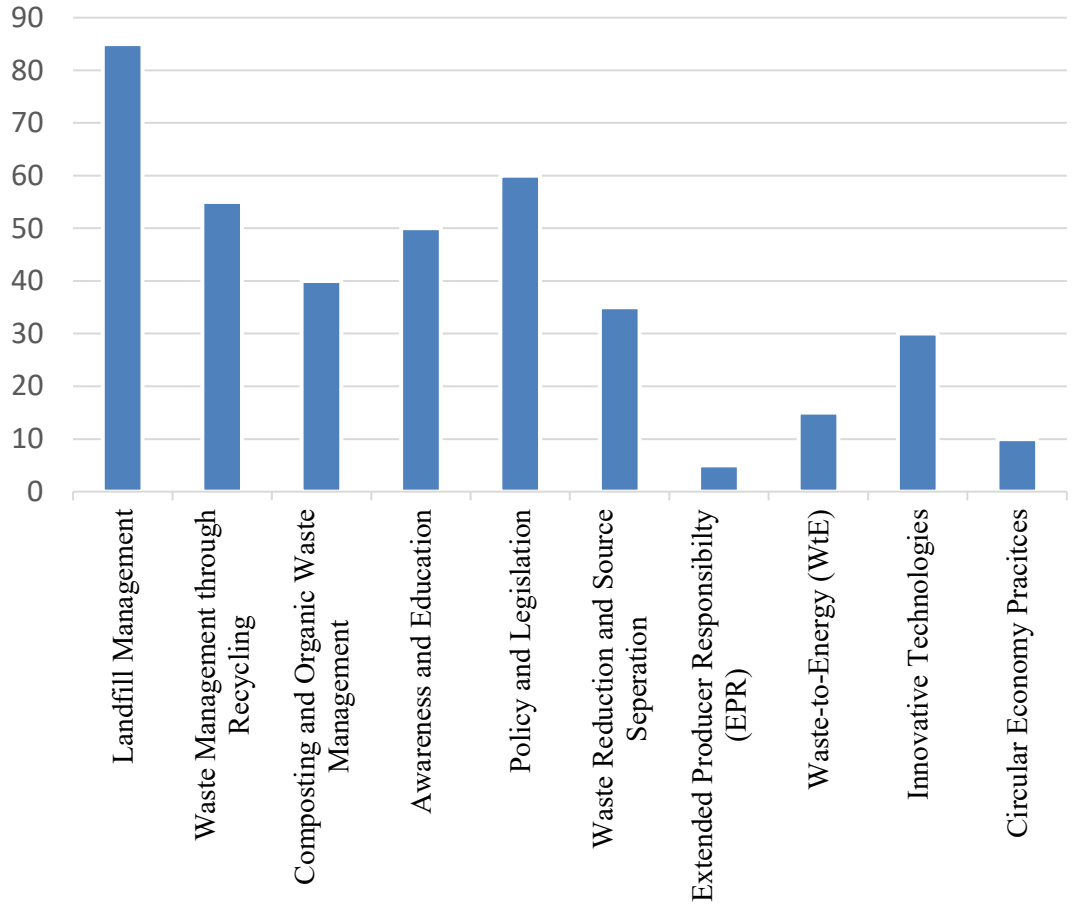

Figure 3 – Waste Management Practices

Landfill Management (85%): Companies exhibit significant satisfaction with landfill utilization, indicating dependence on existing infrastructure. This practice contradicts global sustainability initiatives that prioritize waste reduction.

Recycling (65%): Moderate efficacy in recycling; however, initiatives are not entirely optimized. Enhancing recycling infrastructure and incentives may augment sustainability.

Composting and Organic Waste Management (55%): Reduced satisfaction attributed to inadequate composting processes, possibly stemming from infrastructural and awareness deficiencies. Enhanced organic waste processing may diminish landfill utilization.

Awareness and Education (70%): Moderate initiatives in informing stakeholders about trash management. More robust initiatives could improve the adoption of best practices.

Policy and Legislation (60%): Moderate efficacy of policies and regulations. Enhanced enforcement and guidelines could facilitate more sophisticated waste management.

Waste Reduction and Source Separation (45%): Companies express dissatisfaction with waste reduction initiatives. A heightened emphasis on these approaches can result in enhanced resource recovery and reduced landfill utilization.

Extended Producer Responsibility (EPR) (20%): Limited implementation of EPR. Companies must incorporate product lifecycle accountability to promote sustainability.

Waste-to-Energy (WtE) (30%): Limited implementation of WtE technologies attributable to financial, infrastructural, or regulatory challenges. garbage-to-Energy (WtE) has the potential to diminish dependence on landfills by transforming garbage into energy.

Innovative technology (40%): Minimal application of advanced waste management technology. The use of innovative ideas is essential for enhancing sustainability.

Engagement with Circular Economy Practices (35%): Limited adherence to circular economy principles. Emphasizing reuse, recycling, and closed-loop technologies may diminish waste and improve resource efficiency.

Firms predominantly depend on landfills; nonetheless, they must implement sustainable policies such as Extended Producer Responsibility (EPR), a circular economy, and innovative technologies. Enhancing legislation, infrastructure, and education can improve waste management and sustainability results.

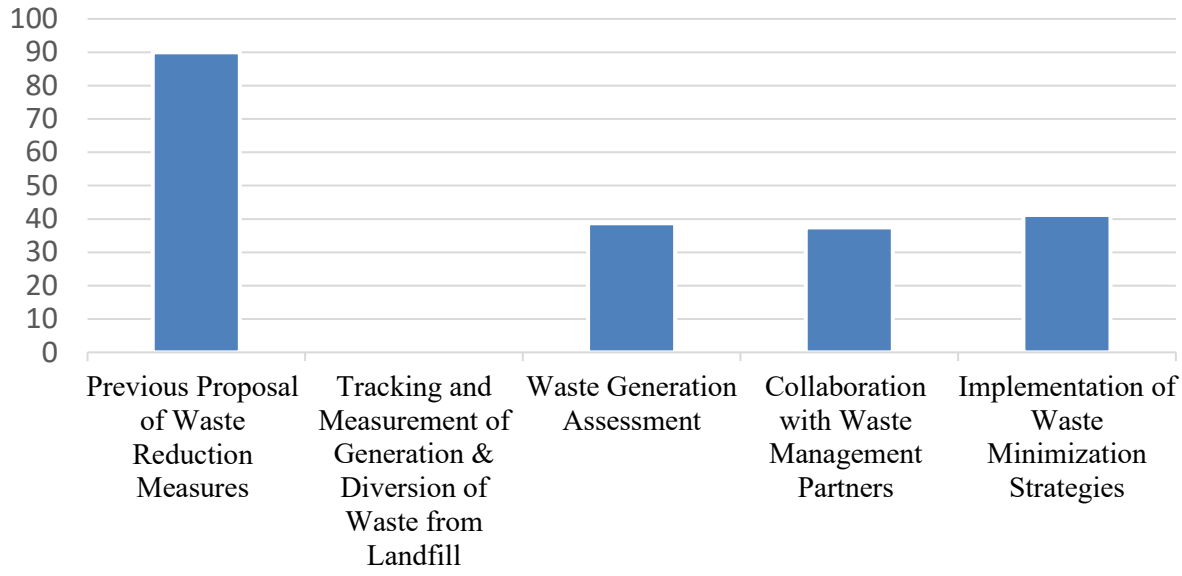

Figure 4 – Evaluation & Implementation of Waste Management Strategies

Prior Proposal for Waste Reduction Strategies (90%): Companies express high satisfaction with previous waste reduction initiatives. Nonetheless, evaluating the execution and monitoring of these procedures is essential.

Monitoring and Assessment of Waste Diversion (45%): Companies express dissatisfaction with their waste generation and diversion tracking systems, indicating a necessity for improved oversight.

Waste creation Assessment (50%): Companies exhibit modest satisfaction with waste assessments, indicating an absence of thorough methods for precise analysis of waste creation.

Collaboration with Waste Management Partners (50%): Moderate satisfaction with collaborative efforts indicates a necessity for enhanced partnerships and strategic collaboration to achieve improved results.

Implementation of Waste Minimization methods (50%): Companies exhibit moderate satisfaction with the execution of minimization methods, presumably attributable to resource limitations and insufficient enforcement.

A distinct disparity exists between elevated satisfaction with previous proposals and subpar performance in tracking, evaluation, collaboration, and execution. Although companies possess robust waste reduction strategies, they have difficulties in converting these into quantifiable actions. Enhancing tracking mechanisms, fortifying relationships, and

guaranteeing thorough implementation of waste minimization methods are crucial for transitioning from planning to successful action.

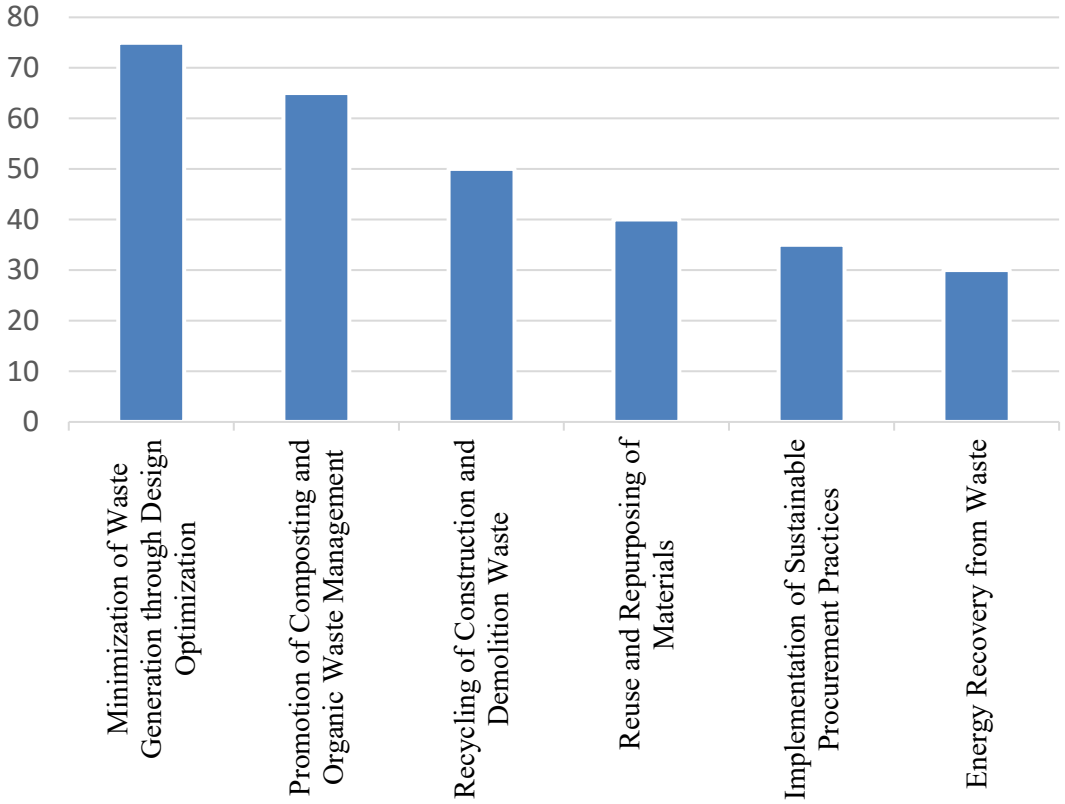

Figure 5 – Waste Reduction Strategies

Reduction of Waste Generation via Design Optimization (75%): Companies express contentment with waste minimization achieved through optimized design, signifying its effective incorporation into project planning and its efficacy as a waste reduction technique.

Promotion of Composting and Organic Waste Management (65%): Companies exhibit modest effectiveness in advocating for composting and organic waste management; nevertheless, their initiatives are not fully optimized, indicating potential for enhancement.

Recycling of Construction and Demolition Waste (55%): Companies exhibit diminished satisfaction with the recycling of construction waste, presumably due to infrastructural, financial, or logistical impediments that hinder its efficacy.

The reuse and repurposing of materials (55%): Comparable to recycling, initiatives for material reuse are underdeveloped, encountering obstacles such as operational or financial limitations that impede wider adoption.

Implementation of Sustainable Procurement Practices (50%): Companies express diminished satisfaction with sustainable procurement, suggesting it is not thoroughly incorporated into decision-making processes. Enhanced policies and incentives are essential to advance sustainability.

Energy Recovery from Waste (45%): Companies express dissatisfaction with energy recovery methods, likely attributable to elevated prices, technological constraints, or regulatory obstacles, indicating substantial potential for enhancement.

The data indicates that although design optimization effectively reduces waste, enhancements are necessary in areas such as recycling, material reuse, and energy recovery. Sustainable procurement and energy recovery strategies require increased focus to include comprehensive sustainability across the project lifecycle.

