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Civil Engineers' Migration to Highly Urbanized Cities

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Abstract — This study investigates the migration of civil engineers to highly urbanized cities, a phenomenon driven by the pursuit of enhanced career opportunities. As urban centers expand, the demand for skilled engineers to design and manage complex infrastructure projects intensifies. This research examines the career trajectories of civil engineers who have relocated to these dynamic environments, with a specific focus on those originating from Calbayog City, Eastern Visayas, Philippines, and their movement towards cities like Cebu and Manila. The study aims to understand the multifaceted motivations behind this migration, encompassing socio-economic, environmental, and salary-related factors. The results of this research indicate that a significant proportion of migrating engineers experience upward career mobility. Many advances from entry-level positions, such as Site Engineer or Engineering Assistant, to more senior roles, including Project Engineer, Planning Engineer, and Structural Engineer. These advancements are often accompanied by increased responsibilities, exposure to larger-scale projects, and opportunities for specialization. However, the study also reveals that migration does not guarantee career progression for all engineers. A subset of respondents reported experiencing career stagnation or opting to switch careers, highlighting the influence of factors such as employment availability, market competition, and work-life balance on individual career trajectories. In conclusion, while highly urbanized cities offer expanded opportunities for civil engineers, career success is contingent upon a complex interplay of factors. The findings underscore the importance of continuous skill development, adaptability in a competitive labor market, and the need for both government and private sector initiatives to support engineers' professional growth. By understanding the career trajectories of migrating engineers, industries and policymakers can develop targeted strategies to enhance career prospects, foster career stability, and address the challenges associated with engineer migration.

Keywords — civil engineers, migration, urbanization, career growth, occupational mobility

I. Introduction

The rapid trend of global urbanization is reshaping societies and economies at an unprecedented pace. According to the United Nations (2019), it is projected that by 2050, nearly 68% of the global population will reside in urban areas, leading to a surge in the development of megacities, or cities housing over 10 million residents. This explosive growth demands sophisticated and sustainable infrastructure systems, heightening the need for civil engineers who possess the expertise to design, build, and manage complex urban projects (Gonzalez & Wen, 2020; Freire et al., 2022). With urban centers evolving into innovation hubs and economic

powerhouses, the migration of professionals, particularly civil engineers, towards these areas is becoming a critical phenomenon that warrants in-depth analysis.

In the global context, smart city initiatives are increasingly shaping urban development strategies. These initiatives, aimed at enhancing competitiveness and sustainability, are being deployed in both developed and developing countries, including the Philippines (Albino et al., 2015; Bibri, 2021). Civil engineers are at the forefront of these transformations, contributing to fields such as structural design, transportation systems, project management, and quality assurance (Aktan et al., 2021; Singh & Sarkar, 2021). Urban areas offer unparalleled opportunities for civil engineers through large-scale infrastructure projects, access to cutting-edge technologies, and opportunities for specialization and professional growth (Garrido et al., 2021). However, the migration towards urban centers is influenced by a combination of "pull" factors, such as career advancement and higher salaries, and "push" factors, including limited opportunities in rural regions (Gottfried & Reese, 2020).

At the local level, Calbayog City in Eastern Visayas represents a microcosm of this national trend. As a growing economic and educational hub, Calbayog produces a steady stream of young engineers through its universities and colleges (Echaves, 2019). Despite this, the city struggles to retain its engineering talent. Many civil engineers migrate towards larger urban centers like Cebu City or Metro Manila in search of better job prospects, higher salaries, and more sophisticated project opportunities (Philippine Society of Civil Engineers, 2022). This outflow of talent poses significant challenges to local development efforts and underscores the urgent need to understand the nuanced motivations behind engineer migration.

This study is significant because it addresses a critical need to understand the multifaceted motivations influencing civil engineers' migration towards highly urbanized cities. By exploring personal narratives, aspirations, and professional trajectories, this research will provide stakeholders—such as policymakers, industry leaders, and academic institutions—with insights necessary to craft strategies aimed at attracting, retaining, and nurturing engineering talent. Ultimately, these insights contribute to building resilient cities capable of sustaining economic growth and delivering sustainable development in a rapidly urbanizing world.

The study focused on civil engineers who have migrated from Calbayog City, Eastern Visayas, to larger urban centers within the Philippines. It looks into the different reasons why people decide to move, such as job opportunities, career growth, social connections, and their own individual desires. However, it is limited by its geographic scope (focusing on engineers from a single provincial city) and may not have captured the experiences of engineers from other regions. Additionally, the study centered primarily on internal migration within the Philippines rather than international migration.