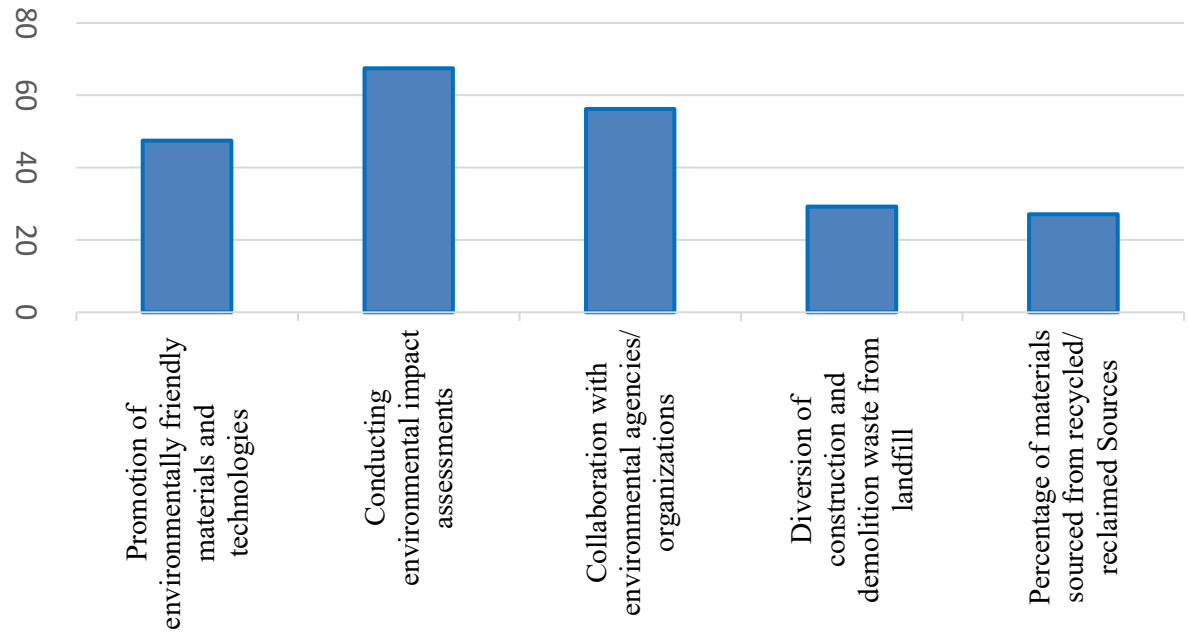

Figure 6 – Environmental Sustainability Practices in Planning Firms

Promotion of Eco-Friendly Materials and Technologies (45%): Companies express dissatisfaction with their promotion of sustainable materials and technologies, presumably due to cost or availability constraints hindering widespread adoption.

Executing Environmental Impact Assessments (65%): Firms are assessed as average in their engagement with environmental impact assessments (EIAs), indicating potential for enhancement in both the thoroughness and frequency of these evaluations.

Collaboration with Environmental Agencies/Organizations (60%): This score indicates moderate collaboration with environmental agencies, highlighting the opportunity to enhance collaborations for improved sustainability practices.

Diverting Construction and Demolition Waste from Landfills (35%): Companies express considerable dissatisfaction with their initiatives to divert construction waste from landfills, indicating substantial obstacles in sustainable waste management, potentially attributable to infrastructural or legislative problems.

Percentage of Materials Obtained from Recycled/recovered Sources (40%): Companies express dissatisfaction with the procurement of recycled materials, indicating a necessity for enhanced policies and incentives to augment the utilization of recovered materials.

The data indicates considerable success in executing environmental impact studies and partnering with environmental organizations; however, substantial enhancements are required in advocating for eco-friendly materials, diverting construction waste from landfills, and procuring recycled materials. Overcoming these issues necessitates more robust regulatory frameworks, enhanced infrastructure, and augmented incentives for the adoption of sustainable practices.

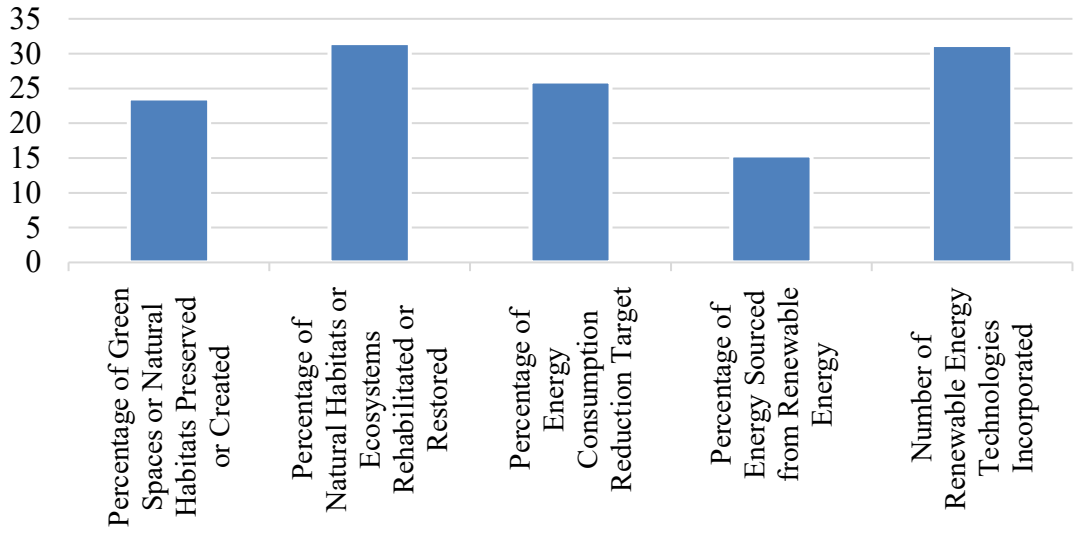

Figure 7 – Sustainability and Environmental Impact Metrics

Percentage of preserved or created green areas or natural habitats (20%): reveals that firms are highly dissatisfied, indicating insufficient efforts in this domain and suggesting a lack

of prioritization.

Percentage of Natural Habitats or Ecosystems Rehabilitated or Restored (30%): Companies express significant dissatisfaction with ecosystem restoration initiatives, underscoring the necessity for increased focus on the rehabilitation of natural habitats.

Target for Energy Consumption Reduction (25%): Companies exhibit minimal advancement in decreasing energy consumption, suggesting an absence of effective energy management practices.

Percentage of Energy Derived from Renewable Sources (15%): The lowest score indicates that companies are minimally utilizing renewable energy, highlighting an urgent necessity for investment in renewable energy infrastructure.

Proportion of Renewable Energy Technologies Integrated (25%): Companies are integrating a limited number of renewable energy technologies, indicative of the overarching difficulty of restricted renewable energy adoption, largely attributable to financial or regulatory obstacles.

The data indicates significant deficiencies in environmental sustainability, evidenced by poor scores in critical categories such as green space preservation, ecosystem restoration, energy reduction, and renewable energy adoption. Companies must promote environmental preservation, include renewable energy sources, and diminish energy usage. Improved rules, financial incentives, and investments in green technologies are crucial for enhancing sustainability performance in planning projects.

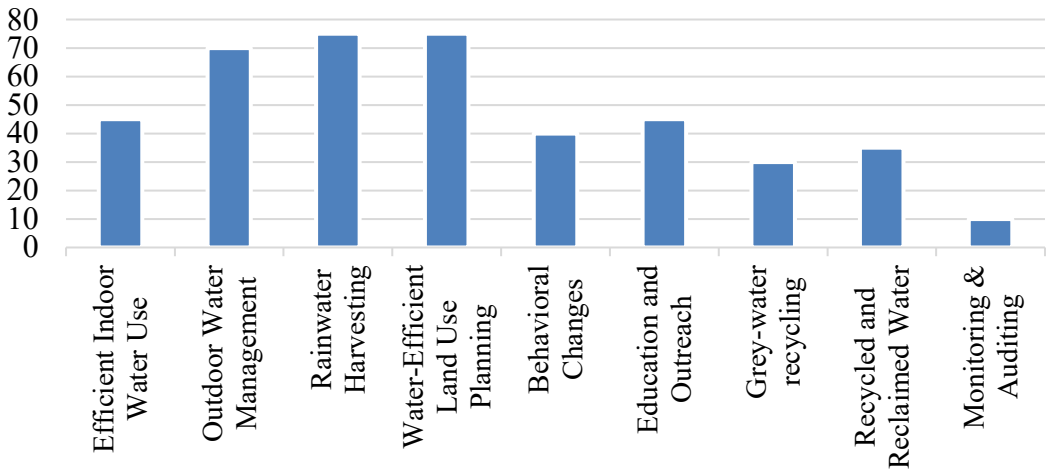

Figure 8 – Water Conservation Measures in Planning Firms

Effective Indoor Water Utilization (45%): Companies express dissatisfaction with indoor water conservation initiatives, suggesting it is not prioritized, potentially due to insufficient resources or awareness.

Outdoor Water Management (70%): Evaluated as average, companies exhibit moderate effectiveness in managing outdoor water consumption but have the potential for enhanced efficiency.

Rainwater Harvesting (75%): Companies express satisfaction with rainwater harvesting, indicating its effective implementation as a principal water-saving method.

Water-Efficient Land Use Planning (70%): Companies are moderately integrating water-efficient land use practices, although there exists potential for enhancement in optimizing water conservation.

Behavioral Modifications (50%): Companies express diminished satisfaction with activities aimed at promoting water conservation behaviors, suggesting that more comprehensive strategies are required.

Education and Outreach (60%): Moderate effectiveness in advancing water conservation through educational initiatives, with opportunities for enhancement to elevate awareness and impact.

Greywater Recycling (40%): Companies express dissatisfaction with greywater recycling initiatives, presumably due to infrastructural or financial impediments hindering implementation.

Recycled and Reclaimed Water (50%): There is a moderate utilization of reclaimed water; nevertheless, more efforts could enhance its contribution to water conservation.

Monitoring and Auditing (20%): Companies express considerable dissatisfaction with water usage monitoring and auditing, revealing a substantial deficiency that obstructs the tracking and enhancement of conservation initiatives.

Although rainwater collecting and outdoor water management are relatively effective, indoor water usage, greywater recycling, and monitoring systems remain inadequately developed. Enhancing infrastructure, education, and oversight could markedly advance water

conservation methods in planning firms.

4.2 Governance Dimension

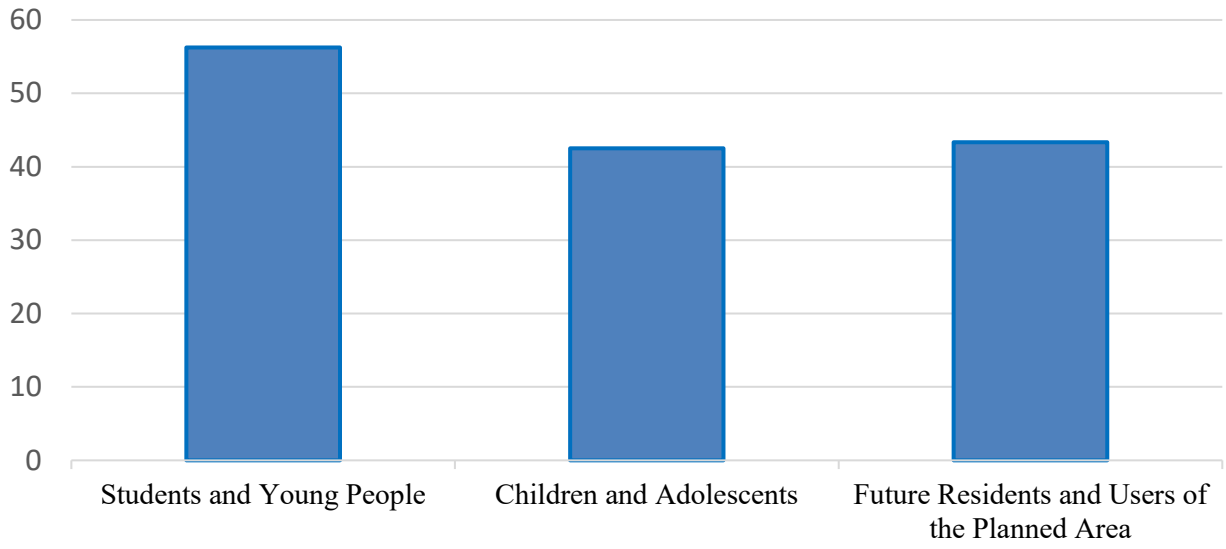

Figure 9 – Engagement with Future Generation & Young Stakeholders

Students and Young Individuals (55%): Companies express diminished satisfaction over their interaction with students and young individuals, suggesting moderate participation. There is potential to enhance outreach and engagement techniques for this demographic.

Children and Adolescents (45%): Companies express dissatisfaction with their involvement with children and adolescents, indicating a substantial deficiency in meeting the demands of this critical demographic in urban planning.

Future Residents and Users of the Planned Area (50%): Companies exhibit dissatisfaction with their engagement initiatives, demonstrating moderate interaction with prospective residents; nonetheless, there exists an opportunity for a more inclusive approach.

The data indicates that although companies strive to engage younger stakeholders, especially students, their efforts are inadequate. Engagement with children, adolescents, and prospective residents is insufficiently developed, necessitating more aggressive tactics. Enhanced outreach, participatory initiatives, and the early engagement of prospective users will result in more inclusive urban planning and increased stakeholder satisfaction.

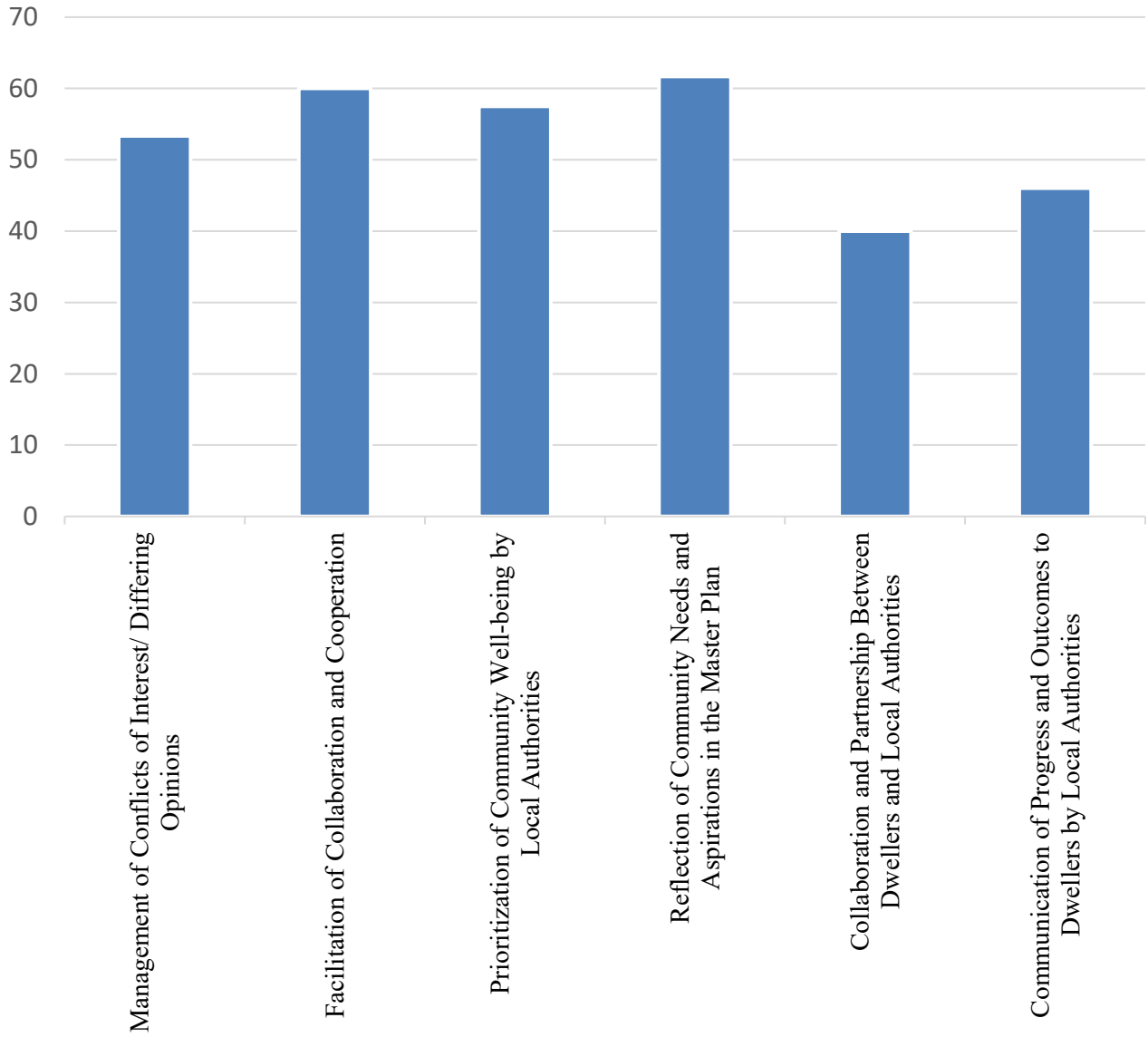

Figure 10 – Community Engagement and Collaborative Governance

Management of Conflicts of Interest and Divergent Opinions (50%): Firms express dissatisfaction with existing conflict management initiatives, highlighting the necessity for enhanced conflict resolution solutions to facilitate more efficient planning processes.

Facilitation of Collaboration and Cooperation (60%): Rated as average, stakeholder collaboration is somewhat supported; however, enhanced methods could bolster overall community engagement.

*Prioritization of Community Well-being by Local Authorities (55%): B*usinesses express dissatisfaction with the prioritization of community well-being, indicating a necessity for enhanced community-centric planning.

Reflection of Community Needs in the Master Plan (60%): The Master Plan reflects community requirements to a considerable extent; however, there is potential for further participation and improved integration of community objectives.

Collaboration Between Residents and Local Authorities (45%): Businesses express dissatisfaction with the collaboration between residents and local authorities, highlighting the necessity for stronger collaborations to address community issues.

Communication of Progress and Outcomes to Residents (50%): Diminished satisfaction with communication initiatives indicates a necessity for more transparent and frequent updates to foster trust and involvement within the community.

The data indicates that although there are moderate initiatives in collaboration and community participation, enhancements are required in conflict management, communication, and relationships with local authorities. Enhancing these domains will result in more participatory and transparent planning processes, yielding improved outcomes for communities and planners.

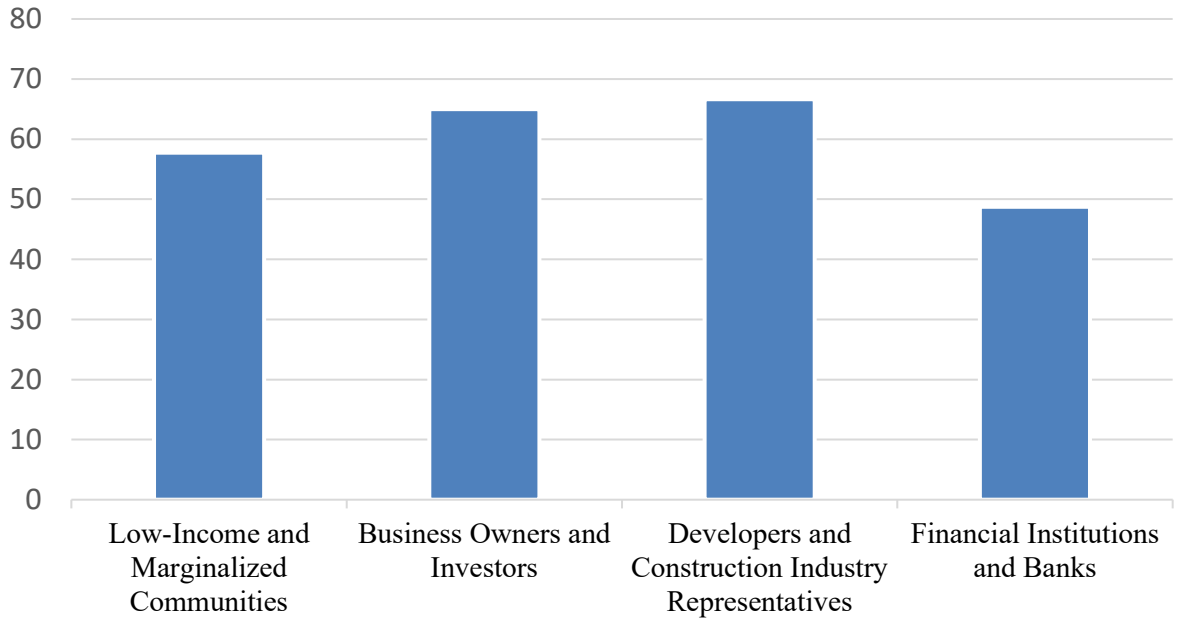

Figure 11 – Stakeholder Engagement Across Economic & Industry Sectors

Low-Income and Marginalized Communities (50%): Firms exhibit diminished satisfaction over their interaction with low-income and marginalized groups (50%). Increased effort is required to address their issues and include them in the planning process.

Business Owners and Investors (65%): Firms exhibit a modest level of engagement with business owners and investors, receiving an average rating. Enhancing this partnership could facilitate improved incorporation of their viewpoints into planning.

Developers and Construction Industry Representatives (65%): Interaction with developers and the construction sector is moderate. Improving collaboration with this group may result in more effective and sustainable project outcomes.

Financial Institutions and Banks (50%): Companies express diminished satisfaction with their participation in the financial sector, indicating a necessity for enhanced collaborations with banks and financial institutions to obtain funding for sustainable initiatives.

The data indicates reasonable interaction with business owners, investors, and developers; however, companies must enhance their partnerships with low-income neighborhoods and financial institutions. Enhancing these ties will guarantee more inclusive, equitable, and fiscally sustainable urban planning initiatives.

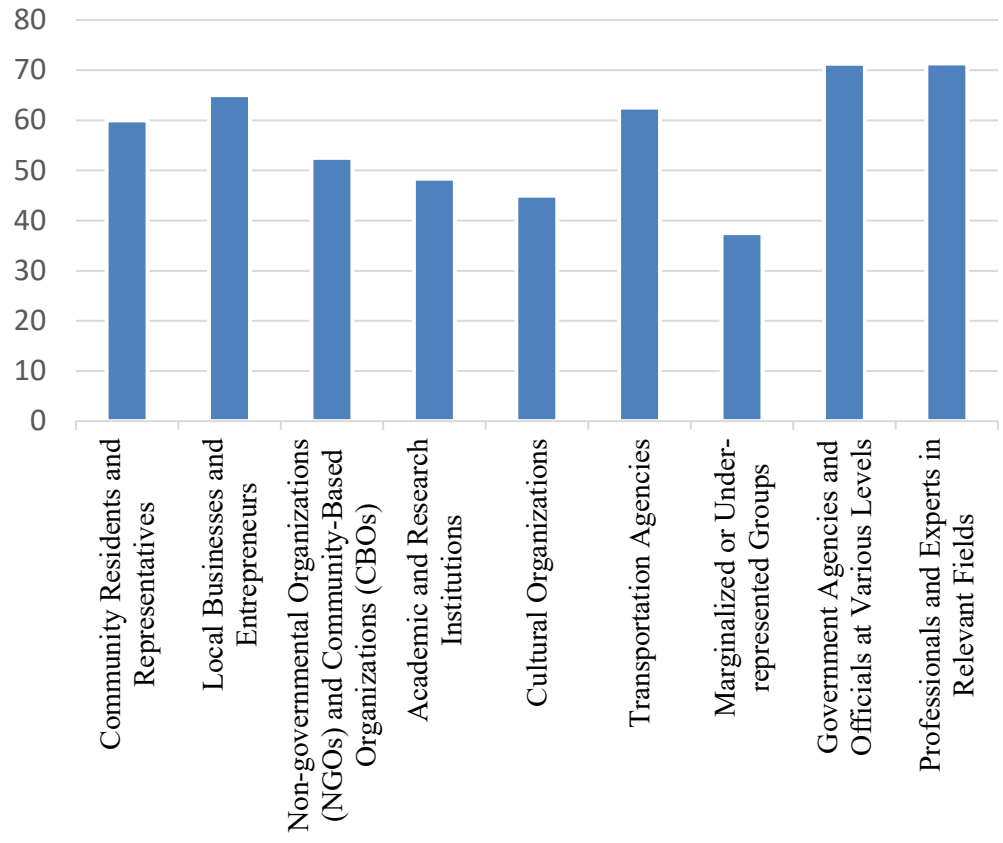

Figure 12 – Engagement of Stakeholders by Planning Firms

Community Residents and Representatives (60%): Firms engage moderately with community residents; nevertheless, increased proactive involvement is essential to effectively integrate their perspectives into the planning process.

Local Businesses and Entrepreneurs (65%): Engagement with local enterprises is moderate; nonetheless, enhancing engagement could foster economic development in designated regions.

Non-governmental Organizations (NGOs) (55%): Companies express dissatisfaction with their interactions with NGOs, indicating a necessity for enhanced collaboration to elevate social and environmental results.

Academic and Research Institutions (60%): Engagement is moderate; however, augmenting partnerships with these institutions may yield more research-driven and innovative planning solutions.

Cultural Organizations (45%): Firms express dissatisfaction with their interaction with cultural organizations, highlighting the necessity for enhanced incorporation of cultural viewpoints to safeguard local history in urban development.

Transportation Agencies (60%): The engagement with transportation agencies is moderate; however, enhancing this relationship could facilitate the integration of transportation solutions into urban planning.

Marginalized or Under-Represented Groups (40%): Companies express dissatisfaction with their interactions with marginalized groups, underscoring a significant deficiency in achieving equality and inclusion in planning results.

Government Agencies and Officials (70%): Companies exhibit moderate success in engaging governmental entities; nonetheless, enhanced collaboration could facilitate improved alignment with regulatory frameworks and public policy.

Professionals and Experts (65%): Engagement with professionals and experts is moderate; nonetheless, enhancing this interaction could yield more robust technical assistance for planning endeavors.

Although companies demonstrate modest success in engaging with government

agencies, corporations, and professionals, substantial deficiencies exist in their interactions with cultural organizations, marginalized communities, and non-governmental organizations (NGOs). Focusing on these areas will result in more inclusive, sustainable, and community-oriented planning outcomes.

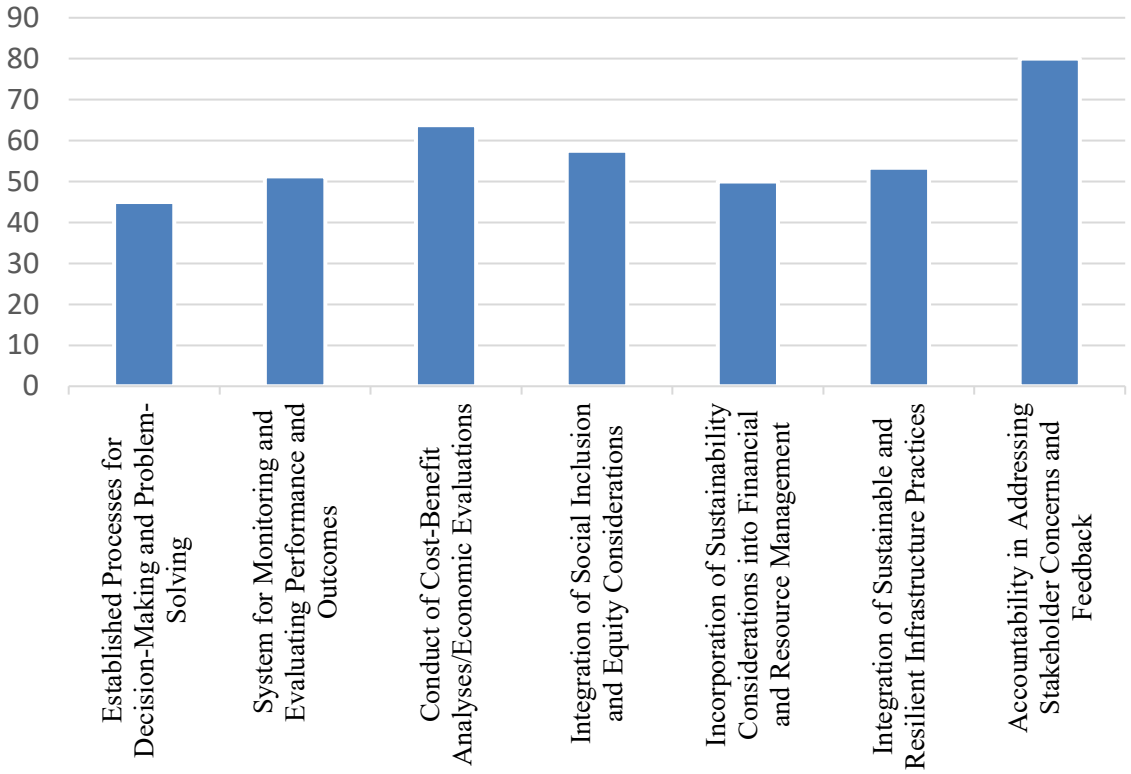

Figure 13 – Comprehensive Governance, Sustainability and Accountability Framework

Established Processes for Decision-Making and Problem-Solving (50%): Companies express diminished satisfaction with their decision-making processes, highlighting the necessity for more defined and systematic frameworks to enhance governance.