The study investigated the factors influencing the migration of civil engineers from regional areas to highly urbanized cities, with a specific focus on understanding the interplay

between professional aspirations, socio-economic conditions, and personal motivations, ultimately aiming to provide actionable insights for sustainable urban development and talent retention strategies. While existing literature explored broader patterns of skilled migration and urbanization, few studies examined the lived experiences and personal motivations of civil engineers migrating within the Philippines. Most analyses focused either on macroeconomic trends or generic skilled worker categories without distinguishing the unique role civil engineers play in urban development. This study addresses this gap by integrating economic, professional, and personal narratives to craft a holistic understanding of the civil engineer migration phenomenon, particularly from the perspective of regional cities like Calbayog.

The increasing demand for civil engineers in rapidly growing urban centers necessitates an examination of the factors driving their migration. The study focuses on migration, defined here as the movement of civil engineers from Calbayog City to highly urbanized cities (characterized by large populations, economic activity, and advanced infrastructure, such as Cebu and Manila). This migration is influenced by a combination of socio-economic factors (including job opportunities and career advancement), environmental factors (such as work-life balance and urban amenities), and salaries and benefits (encompassing financial incentives and compensation packages), which collectively shape the decision of civil engineers to relocate.

Review of Literature

This section provides the conceptual framework that guides the study, explaining the key theories and concepts that underpin the research. It integrates the theoretical framework with a review of relevant literature to provide a comprehensive understanding of the factors influencing civil engineers' migration to highly urbanized cities.

Conceptual Literature. Migration is a complex, multidimensional process that integrates individuals into social networks, shaping their access to resources, modes of adaptation, identity construction, and broader life trajectories. Recent scholarship emphasizes that migration is not a one-way movement but an interactive transformation of social, economic, and political relationships across borders (Ryan & D'Angelo, 2018; Paul, 2020). Social networks act both as facilitators and consequences of migration, providing vital support systems that influence decision-making, settlement patterns, and career development opportunities. Migration also reshapes these networks by establishing transnational ties that link migrants to both their origin and destination contexts, ultimately impacting institutions, economies, and nation-states (Bilecen & Lubbers, 2021; Surak, 2018). Recognizing migration as a networked and relational phenomenon is crucial in understanding the mobility of highly skilled professionals, including civil engineers.

The migration of engineers, in particular, reflects the global orientation of their profession and the increasing fluidity of skilled labor markets. Torstendahl (2021) highlights that the mobility of engineers is closely tied to global economic shifts, labor market demands, and prospects for career advancement, factors which encourage migration both internationally and internally toward

urban centers. Complementing this view, Bilecen (2019) emphasizes that career mobility requires intentional alignment with economic conditions and industry trends, suggesting that engineers must remain adaptable to evolving opportunities. Delicado (2020) furthers this argument by illustrating how engineers actively strategize their career moves based on global market conditions and emerging infrastructure needs. Together, these studies indicate that engineer migration is neither spontaneous nor purely opportunistic; it is a calculated response to economic incentives, career growth possibilities, and dynamic labor market structures.

Urbanization acts as a significant pull factor for engineers, offering concentrated employment opportunities, professional networks, and exposure to large-scale infrastructure projects. Debele (2022) asserts that urban environments provide fertile grounds for career development, especially for civil engineers whose expertise is essential for ongoing urban expansion and modernization efforts. Akinyoade and Uche (2021) add that urban migration among skilled professionals is driven by both push factors, such as limited opportunities in rural areas, and pull factors including better wages, diverse professional experiences, and access to technological advancements. The dense clustering of industries and projects in cities creates a vibrant ecosystem where civil engineers can continuously upgrade their skills and remain competitive in the global workforce. Thus, urban migration is not merely a response to unemployment or underemployment but an active pursuit of professional enhancement.

The governance of migration has shifted dramatically in recent years, moving beyond traditional state-centered models to a more decentralized, market-driven approach. Surak (2018) and Xiang and Lindquist (2022) reveal that migration industries—comprising recruitment agencies, visa consultancies, training institutions, and private intermediaries—now play a central role in managing skilled migration flows. These actors facilitate legal migration pathways, structure recruitment processes, and increasingly influence destination choices. McCollum and Findlay (2018) argue that the migration industry is no longer confined to “grey zones” of irregular movement but has become a formalized sector integral to national labor strategies. Moreover, Andrees and Panhuys (2022) underscore the need for ethical recruitment practices to safeguard migrant workers’ rights and promote fair labor standards, signaling a growing awareness of social justice within the migration governance framework.