System for Monitoring and Evaluating Performance (55%): Companies exhibit diminished satisfaction with their monitoring systems, indicating that although such systems are in place, enhanced tracking and feedback mechanisms are necessary to optimize results.

Conduct of Cost-Benefit Analyses (65%): Companies engage somewhat in economic evaluations; however, more thorough assessments could enhance decision-making and sustainability results.

Integration of Social Inclusion and Equity Considerations (50%): Companies express dissatisfaction with their emphasis on social inclusion and equity, underscoring the necessity

for more robust strategies to prioritize these domains.

Incorporation of Sustainability into Financial Management (55%): Companies are somewhat integrating sustainability into financial planning; however, a more cohesive alignment between financial and sustainability objectives is necessary.

Integration of Sustainable Infrastructure Practices (50%): Companies express dissatisfaction with their incorporation of sustainable infrastructure practices, highlighting the necessity for enhanced planning in this domain.

Accountability in Addressing Stakeholder Concerns (70%): Companies exhibit moderate success in ensuring accountability for stakeholder concerns; nonetheless, there is potential for enhancement in these procedures.

The data indicates moderate effectiveness in stakeholder accountability and cost-benefit assessments; however, critical areas such as decision-making, performance monitoring, social inclusion, and sustainability integration necessitate enhancement. Companies should prioritize the improvement of governance structures, intensify social equality considerations, and more effectively integrate financial planning with sustainability objectives.

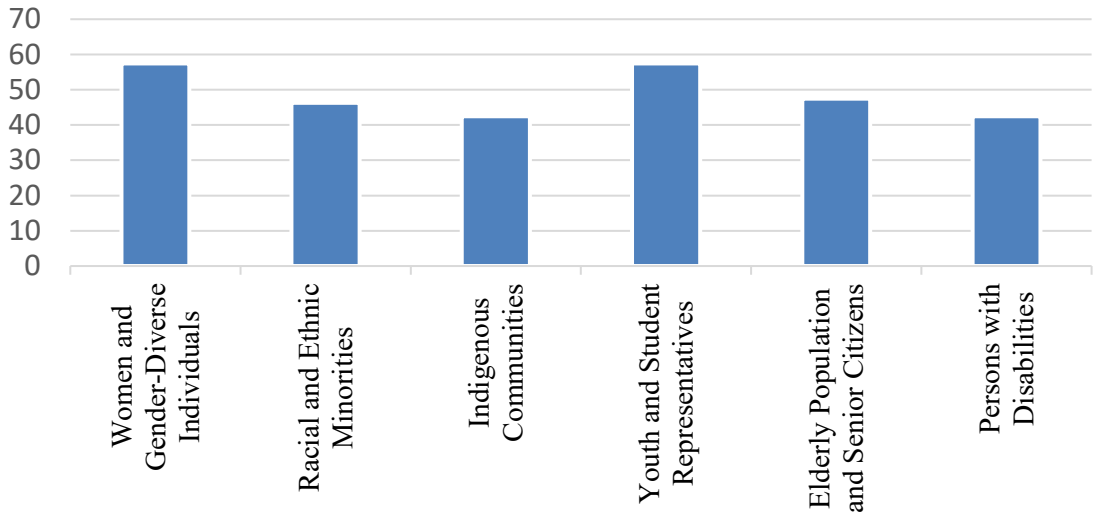

Figure 14 – Comprehensive Inclusive Representation of Marginalized & Diverse Groups

Women and Gender-Diverse Individuals (55%): Organizations exhibit diminished satisfaction with the inclusion of women and gender-diverse individuals, highlighting the necessity for enhanced representation in decision-making roles.

Racial and Ethnic Minorities (50%): Engagement with racial and ethnic minorities is modest but requires enhancement to guarantee substantial inclusion in planning processes.

Indigenous Communities (50%): Companies express dissatisfaction with their involvement with indigenous communities, indicating a necessity for improved incorporation of their distinct needs and viewpoints.

Youth and Student Representatives (60%): Engagement with youth and student representatives is moderate, although there exists potential to enhance their involvement for improved integration of their perspectives.

Elderly Population and Senior Citizens (50%): Companies exhibit modest success in engaging the elderly demographic; nevertheless, more focused actions are required to adequately meet their planning requirements.

Persons with Disabilities (45%): Companies express dissatisfaction with their interactions with individuals with disabilities, underscoring a considerable deficiency in guaranteeing accessibility and equity in planning procedures.

The data indicates that, although there is some engagement with youth, women, and marginalized groups, substantial enhancements are required to achieve genuine inclusivity, especially for individuals with disabilities, the elderly, and indigenous populations. Planning businesses must intensify their endeavors to guarantee that all perspectives are included in decision-making, fostering more fair and accessible urban environments.

4.3 Social Dimension

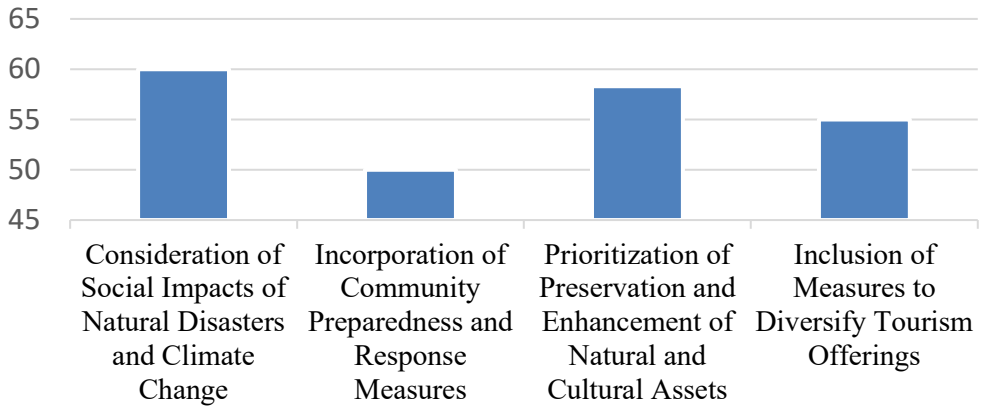

Figure 15 – Resilience, Sustainability, and Cultural Preservation in Community Planning

Women and Gender-Diverse Individuals (55%): Organizations express dissatisfaction with the representation of women and gender-diverse individuals, highlighting the necessity for enhanced participation in planning and decision-making processes.

Racial and Ethnic Minorities (50%): Engagement with racial and ethnic minorities is modest but requires enhancement to ensure these groups are more significantly incorporated in planning.

Indigenous Communities (50%): Companies express dissatisfaction with their involvement with indigenous communities, indicating a necessity to more effectively address their special requirements in project development.

Youth and Student Representatives (60%): Engagement with youth and student representatives is moderate, indicating potential for enhanced involvement to more effectively integrate their viewpoints into planning.

Elderly Population and Senior Citizens (50%): Firms exhibit limited success in engaging the elderly population, necessitating more specialized initiatives to fully serve their demands in urban planning.

Persons with Disabilities (45%): Organizations express dissatisfaction with their involvement of individuals with disabilities, underscoring a considerable deficiency in guaranteeing accessibility and equity in planning procedures.

The data indicates moderate engagement with youth and certain underrepresented groups; however, substantial enhancements are necessary to guarantee inclusion. Individuals with impairments, the elderly, and indigenous populations are notably underrepresented. Planning businesses must intensify their endeavors to develop more egalitarian, accessible, and inclusive urban environments by incorporating varied perspectives into decision-making processes.

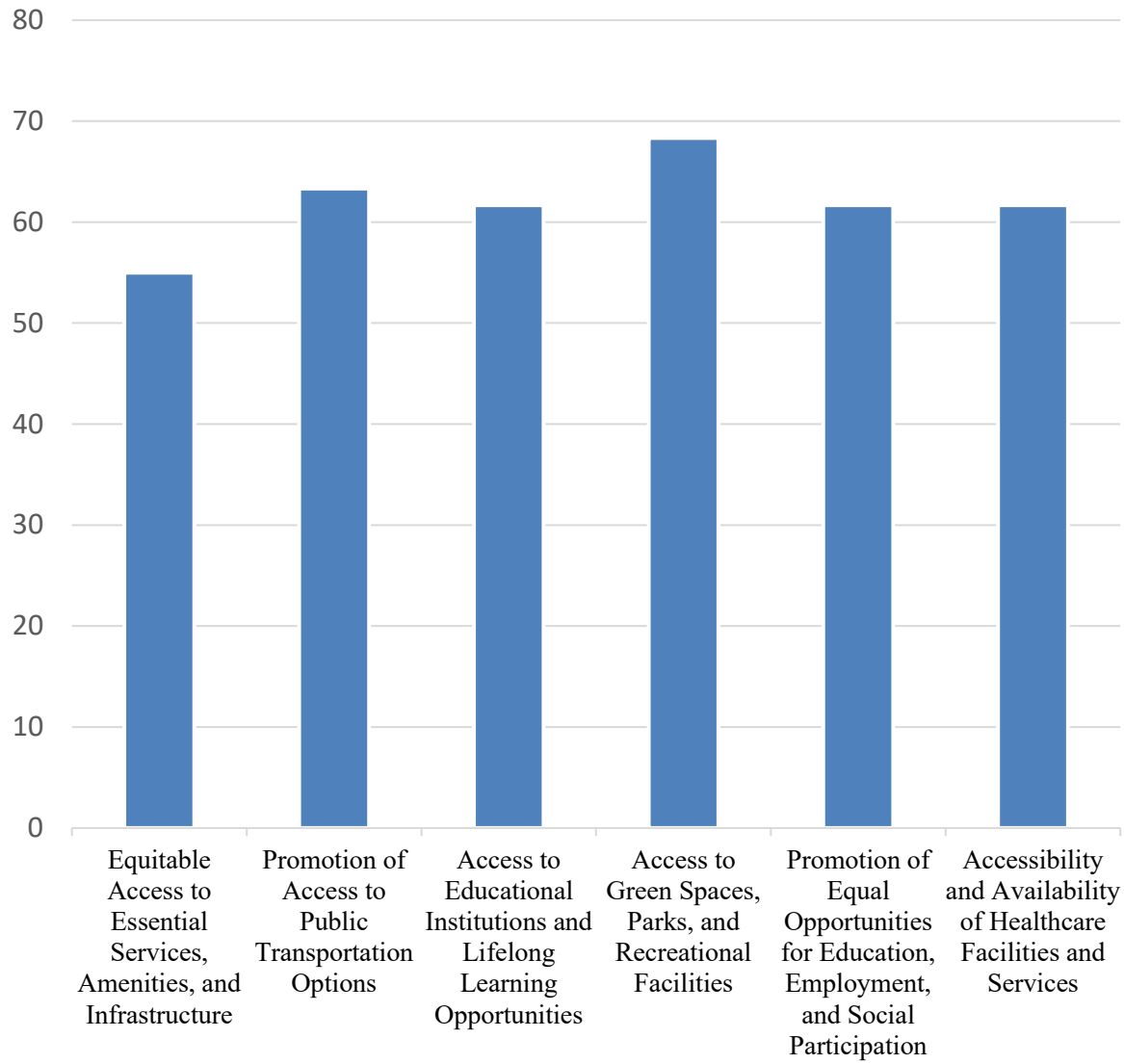

Figure 16 – Ensuring Equitable Access to Services, Opportunities, and Infrastructure

Equitable Access to Essential Services (55%): Companies exhibit diminished satisfaction over the provision of equitable access to key services. Increased efforts are required to enhance access to essential infrastructure and services for excluded communities.

Promotion of Public Transportation Access (65%): Companies exhibit moderate progress in facilitating public transportation access, but broadening options and augmenting accessibility could advantage all citizens, particularly marginalized groups.

Access to Educational Institutions (60%): Companies offer limited access to educational opportunities; nevertheless, improving infrastructure and fostering inclusive learning settings could augment opportunities for various populations.

Access to Green Spaces and Recreational Facilities (60%): Companies moderately

facilitate access to green spaces; however, enhancing access, particularly in underprivileged regions, could improve community well-being.

Promotion of Equal Opportunities (60%): Organizations exhibit moderate success in advancing equal chances in education, employment, and social engagement. Enhancing these initiatives could promote increased inclusivity and participation.

Access to Healthcare Facilities (60%): Companies moderately facilitate access to healthcare services; nonetheless, enhancing infrastructure and increasing availability in underserved regions will provide improved public health results.

The data indicates reasonable advancement in enhancing access to transportation, education, green spaces, and healthcare; however, intensified efforts are required to guarantee fair access to critical services. Enhancing infrastructure and addressing excluded populations could substantially advance social inclusion, community welfare, and equity in urban development.

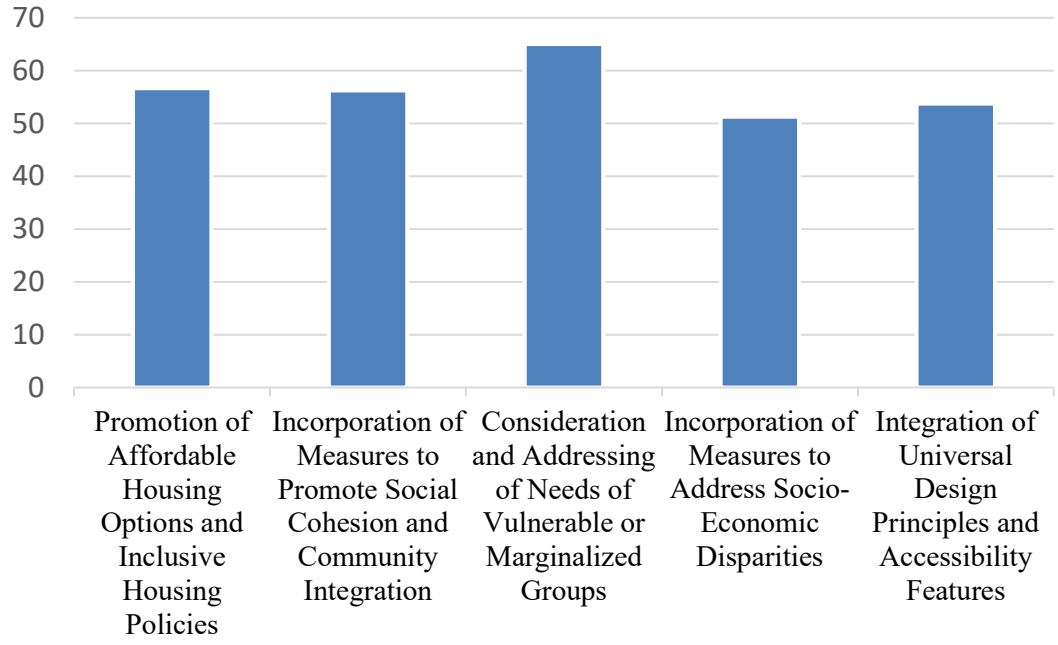

Figure 17 – Fostering Inclusive, Affordable, and Equitable Communities

Promotion of Affordable Housing and Inclusive Policies (55%): Companies express dissatisfaction with the current activities aimed at promoting affordable housing and inclusive policies, highlighting the necessity for more focused strategies to ensure housing accessibility across all income brackets.

Social Cohesion and Community Integration (55%): Initiatives to promote social cohesion and community integration exist; however, their effectiveness is incomplete. Enhanced community engagement activities could fortify social connections and outcomes.

Addressing Needs of Vulnerable Groups (65%): Companies exhibit moderate effectiveness in meeting the requirements of vulnerable populations; nonetheless, there exists potential for enhanced engagement to guarantee comprehensive assistance in planning initiatives.

Addressing Socioeconomic Disparities (50%): Companies express dissatisfaction with initiatives aimed at mitigating socioeconomic gaps, indicating a necessity for more robust policies to guarantee equity among various socioeconomic groups.

Integration of Universal Design and Accessibility (55%): Companies are partially incorporating accessibility elements; nevertheless, a stronger focus on universal design is necessary to improve inclusion and community equality.

The data indicates moderate effectiveness in meeting the requirements of vulnerable populations; nonetheless, critical areas such as affordable housing, social cohesion, and the reduction of socioeconomic inequities require enhancement. Planning firms must prioritize the formulation of robust policies for affordability, accessibility, and equity to foster more inclusive and sustainable communities.

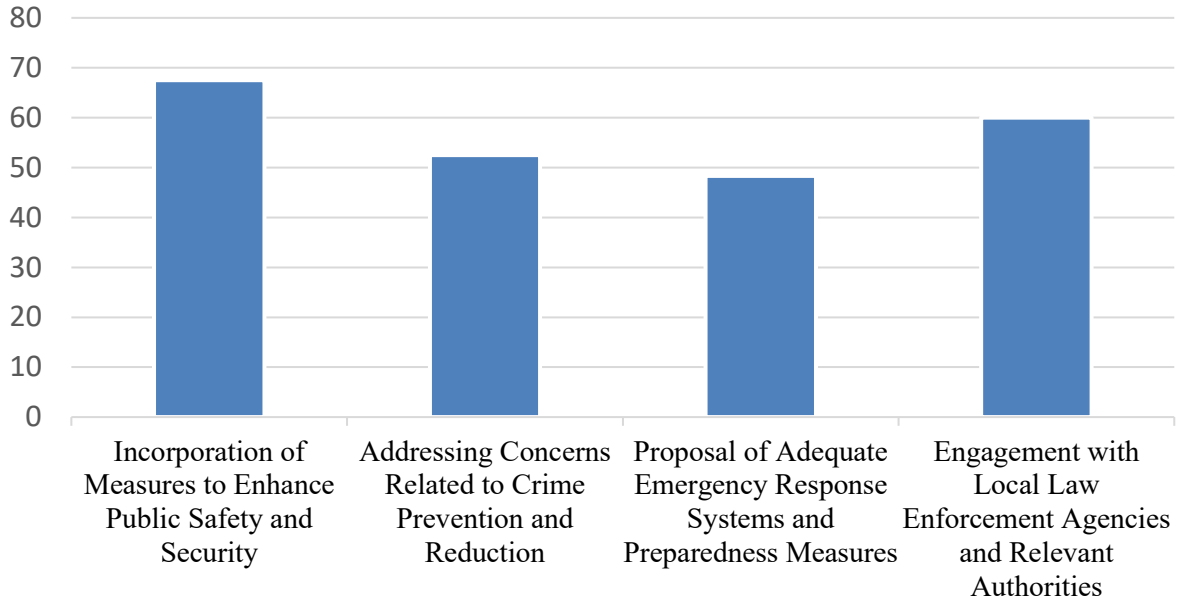

Figure 18 – Enhancing Public Safety, Security, and Emergency Preparedness

Incorporation of Public Safety and Security Measures (70%): Companies exhibit modest success in embedding public safety into projects, although there exists potential for enhancement to attain greater satisfaction.

Addressing Crime Prevention and Reduction (55%): Businesses express diminished satisfaction with initiatives aimed at crime prevention and reduction, highlighting the necessity for more focused tactics to improve community safety.

Emergency Response Systems and Preparedness (50%): Companies express dissatisfaction with emergency preparedness, indicating that existing response systems are insufficient and require enhanced planning and resources for increased safety.

Engagement with Law Enforcement and Authorities (60%): Firms cooperate modestly with local law enforcement; nonetheless, enhanced cooperation could facilitate the incorporation of security measures into urban planning.

Planning businesses exhibit moderate success in integrating public safety and security measures; however, greater emphasis is required on crime prevention and emergency preparedness. Fortifying collaborations with law enforcement and improving emergency response systems may result in safer, more resilient communities.

4.4 Economic Dimension

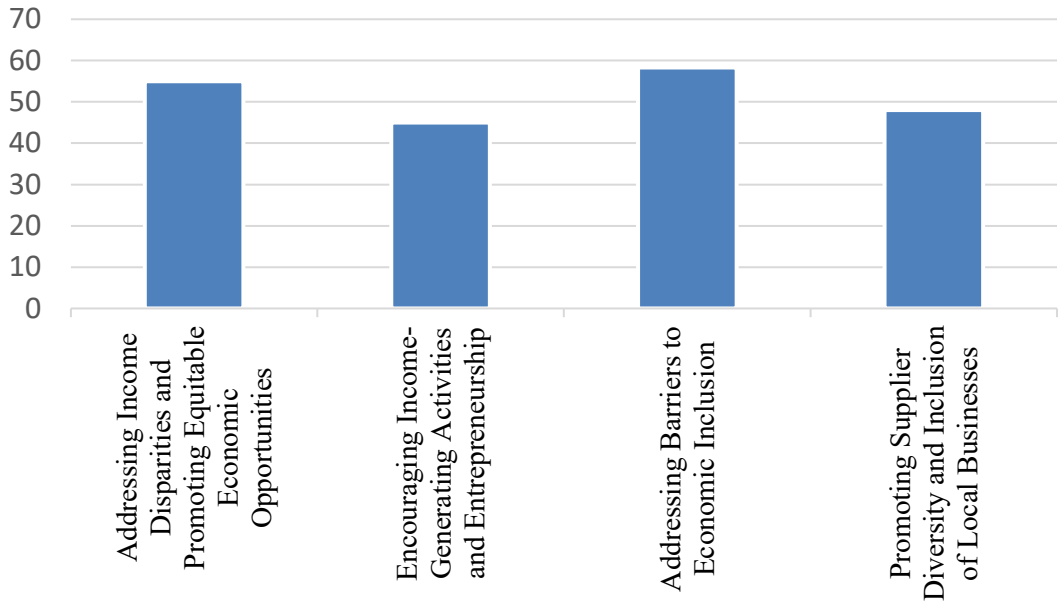

Figure 19 – Promoting Economic Equity, Inclusion, and Local Entrepreneurship

Addressing Income Disparities and Promoting Equitable Economic Opportunities (55%): Companies express diminished satisfaction with initiatives aimed at mitigating income disparities and fostering equitable possibilities, signifying a necessity for more robust actions to tackle economic imbalances.

Encouraging Income-Generating Activities and Entrepreneurship (50%): Companies express dissatisfaction with initiatives aimed at fostering entrepreneurship and income-generating activities, indicating a need for enhancement through more focused programs and incentives.

Addressing Barriers to Economic Inclusion (60%): Firms have moderate effectiveness in overcoming barriers to economic inclusion; nonetheless, additional efforts are necessary to improve economic participation for excluded groups.

Promoting Supplier Diversity and Inclusion of Local Businesses (50%): Companies exhibit diminished satisfaction with the promotion of supplier diversity and the participation of local businesses, indicating a necessity for increased emphasis on incorporating local enterprises and varied suppliers into strategic planning.

Although companies are achieving incremental advancements in fostering economic inclusion, substantial deficiencies persist in mitigating income inequality, facilitating entrepreneurship, and enhancing supplier diversity. Enhancing programs to assist local enterprises and entrepreneurs, coupled with more focused strategies to tackle economic disparities, will promote a more inclusive and fair economic landscape in communities.

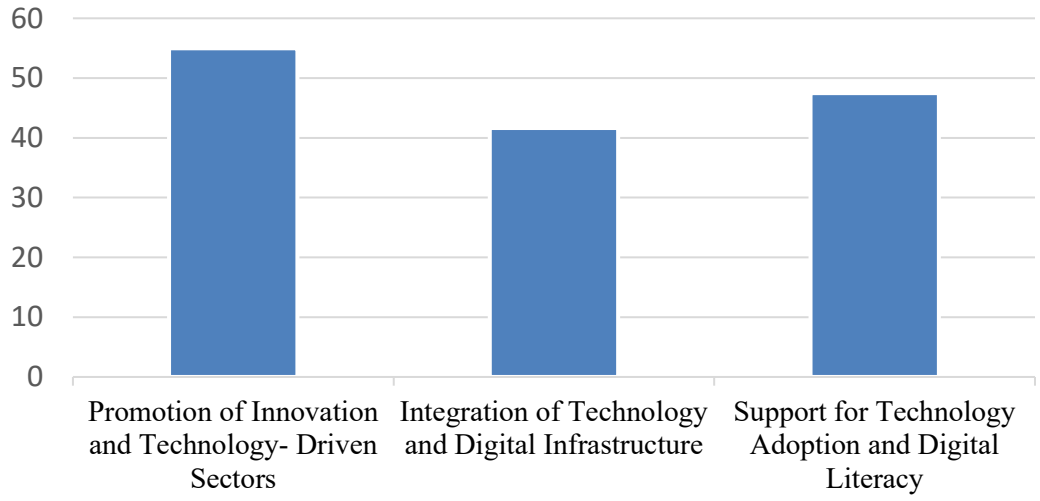

Figure 20 – Advancing Innovation and Digital Transformation

Promotion of Innovation and Technology-Driven Sectors (55%): Companies express diminished satisfaction regarding their initiatives to advance innovation and technology-driven sectors, signifying a necessity for more effective ways to cultivate innovation and facilitate technology adoption.

Integration of Technology and Digital Infrastructure (50%): Companies express dissatisfaction with the integration of digital infrastructure, indicating that existing initiatives are insufficiently advanced. Enhanced investment in technology infrastructure is essential to optimize community advantages.

Support for Technology Adoption and Digital Literacy (55%): Companies exhibit diminished satisfaction with assistance for technology adoption and digital literacy, indicating a necessity for more extensive programs and broader access to technological resources.

Although companies are advancing in fostering innovation and digital transformation, their initiatives are not entirely optimized. Targeted actions are essential to augment digital literacy, expand technological infrastructure, and bolster technology-driven sectors. By enhancing support for innovation and augmenting expenditures in digital infrastructure, companies can more effectively equip communities for forthcoming technological progress.