Beyond structural economic drivers, migration today is also shaped by lifestyle considerations and personal aspirations. Robertson (2020) introduces the concept of “lifestyle migration,” wherein highly skilled individuals, including engineers, pursue mobility not solely for economic gain but to achieve better work-life balance, higher quality of life, and broader personal development opportunities. In this context, migration decisions are informed by complex motivations that encompass family welfare, educational prospects for children, healthcare access, and social integration prospects. Thus, migration becomes part of a larger life project rather than a purely occupational move.

The COVID-19 pandemic has added new dimensions to the migration landscape. According to Kahanec (2021) and Clemens and Ginn (2022), temporary border closures and economic disruptions during the pandemic initially slowed migration flows. However, the crisis also spotlighted the critical roles migrants play in essential sectors, prompting many governments to reconsider restrictive immigration policies. As economies recover, engineering professionals are increasingly valued for their contributions to rebuilding infrastructure and advancing technological innovation, thereby reaffirming their importance in global labor markets.

Another emerging trend is the role of digitalization in shaping migration patterns. Hooijen, Meng, and Schene (2021) observe that advancements in remote work technologies have created new forms of transnational labor participation, enabling engineers to engage in international projects without permanent relocation. This evolution challenges traditional notions of migration and suggests a future where physical mobility may decline even as professional integration across borders intensifies. Nonetheless, physical migration remains essential for many engineers seeking full immersion in project-based roles and leadership positions in global firms.

Finally, a broader theoretical perspective offered by De Haas, Castles, and Miller (2020) stresses that migration is a multi-causal phenomenon involving economic, political, social, and personal dimensions. Their analysis emphasizes the need for policies that not only address labor shortages but also consider migrant well-being, integration processes, and social equity. As migration continues to evolve, understanding these intersecting forces becomes critical for managing mobility in ways that benefit individuals, societies, and economies alike.

Research Literature. Employee migration has become a crucial aspect of the global workforce, and understanding the underlying factors driving these migration decisions is essential for employers, policymakers, and researchers. Migration is not merely a matter of geographical relocation but is deeply intertwined with economic, social, and professional factors that shape both individual and collective experiences. This literature review synthesizes key findings from contemporary studies to offer a nuanced understanding of employee migration, focusing on its economic, social, and logistical dimensions.

Recent work by Krifors (2021) brought a new perspective to the field of migration mediation by highlighting the role of migration industries and infrastructure. Krifors focused on how recruiters negotiate mobility within and beyond state borders, offering a unique lens to understand migration's economic implications. This work suggested that migrant labor and employers are key players in the global migration economy, and migration itself can be viewed as an integral component of value extraction through transnational experiences. Krifors (2021) argued for an economy of migration theory that incorporates the complex relationships between migrant labor, employers, and the commodification of migration experiences. This idea connects to the broader concept of "migration industries," where various private and public stakeholders, such as recruitment agencies and governments, manage and mediate migration flows to benefit from the global labor market.

In a complementary vein, Altenried et al. (2018) proposed a logistical framework for understanding migration, which emphasizes how mobility is commodified within global markets. They integrated supply chain management theories with migration studies, illustrating how labor mobility is treated similarly to other commodities that flow across global networks. Their ethnographic study of labor recruiters and employers in Sweden's wild berry and ICT sectors revealed how migration is not only a matter of labor movement but also a part of a broader economic system that treats people as commodities within the labor market. By adopting this logistical "gaze," Altenried et al. (2018) explored how migration intersects with other forms of mobility, such as capital, technology, and commodities, reinforcing the idea that migration should be studied not in isolation, but as part of global business practices.

The implications of Human Capital Theory (HCT) in migration studies, particularly in the context of the construction industry, are examined by Aliu and Aigbavboa (2019). Their research highlighted how education and professional qualifications influence engineers' decisions to migrate, emphasizing that skilled migration is often viewed as a strategy for career advancement. This idea is echoed by Hooley (2021), who explored how educational attainment impacts career trajectories and shapes individuals' decisions to relocate in search of better job opportunities. According to Hooley, the pursuit of higher wages, career growth, and access to specialized skills training are some of the primary factors motivating professionals to move across borders.

In contrast, Debele's (2022) study on job creation and self-employment in Ethiopian urban centers added another layer to this discussion by considering the local dynamics of migration within developing economies. Debele addressed the challenges faced by urban centers in creating sufficient employment opportunities for skilled workers, especially engineers, and suggested that self-employment and entrepreneurial ventures may be viable alternatives for retaining talent. This reflects a broader trend observed by Bandyopadhyay and Bharadwaj (2018), who argued that immigration is not only a response to labor market shortages but also a critical factor in balancing future workforce demands in aging populations.

In addition to these studies, Dahinden (2016) and Surak (2018) provided critical insights into the role of state involvement and migration industries in shaping migration flows. Surak's (2018) research highlighted how state policies, especially in East Asia, shape migration by regulating and facilitating the movement of labor. Dahinden (2016) critiqued the way migration studies have been dominated by a focus on the migrant experience alone, advocating for a broader framework that situates migration within larger economic and political structures.

Collectively, these studies contributed to a deeper understanding of the complex and multifaceted nature of migration. The intersection of human capital, career development, transnational networks, and state policies creates a dynamic environment where migration is both an individual and structural phenomenon. In sum, the literature reviewed here reflects the diverse ways in which migration influences global workforce trends and provides a foundation for

exploring the specific motivations and outcomes of civil engineers' migration to highly urbanized cities.

II. Methodology

The study employed a descriptive research design, which was deemed appropriate for systematically portraying the characteristics of the target population and the factors influencing their migration decisions. Descriptive research designs are particularly useful when the objective is to describe the attributes, behaviors, or experiences of individuals within a specific context (Elmusharaf, 2018). In this study, the descriptive design facilitated an in-depth examination of the demographic profiles of Civil Engineers, as well as the push and pull factors that influenced their decisions to relocate to highly urbanized cities such as Cebu and Manila. The design aimed to provide a comprehensive and accurate portrayal of the factors shaping migration patterns, focusing on the "what" of the phenomenon—specifically, the factors driving engineers' relocation decisions. By adopting this design, the study was able to systematically assess the attributes and experiences of Civil Engineers involved in migration to urban centers.

The primary data collection method utilized in this study was a survey and this method was selected for its efficiency in gathering data from a large sample, allowing to generalize the findings to a broader population. The survey was specifically structured to collect quantitative data on the demographic background of Civil Engineers, as well as their perceptions of various factors influencing their migration decisions. The respondents were Civil Engineers from Calbayog City, Eastern Visayas, who had either migrated to or considered migrating to highly urbanized cities. The questionnaire was designed to gather specific insights regarding factors such as job opportunities, salary expectations, career progression, and professional development. By using a standardized format for the survey, the study ensured that data was collected consistently, which facilitated reliable quantitative analysis and made it possible to draw comparisons across the respondents.

The data collected through the structured survey questionnaire underwent quantitative analysis to summarize and describe the responses obtained from the participants. The primary statistical tools employed in this study were descriptive statistics, frequency distribution, and One-Way Analysis of Variance (ANOVA).

Descriptive statistics were utilized to summarize the perception scores of the respondents regarding various motivating factors. Measures such as the mean and standard deviation were calculated to determine the central tendency and variability of responses. These statistical measures helped quantify the general sentiment of the participants toward the factors influencing their decision to relocate, and assess how tightly clustered or spread out the responses were. The weighted mean was also calculated to determine the perceived level of motivating factors influencing Civil Engineers to relocate to highly urbanized cities.

Frequency distribution was used to present the demographic profile of the respondents and the distribution of various categorical variables. This involved calculating the number and percentage of respondents within each category, such as age, sex, civil status, and work experience. It helped identify common characteristics among the sample and visualize migration trends based on these classifications.

One-Way Analysis of Variance (ANOVA) was applied to determine if there were statistically significant differences in respondents' perceptions when grouped according to demographic variables. This inferential statistical method assessed whether variations in responses could be attributed to differences among the groups being compared. A significance level was used to evaluate the results, allowing the researchers to pinpoint which factors, if any, had a meaningful impact on the engineers' perceptions of motivating factors. These data treatment methods provided a systematic and concise way to analyze the quantitative data gathered in the study, allowing for meaningful conclusions to be drawn regarding the research questions.