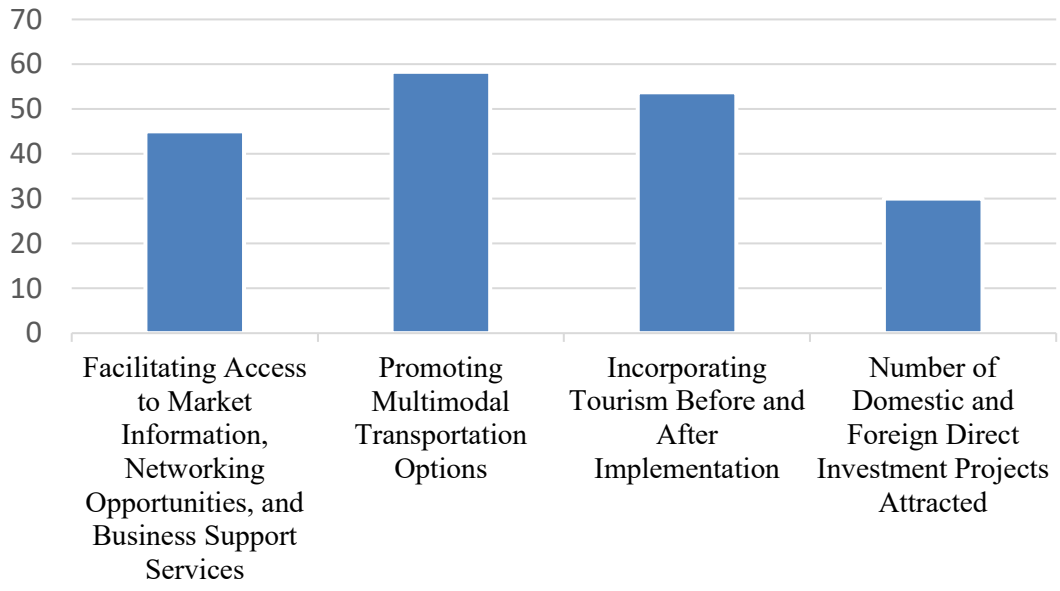

Figure 21 – Enhancing Economic Connectivity, Investment, and Market Access

Facilitating Access to Market Information, Networking, and Business Support Services (50%): This score is categorized as less satisfactory, suggesting that although some

initiatives exist to enhance access to market information and networking opportunities, they are not entirely effective. Enhanced business support services and robust networking platforms could facilitate improved market access and business expansion.

Promoting Multimodal Transportation Options (65%): Firms are moderately successful in promoting diverse transportation options, but expanding multimodal systems further could improve connectivity and economic growth.

Incorporating Tourism Before and After Implementation (60%): This score, indicative of the average category, implies that planning firms exhibit modest success in advocating for varied transportation alternatives. Although advancements are occurring, there exists an opportunity to develop multimodal transportation networks further to improve connectivity.

Attracting Domestic and Foreign Investment (45%): Companies express dissatisfaction with their capacity to secure investment, underscoring the necessity for more focused strategies and incentives to entice both domestic and foreign investors.

The data indicates moderate progress in advancing multimodal transportation and including tourism in planning. Nonetheless, enhancement is required to promote market access, provide company support, and attract investment. Enhancing transportation networks, augmenting business support services, and formulating targeted investment strategies would foster greater economic connectedness and growth.

4.5 Cultural Dimension

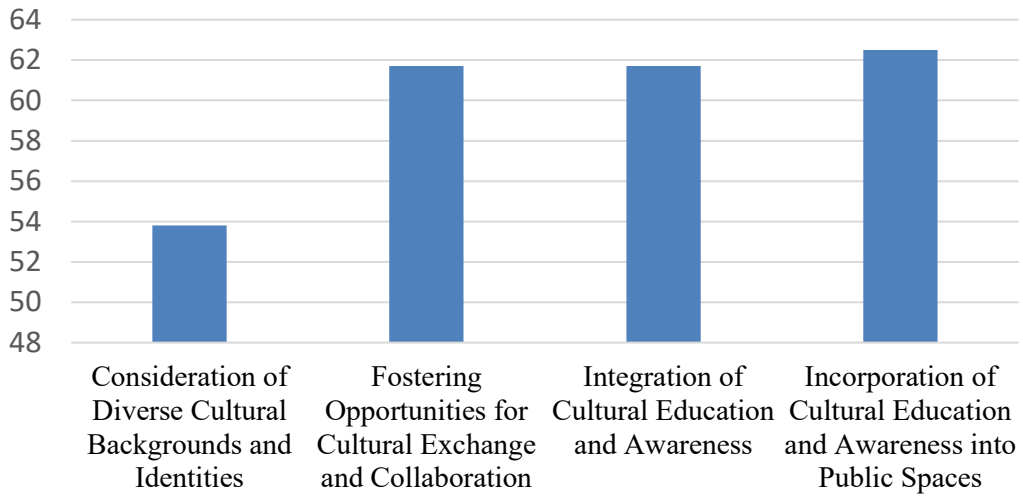

Figure 22 – Promoting Cultural Diversity, Exchange and Awareness

Consideration of Diverse Cultural Backgrounds and Identities (52%): Organizations express diminished satisfaction with their initiatives to incorporate multiple cultural backgrounds, highlighting the necessity for a more focused integration of varied perspectives in strategic planning.

Fostering Opportunities for Cultural Exchange and Collaboration (60%): Companies exhibit moderate success in advancing cultural exchange; nonetheless, enhancing these initiatives could further bolster community cohesiveness and engagement.

Integration of Cultural Education and Awareness (60%): Organizations somewhat implement cultural education; however, enhanced programs could augment cultural comprehension and awareness in planning initiatives.

Incorporation of Cultural Education into Public Spaces (62%): Companies are moderately effective in fostering cultural awareness in public areas; nonetheless, augmenting the cultural inclusivity of these spaces could enhance community-wide cultural consciousness.

The data indicates moderate progress in promoting cultural exchange and integrating cultural education. However, there remains potential for enhancement. Organizations should prioritize the integration of varied cultural backgrounds in planning and the enhancement of public areas to embody cultural inclusion. Enhancing cultural education initiatives and fostering increased chances for cultural collaboration would bolster community cohesion and cultural representation.

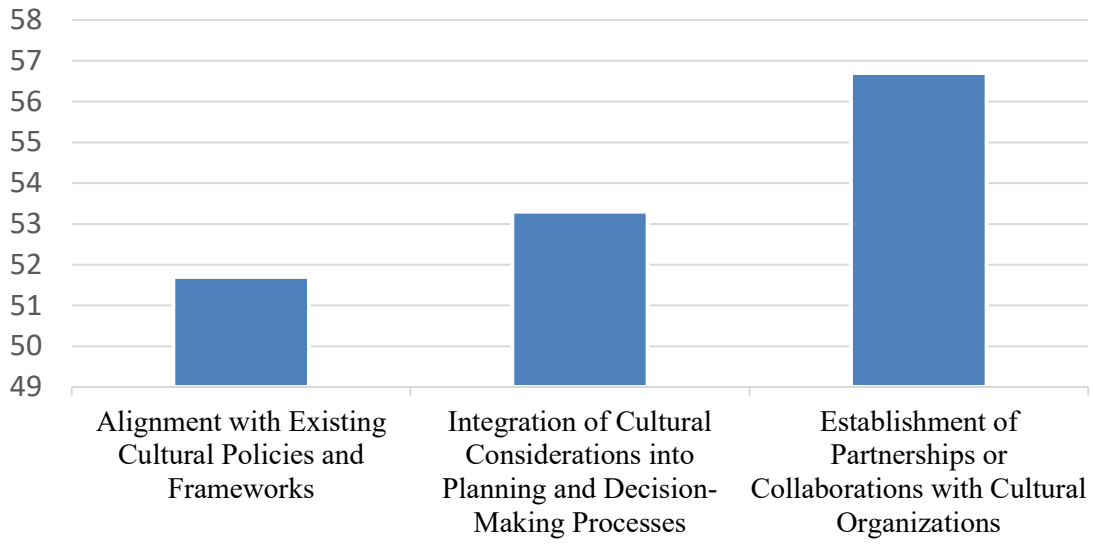

Figure 23 – Cultural Integration and Collaboration in Urban Planning

Alignment with Existing Cultural Policies and Frameworks (50%): Companies express diminished satisfaction regarding their alignment with cultural policies, highlighting the necessity for enhanced initiatives to ensure urban development adheres to recognized cultural frameworks.

I*ntegration of Cultural Considerations into Planning and Decision-Making (54%):* Cultural elements are somewhat incorporated into planning; nevertheless, enhanced integration into decision-making processes is essential for achieving more culturally inclusive outcomes.

Establishment of Partnerships with Cultural Organizations (57%): Companies have achieved moderate advancement in collaborating with cultural organizations; however, these partnerships might be enhanced to promote more culturally attuned urban planning.

The data indicates that although there are attempts to integrate cultural factors into urban planning, further efforts are required. Enhancing alignment with cultural policies, augmenting the incorporation of cultural elements in decision-making, and fostering robust connections with cultural groups will result in urban developments that are more culturally inclusive and representative.

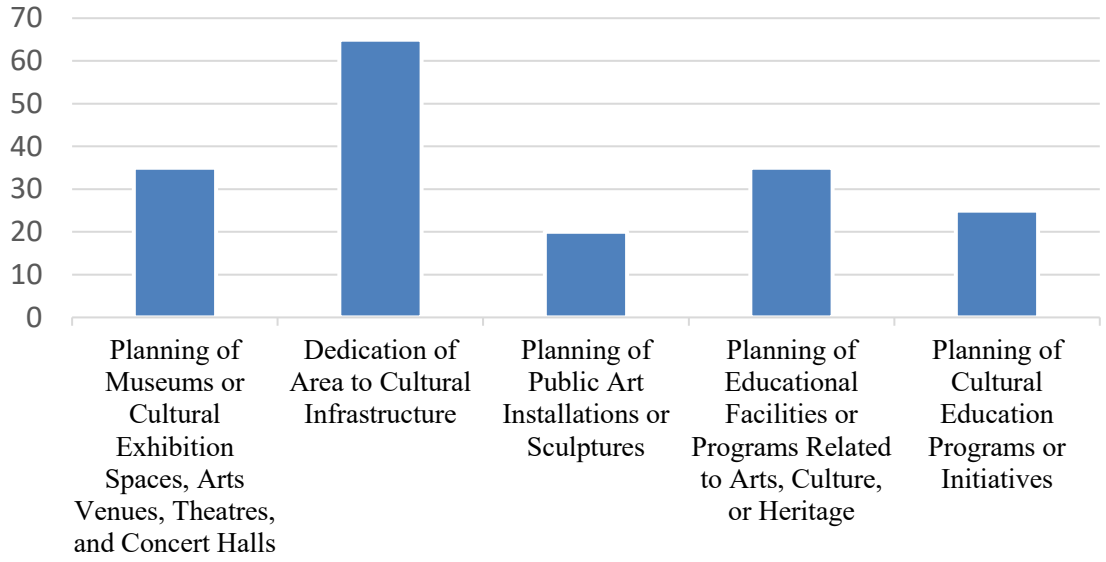

Figure 24 – Development of Cultural Infrastructure and Educational Initiatives

Planning of Museums or Cultural Exhibition Spaces, Arts Venues, Theatres, and Concert Halls (45%): Companies express dissatisfaction with the planning of cultural spaces, highlighting the necessity for more emphasis on creating accessible and advantageous venues for the community.

Dedication of Area to Cultural Infrastructure (65%): Companies exhibit reasonable success in allocating areas for cultural infrastructure; nonetheless, enhancing these initiatives could bolster cultural representation and accessibility.

Planning of Public Art Installations or Sculptures (35%): Firms express significant dissatisfaction with the incorporation of public art in planning, indicating a lost potential to enrich communal areas with art that embodies local culture.

Planning of Educational Facilities or Programs Related to Arts, Culture, or Heritage (50%): Companies exhibit diminished satisfaction with cultural education programs, indicating the necessity to enhance these activities to promote increased cultural knowledge and community involvement.

Planning of Cultural Education Programs or Initiatives (45%): Organizations express dissatisfaction with their planning of cultural education programs, highlighting the necessity for more focused initiatives to enhance public participation in the arts and culture.

The data indicates moderate advancement in allocating sites for cultural infrastructure, yet substantial deficiencies persist in the planning of cultural spaces, public art, and educational initiatives. Augmenting initiatives in these domains will result in more culturally dynamic communities, improved public places, and heightened involvement with arts and heritage.

4.6 Institutional Dimension

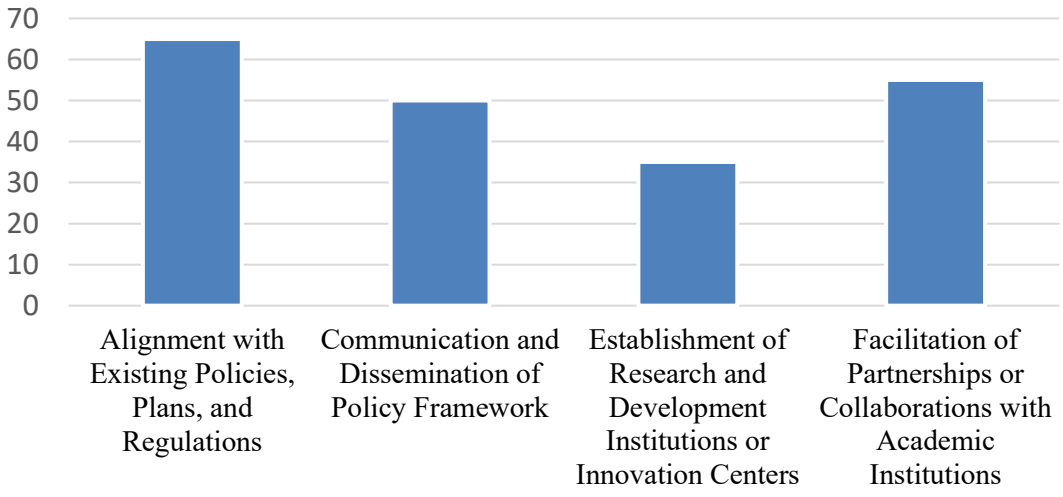

Figure 25 – Policy Alignment, Governance, and Institutional Collaboration

Alignment with Existing Policies, Plans, and Regulations (65%): Firms exhibit

moderate success in aligning their initiatives with current policies; nonetheless, improved alignment with policy frameworks could bolster governance and boost urban planning results.

Communication and Dissemination of Policy Framework (55%): Companies express dissatisfaction with policy communication initiatives, underscoring the necessity for more transparent dissemination and communication to enhance stakeholder comprehension and adherence.

Establishment of Research and Development Institutions or Innovation Centers (50%): Companies express dissatisfaction with policy communication initiatives, underscoring the necessity for more transparent dissemination and communication to enhance stakeholder comprehension and adherence.

Facilitation of Partnerships or Collaborations with Academic Institutions (60%): Companies have moderate effectiveness in establishing partnerships with academic institutions; nonetheless, augmenting these connections could provide a more research-driven, evidence-based strategy.

The data indicates moderate effectiveness in policy alignment and collaboration with academic institutions; nonetheless, deficiencies persist in policy communication and the establishment of innovation centers. Enhancing these domains will result in superior governance, heightened stakeholder comprehension, and more research-driven urban development methodologies.

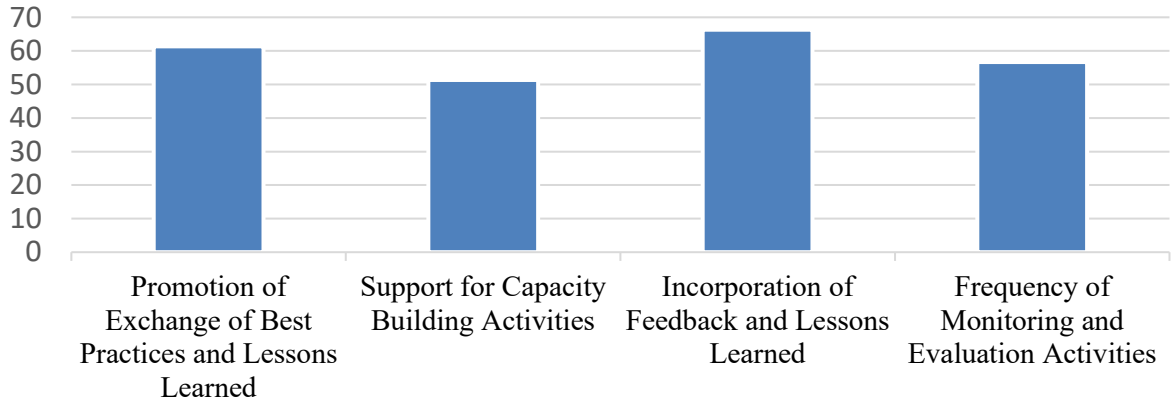

Figure 26 – Continuous Improvement through Knowledge Sharing, Capacity Building, and Stakeholder Engagement

Promotion of Exchange of Best Practices and Lessons Learned (60%): Companies exhibit modest success in fostering knowledge sharing; nevertheless, more systematic activities could enhance the distribution of best practices among stakeholders.

Support for Capacity Building Activities (55%): Companies express diminished satisfaction with capacity-building initiatives, underscoring the necessity to enhance training and development programs to bolster stakeholder competencies in project planning.

Incorporation of Feedback and Lessons Learned (65%): Companies exhibit moderate success in assimilating input and lessons into the planning process; nonetheless, enhancing feedback channels could facilitate continuous development.

Frequency of Monitoring and Evaluation Activities (60%): Companies exhibit modest success in executing monitoring and evaluation; nonetheless, enhanced consistency and comprehensiveness in these processes could improve decision-making in the long term.

The data indicates modest success in facilitating information exchange and integrating feedback; nonetheless, there is a necessity to enhance capacity-building programs and monitoring operations. Enhancing these domains will promote ongoing improvement, superior decision-making, and more efficient stakeholder engagement in urban planning initiatives.

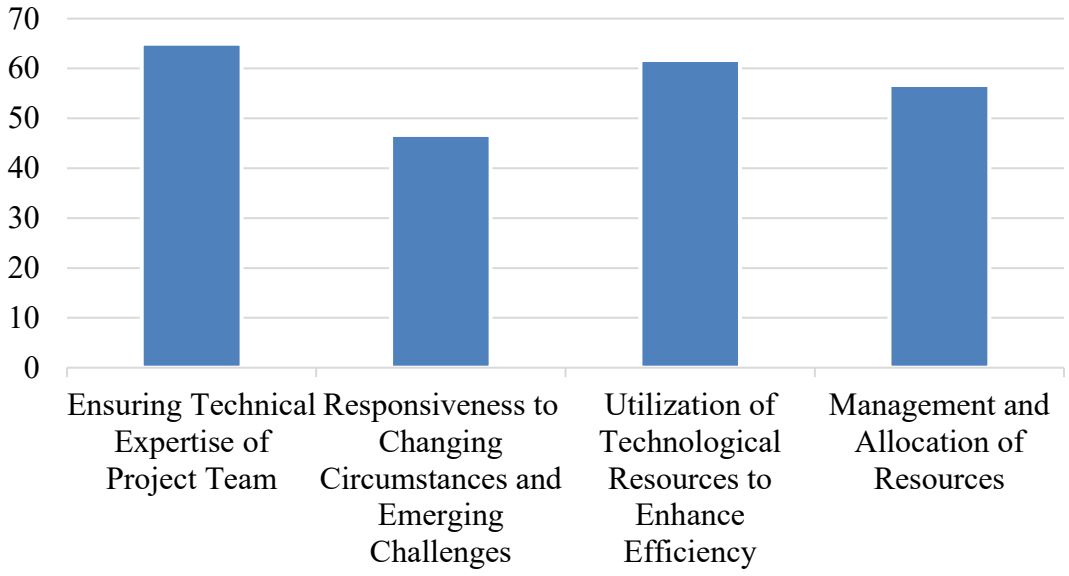

Figure 27 – Efficient Resource Management, Technical Expertise, and Project Sustainability

Ensuring Technical Expertise of Project Team (65%): Organizations exhibit moderate effectiveness in guaranteeing that their teams have requisite technical abilities; however,

supplementary training and professional development could enhance their knowledge further.

Responsiveness to Changing Circumstances and Emerging Challenges (50%): Companies express dissatisfaction with their flexibility, highlighting the necessity for more agile project management strategies to effectively address unexpected obstacles.

Utilization of Technological Resources to Enhance Efficiency (60%): Organizations exhibit modest effectiveness in leveraging technology to augment efficiency; however, the adoption of new technologies and the optimization of existing resources might significantly enhance production.

Management and Allocation of Resources (60%): Companies exhibit modest proficiency in managing resources but might improve sustainability and efficiency by refining resource allocation procedures.

The data indicates moderate success in securing technical talent and employing technology. However, there remains potential for enhancement in flexibility and resource management. Through the enhancement of training, the use of agile approaches, and the optimization of resources, planning firms can attain more sustainable and efficient project results.

CHAPTER 5: CONCLUSION AND RECOMMENDATION

5.1 Conclusions

The analysis of the various aspects of sustainability, community engagement, governance, and project management in urban planning projects reveals a mixed performance by planning firms. While there is evidence of moderate success in certain areas, the research finds many critical aspects still require significant improvement to achieve truly sustainable, inclusive, and efficient outcomes. Below is a summary of the findings across different dimensions:

1. Waste Management Practices: While there are moderate efforts in pollution minimization and stakeholder education, firms are very unsatisfied with their ability to set clear waste reduction targets. A stronger focus on waste reduction and innovative technologies is necessary for improving waste management practices.

2. Environmental Sustainability: Firms are the weakest in the area of environmental aspects of planning, especially preserving green spaces and restoring ecosystems. Furthermore, they are heavily reliant on non-renewable energy sources, and efforts to use renewable energy technologies remain underdeveloped. There is a clear need for a stronger focus on environmental sustainability in urban projects.

3. Community Engagement: Engagement with marginalized groups, such as low-income communities, racial minorities, and persons with disabilities, is insufficient. While there is moderate engagement with businesses and local institutions, more targeted efforts are required to ensure inclusive participation from all sectors of society.

4. Lack of Monitoring and Auditing: A significant gap identified is the lack of monitoring during the execution phase of planning projects. Firms very rarely conduct audits to assess the outcomes of previous projects, resulting in missed opportunities to learn from mistakes and improve future planning efforts. Implementing regular audits and evaluations would help identify shortcomings and drive continuous improvement.

5. Cultural Integration: While there are some efforts to integrate cultural elements, such as partnerships with cultural organizations, public art and cultural education programs remain underdeveloped. Enhancing cultural representation in urban planning could lead to more vibrant, inclusive communities.

6. Public Safety and Emergency Preparedness: Public safety measures are moderately integrated, but there is a need to improve crime prevention and emergency response systems. A stronger focus on these aspects could lead to safer and more resilient communities.

7. Economic Connectivity and Local Entrepreneurship: There is moderate success in promoting multimodal transportation and integrating tourism into planning projects. However, efforts to attract domestic and foreign direct investment, support local businesses, and address income disparities are lacking. Strengthening these efforts could lead to better economic development outcomes.

8. Innovation and Digital Transformation: Efforts to promote technological innovation and support digital literacy are present but underdeveloped. Improving the integration of digital infrastructure and fostering innovation-driven sectors could lead to more efficient and forward-looking urban environments.

9. Governance and Policy Alignment: There is moderate alignment with existing policies and regulations, but communication of policy frameworks and the establishment of research institutions remain weak. Enhancing governance practices through better communication and stronger partnerships with academic institutions could drive more informed, research-based urban planning.

10. Resource Management and Technical Expertise: Firms exhibit moderate success in ensuring the technical expertise of their project teams and utilizing technological resources to improve efficiency. However, responsiveness to changing circumstances and resource management needs improvement to ensure sustainable and adaptable project outcomes.

11. Client Education on Sustainability Development Goals (SDGs): Another critical gap is the lack of education and awareness among clients regarding sustainability development goals (SDGs) and their long-term advantages. Many clients are not well-informed about the importance of integrating SDGs into their projects, which hinders progress toward more sustainable and resilient urban development. The clients are only concerned with the approvals of their plans and nothing beyond this phase. Educating clients on the benefits of sustainability will help drive more responsible project decisions and foster long-term positive impacts.

5.2 Recommendations

Based on the analysis of various aspects of sustainability, community engagement, governance, and project management in urban planning, several key recommendations can be made to improve the performance of planning firms and the overall sustainability of their projects. These recommendations address the critical areas where improvement is needed to achieve more efficient, inclusive, and resilient outcomes.

1. Enhance Waste Management Practices: Planning firms should focus on setting clear waste reduction targets and incorporating innovative waste management technologies. This includes educating stakeholders on the importance of waste reduction and ensuring that projects actively contribute to minimizing environmental impact.

2. Prioritize Environmental Sustainability: Efforts should be intensified to preserve green spaces, restore ecosystems, and reduce reliance on non-renewable energy. Planning firms must increase the adoption of renewable energy technologies and focus on integrating sustainability goals in all phases of their projects.

3. Strengthen Community Engagement: Planning firms need to prioritize the inclusion of marginalized groups such as low-income communities, racial minorities, and persons with disabilities in the planning process. Greater efforts should be made to engage all sectors of society and ensure that urban projects are designed to meet the diverse needs of the community.

4. Foster Cultural Integration: More emphasis should be placed on incorporating cultural elements into urban planning, including the development of public art installations, cultural education programs, and partnerships with cultural organizations. This will help create more inclusive, culturally vibrant urban spaces.

5. Improve Public Safety and Emergency Preparedness: Planning firms should invest in stronger crime prevention strategies and more robust emergency response systems. Enhancing these measures will create safer and more resilient communities, particularly in areas prone to natural disasters or other emergencies.

6. Promote Local Economic Development and Entrepreneurship: Firms should work to attract more domestic and foreign investment while providing greater support for local businesses and reducing income disparities. Additionally, fostering local entrepreneurship

through targeted programs and financial incentives will contribute to the economic vitality of the community.

7. Invest in Digital Transformation: Planning firms should improve the integration of digital infrastructure and support for technology-driven sectors. By adopting cutting-edge technological solutions and promoting digital literacy, firms can drive innovation and ensure that urban projects are prepared for the future.

8. Align with Governance and Policy Frameworks: Planning firms need to improve their alignment with existing policies and regulations and foster stronger collaborations with academic and research institutions. Better communication and the establishment of innovation centers can lead to more research-based, informed urban planning practices.

9. Enhance Resource Management and Technical Expertise: Firms should focus on improving resource allocation and management practices to ensure that projects are more sustainable. Additionally, providing ongoing professional development for project teams will help enhance technical expertise and adaptability to changing project demands.

10. Implement Regular Monitoring and Auditing: To improve project outcomes, firms should establish consistent monitoring and auditing mechanisms during and after the execution of projects. Regular audits will help identify areas for improvement, promote continuous learning, and enhance the overall quality of future projects.

11. Educate Clients on Sustainability Development Goals (SDGs): It is crucial for planning firms to educate their clients on the long-term benefits of sustainability and the importance of aligning projects with sustainability development goals (SDGs). By increasing awareness of the advantages of sustainable practices, firms can foster more responsible project decisions that contribute to long-term environmental and social benefits.

In conclusion, planning firms must adopt a more holistic, inclusive, and future-oriented approach to urban development. By addressing the key areas outlined in these recommendations, firms can enhance their performance, contribute to more sustainable urban environments, and create resilient, equitable, and economically vibrant communities. These improvements will not only benefit current projects but also pave the way for future success in achieving sustainability goals and meeting the needs of diverse urban populations.

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ANNEXURES A:

SR. Number: _____

NUST INSTITUTE OF CIVIL ENGINEERING (NICE) - URBAN AND REGIONAL PLANNING

SUSTAINABILITY ASSESSMENT OF MASTER PLANNING PROJECTS IN PAKISTAN.

CONSENT FORM: You are invited to participate in a research survey about the sustainability assessment of master planning projects. Your participation will take approximately 10 minutes. This is regarding MS research. Taking part in this survey is voluntary and the data collected will be kept confidential and research purposes only. If you have any questions or want a copy of a summary of the results of this survey, you can contact on the email address given below.

AHEED NAVEED AHMED aheed.urp20nit@student.nust.edu.pk; THESIS SUPERVISOR: DR. ABDUL WAHEED

Company/Firm Name: _____

Environmental Dimension:

Please answer the following questions based on a scale of 1 to 5, with 1 indicating the lowest rating, and 5 indicating the highest rating.