III. Results and Discussion

An analysis of ANOVA outputs on various demographic and professional characteristics—such as age, sex, civil status, work experience, relocation site, year of relocation, and security of tenure—revealed that, in most cases, these factors do not significantly impact civil engineers' attitudes toward socio-economic factors, work conditions, or economic incentives. This observation suggests that, despite differing personal and professional backgrounds, civil engineers from Calbayog City exhibit similar motivations for relocation, indicating that common drivers of mobility transcend individual characteristics (Philippine Society of Civil Engineers, 2022). The uniformity in relocation motivations, regardless of demographic or professional status, underscores the idea that the primary reasons for engineers' migration are rooted in broader, systemic factors rather than specific personal or professional differences.

However, the security of tenure factor stands out as the only significant predictor in this analysis. With a p-value of 0.045 under socio-economic factors, this result reinforces the importance of job stability as a key element in engineers' career decision-making. Engineers with more secure employment, such as permanent positions, are likely to have different perceptions of socio-economic opportunities, potentially driving them to migrate to locations with greater prospects for professional growth and long-term career security. In contrast, engineers in less stable roles (e.g., contractual or project-based positions) might be motivated by different factors, including the search for more stable employment or the desire to pursue opportunities that offer better career security.

IV. Conclusion

1. Engineers primarily migrate to cities in search of improved career prospects. Urban areas provide opportunities to work on significant projects and attain higher professional status. With limited career advancement opportunities in Calbayog City, engineers are motivated to relocate for better job prospects. This reflects a broader trend where cities are seen as hubs for career growth and professional recognition.

2. While living in cities comes with higher living costs, the increased pay and improved benefits provided by urban employers offset these expenses. Engineers view relocation as an investment in their professional future, believing that the higher salaries and greater financial security they can achieve in cities are worth the increased cost of living. This finding suggests that engineers prioritize financial stability when deciding to move.

3. Cities provide good professional networks and excellent career growth opportunities. However, engineers in urban settings also face challenges such as a poor work-life balance and high-pressure working conditions. The demanding and stressful lifestyle often associated with urban living can be a significant downside for engineers, indicating a trade-off between career advancement and personal well-being.

4. The majority of engineers who migrate are in the mid-career stage. These engineers typically relocate after accumulating some work experience but before committing to long-term financial or personal arrangements. This timing allows them to take fewer risks and seize opportunities for career advancement without significant consequences to their existing personal or financial commitments. This trend suggests that career mobility is easier when engineers are still in the early to middle stages of their professional lives.

5. The economic climate plays a significant role in shaping migration patterns. More engineers migrated in 2022 when the economy was strong and opportunities were more abundant. Conversely, fewer engineers chose to migrate in 2024-2025, reflecting the economic instability and fluctuating demand for engineers during less favorable periods. This finding underscores the importance of economic stability in driving migration decisions among engineers.

6. Engineers from various demographic backgrounds, including different ages, genders, and professional experiences, displayed similar motivations for relocation. According to the statistical analysis (ANOVA), no significant differences were found among engineers' perceptions of migration based on their demographic characteristics. This suggests that, regardless of background, engineers tend to relocate for professional development, financial security, and career stability.

7. Job security emerges as a key factor influencing engineers' decisions to migrate. Engineers in contractual or project-based positions are more likely to migrate in search of permanent,

secure jobs. This finding emphasizes the need for more stable employment opportunities in Calbayog City, particularly for engineers seeking long-term career security. It also highlights the importance of job security in engineers' career choices and overall satisfaction.

8. The study confirms that migration to highly urbanized cities significantly enhances the career prospects of civil engineers. Many engineers who relocated moved from lower-level positions to higher-level jobs, proving that cities offer a greater variety of career opportunities. Urban areas, with their large-scale infrastructure projects, generate a high demand for engineers, allowing them to gain more experience and sharpen their skills. However, some engineers faced challenges such as career stagnation or shifting between jobs, which suggests that migration does not always lead to career success. The competitive nature of urban job markets and economic factors can sometimes hinder career development, demonstrating that migration does not guarantee professional success. Individual circumstances and professional challenges play a significant role in shaping engineers' career outcomes.

9. The study confirms that urbanization offers better career development opportunities for civil engineers. However, it also underscores the need for engineers to continuously improve their skills and competencies to remain competitive in the urban job market. As competition for roles in urban centers increases, engineers must adapt to changing market demands and ensure they possess the qualifications and experience needed to stay ahead in their careers.

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