Sr #	Question	1	2	3	4	5
1.	How frequently does your planning firm set specific waste reduction targets for master plan projects? Rate "frequency"					
2.	How often does your planning firm assess the amount of waste generated during master plan projects? Rate "frequency"					
3.	How frequently does your planning firm implement strategies to minimize waste generation during the design and construction phases of master plan projects? Rate "frequency"					
4.	How often does your planning firm collaborate with waste management partners or service providers to optimize waste diversion and recycling practices in master plan projects? Rate "frequency"					
5.	How frequently does your planning firm educate project stakeholders (clients, contractors, etc.) about waste reduction practices and their environmental benefits? Rate "frequency"					
6.	How frequently does your planning firm promote the use of environmentally friendly materials and technologies to minimize degradation effects in master/development plan projects? Rate "frequency"					
7.	How frequently does your planning firm conduct environmental impact assessments or studies to identify potential degradation effects associated with master/development plan projects? Rate "frequency"					
8.	Rate the level of importance your planning firm places on waste reduction in master plan projects.					
9.	Rate the level of satisfaction with waste reduction outcomes achieved by your planning firm in master plan projects.					
10.	Rate the effectiveness of practices proposed by your planning firm in minimizing air pollution and water pollution associated with master/development plan projects.					
11.	Rate the level of collaboration and coordination your planning firm has with environmental agencies or organizations to address degradation effects in master/development plan projects.					
12.	On average, what percentage of construction and demolition waste is proposed to divert from landfill through recycling or other methods in your master plan projects?					
13.	What percentage of materials used in your master plan projects are sourced from recycled or reclaimed sources?					

	☐ Extended Producer Responsibility (EPR)
	☐ Awareness and Education
	☐ Policy and Legislation
	☐ Innovative Technologies
	☐ Circular Economy Practices
	☐ Other (please specify) _____
24.	Which of the following waste reduction strategies does your planning firm prioritize in master plan projects? (Select all that apply)
	☐ Recycling of construction and demolition waste
	☐ Minimization of waste generation through design optimization
	☐ Reuse and repurposing of materials
	☐ Implementation of sustainable procurement practices
	☐ Promotion of composting and organic waste management
	☐ Energy recovery from waste
	☐ Other (please specify) _____

Governance Dimension:

Please answer the following questions based on a scale of 1 to 5, with 1 indicating the lowest rating, and 5 indicating the highest rating.

Sr#	Question Description	1	2	3	4	5
1.	Does your organization have established processes or protocols for decision-making and problem-solving during the master planning process? Rate level of effectiveness					
2.	Does your organization have a system in place for monitoring and evaluating the performance and outcomes of master planning projects? Rate level of effectiveness					
3.	How well does your organization manage potential conflicts of interest or differing opinions among stakeholders during the master planning process? Rate level of effectiveness					
4.	Does your firm conduct cost-benefit analyses or economic evaluations to assess the financial viability and feasibility of proposed interventions in the master plan? Rate extent of analysis					
5.	Do dwellers believe that local authorities prioritize the well-being and interests of the community in the master planning process? Rate level of prioritization.					
6.	How would you rate the level of collaboration and partnership between dwellers and local authorities in the master planning process? Rate level of collaboration					

	☐	Extended Producer Responsibility (EPR)
	☐	Awareness and Education
	☐	Policy and Legislation
	☐	Innovative Technologies
	☐	Circular Economy Practices
	☐	Other (please specify) _____
24.	Which of the following waste reduction strategies does your planning firm prioritize in master plan projects? (Select all that apply)	
	☐	Recycling of construction and demolition waste
	☐	Minimization of waste generation through design optimization
	☐	Reuse and repurposing of materials
	☐	Implementation of sustainable procurement practices
	☐	Promotion of composting and organic waste management
	☐	Energy recovery from waste
	☐	Other (please specify) _____

Governance Dimension:

Please answer the following questions based on a scale of 1 to 5, with 1 indicating the lowest rating, and 5 indicating the highest rating.

Sr#	Question Description	1	2	3	4	5
1.	Does your organization have established processes or protocols for decision-making and problem-solving during the master planning process? Rate level of effectiveness					
2.	Does your organization have a system in place for monitoring and evaluating the performance and outcomes of master planning projects? Rate level of effectiveness					
3.	How well does your organization manage potential conflicts of interest or differing opinions among stakeholders during the master planning process? Rate level of effectiveness					
4.	Does your firm conduct cost-benefit analyses or economic evaluations to assess the financial viability and feasibility of proposed interventions in the master plan? Rate extent of analysis					
5.	Do dwellers believe that local authorities prioritize the well-being and interests of the community in the master planning process? Rate level of prioritization.					
6.	How would you rate the level of collaboration and partnership between dwellers and local authorities in the master planning process? Rate level of collaboration					

	d. Youth and student representatives					
	e. Elderly population and senior citizens					
	f. Persons with disabilities					
14.	How does your firm consider the perspectives and input of future generations in the master planning process? Please rate the extent of consideration					
	a. Students and young people					
	b. Children and adolescents					
	c. Future residents and users of the planned area					
15.	Does your firm actively seek to involve stakeholders with varying economic backgrounds and interests in the master planning process? Please rate your firm's efforts.					
	a. Low-income and marginalized communities					
	b. Business owners and investors					
	c. Developers and construction industry representatives					
	d. Financial institutions and banks					
16.	Do you hold your firm accountable in addressing stakeholder concerns and incorporating feedback?	No	Yes	To Some Extent		

Social Dimension:

Please answer the following questions based on a scale of 1 to 5, with 1 indicating the lowest rating, and 5 indicating the highest rating.

Sr#	Question Description	1	2	3	4	5
1.	To what extent does your master planning project consider the potential social impacts of natural disasters and climate change? Rate level of consideration					
2.	How well does your project incorporate measures to enhance community preparedness and response to natural disasters and climate change-related challenges? Rate level of effectiveness					
3.	How well does your project ensure equitable access to essential services, amenities, and infrastructure for all					

	community members? Rate level of accessibility and availability.					
4.	How effectively does your project consider and address the needs and aspirations of vulnerable or marginalized groups, such as low-income populations, immigrants, and persons with disabilities? Rate level of effectiveness					
5.	Does your project incorporate measures to address socio-economic disparities within the community? Rate level of effectiveness					
6.	How well does your project promote affordable housing options and inclusive housing policies that cater to diverse income groups? Rate level of promotion					
7.	Does your project incorporate measures to promote social cohesion and community integration among diverse social groups? Rate level of incorporation.					
8.	How well does your project promote equal opportunities for education, employment, and social participation within the community? Rate level of promotion					
9.	How well does the master planning project incorporate measures to enhance public safety and security, such as adequate lighting, surveillance systems, and well-maintained infrastructure? Rate level of incorporation.					
10.	To what extent does the master planning project address concerns relate to crime prevention and reduction? Rate level of attention.					
11.	Does the master planning project propose adequate emergency response systems and preparedness measures, such as accessible emergency exits, evacuation plans, and coordination with local emergency services? Rate level of effectiveness					
12.	Does the master planning project engage with local law enforcement agencies and other relevant authorities to address safety and security plans effectively?					
13.	How would you rate the accessibility and availability of healthcare facilities and services within the master planning area? Rate level of accessibility and availability.					
14.	How well does the project ensure access to green spaces, parks, and recreational facilities that contribute to the well-being of residents? Rate level of access.					
15.	How well does the project integrate universal design principles and accessibility features to ensure inclusivity for persons with disabilities and promote their well-being? Rate level of effectiveness					
16.	Does the master planning project promote access to public transportation options that facilitate easy movement within the community? Rate level of effectiveness					
17.	How well does the master planning project ensure access to educational institutions and lifelong learning opportunities within the community? Rate level of access.					
18.	Does the master planning project include measures to diversify tourism offerings and experiences beyond cultural heritage, such as nature-based tourism, culinary experiences, or adventure tourism? Rate level of diversification.					
19.	To what extent does the master planning project prioritize the preservation and enhancement of natural and cultural assets within the community, such as parks, historical sites, and cultural institutions? Level of prioritization.					

SR. Number: _____

NUST INSTITUTE OF CIVIL ENGINEERING (NICE) - URBAN AND REGIONAL PLANNING

Economic Dimension:

Please answer the following questions based on a scale of 1 to 5, with 1 indicating the lowest rating, and 5 indicating the highest rating.

Sr#	Question Description	1	2	3	4	5
1.	How well does the master planning project promote innovation and technology-driven sectors within the project area? Rate level of promotion					
2.	How well integrated the master planning project propose for technology and digital infrastructure within the project area, such as high-speed internet connectivity, smart systems, and digital platforms? Rate level of integration					
3.	To what extent does the master planning project support technology adoption and digital literacy among residents and businesses within the project area? Rate level of support					
4.	How well the master planning project does address income disparities and promote equitable economic opportunities within the project area? Rate level of effort.					
5.	How well does the master planning project encourage income-generating activities and entrepreneurship among individuals from lower-income households within the project area? Rate level of encouragement.					
6.	How effectively master planning project addresses barriers to economic inclusion, such as discrimination, lack of access to resources, or limited networking opportunities? Rate level of effectiveness.					
7.	To what extent does the master planning project promote supplier diversity and inclusion of local businesses in procurement processes? Rate level of promotion.					
8.	How well does the master planning project facilitate access to market information, networking opportunities, and business support services for potential investors within the project area? Rate level of facilitation.					
9.	How well does the master planning project incorporate sustainable and resilient infrastructure practices within the project area? Rate level of incorporation.					
10.	How well does the master planning project promote multimodal transportation options (e.g., public transit, cycling, walking) within the project area? Rate level of promotion.					
11.	How well does the master planning project incorporate tourism within the project area before and after the implementation of the master planning project? Rate level of incorporation.					
12.	How many domestic and foreign direct investment projects have been attracted to the project area as a result of the master planning project? Please provide the total number of investment projects.	_____				

Cultural Dimension:

Please answer the following questions based on a scale of 1 to 5, with 1 indicating the lowest rating, and 5 indicating the highest rating.

Sr#	Question Description	1	2	3	4	5
1.	How well does the master planning project align with existing national, regional, or local cultural policies and					

	frameworks? Rate level of alignment					
2.	How well does the master planning project integrate cultural considerations into the overall planning and decision-making processes? Rate level of integration					
3.	How well does the master planning project establish partnerships or collaborations with cultural organizations, institutions, or agencies to leverage expertise, resources, and networks? Rate level of collaboration					
4.	How well does the master planning project ensure the accessibility and affordability of cultural activities, events, and facilities for all segments of the population? Rate level of consideration					
5.	How well does the master planning project consider the diverse cultural backgrounds and identities of the local population within the project area? Rate level of consideration					
6.	How well does the master planning project foster opportunities for cultural exchange and collaboration between diverse cultural communities within the project area? Rate level of facilitation					
7.	How well does the master planning project integrate cultural education and awareness into the overall planning and development processes? Rate level of integration					
8.	How well does the master planning project incorporate cultural education and awareness into public spaces, signage, and interpretive materials within the project area? Rate level of incorporation					
9.	How many museums or cultural exhibition spaces, arts venues, theatres and concert halls are planned or currently exist within the project area? Please provide the total number.	_____				
10.	What is the total percentage area or square footage dedicated to cultural infrastructure within the project area as part of the master planning project?	_____SFT				
11.	How many public art installations or sculptures are planned or currently exist within the project area? Please provide the total number.	_____				
12.	How many educational facilities or programs related to arts, culture, or heritage are planned or currently exist within the project area? Please provide the total number.	_____				
13.	How many cultural education programs or initiatives are planned within the project area? Please provide the total number.	_____				

Institutional Dimension:

Please answer the following questions based on a scale of level 1 to 5, with 1 indicating the lowest rating, and 5 indicating the highest rating.

Sr#	Question	1	2	3	4	5
1.	How well does the project promote the exchange of best practices and lessons learned with other relevant projects or initiatives? Rate level of promotion.					
2.	How well does the project support capacity building activities to enhance the knowledge and skills of stakeholders involved in the master planning process? Rate level of support.					
3.	How well does the project incorporate feedback and lessons learned into its planning and decision-making processes? Rate "Incorporation"					

SR. Number: _____

NUST INSTITUTE OF CIVIL ENGINEERING (NICE) - URBAN AND REGIONAL PLANNING

4.	How frequently are monitoring and evaluation activities conducted within the project? Rate "frequency"					
5.	How well does the project incorporate stakeholder feedback and input into decision-making processes and project adjustments? Rate "Incorporation"					
6.	How well does the firm ensure that the project team possesses the required technical expertise and knowledge for various aspects of the master planning project? Rate "Sufficiency"					
7.	How well does the project respond to changing circumstances or emerging challenges through adaptive management measures? Rate "Responsiveness"					
8.	How well does the firm utilize technological resources (e.g., GIS, data management systems) to enhance the efficiency and effectiveness of the master planning project? Rate "Utilization"					
9.	How well the firm does manage and allocates resources to different components or phases of the master planning project? Rate "Efficiency"					
10.	How well does the firm ensure the sustainability of resources beyond the project's completion? Rate "Sustainability" of resources					
11.	How well does the project align with existing national, regional, and local policies, plans, and regulations? Rate level of alignment					
12.	How effective is the policy framework in addressing the identified sustainability challenges and objectives of the master planning project? Rate "effectiveness"					
13.	How well does the project communicate and disseminate the policy framework to stakeholders and the wider community? Rate level of communication and dissemination.					
14.	How many research and development (R&D) institutions or innovation centres have been established within the project area as a result of the master planning project? Please provide the total number of institutions or centres.					
15.	Does the project facilitate partnerships or collaborations with academic institutions, research organizations, or think tanks to access and apply relevant research and knowledge?	**NO**		**YES**		
16.	Does the master planning project have a clearly defined governance structure that outlines roles, responsibilities, and decision-making processes?	**NO**		**YES**		