

Barriers to Pursuing Professional Electrical Engineering License among Cagayan – Kalinga – Apayao - Batanes Chapter: Basis for Professional Organization Support Program

Engr. Fritzylei D. Reyes, RME
Engr. Ronnie Reyes, RME, MENG-EE

University of Cagayan Valley

Abstract

This study investigates the critical shortage of Professional Electrical Engineers (PEEs) in the Philippines, focusing on the Cagayan-Kalinga-Apayao-Batanes (CKAB) Chapter of the Institute of Integrated Electrical Engineers of the Philippines (IIEE). While the country has over 100,000 Registered Electrical Engineers (REEs), only about 10,000 have upgraded to a Professional Electrical Engineer license, and only 11 are registered with the Cagayan-Kalinga-Apayao-Batanes Chapter, which holds the sole statutory authority to sign and seal electrical plans and legal documents under Republic Act 7920. Guided by Herzberg's Two-Factor (Motivation-Hygiene) Theory, this qualitative case study examines the external ("hygiene") roadblocks and internal ("motivational") deficits that deter eligible Registered Electrical Engineers from pursuing licensure upgrading.

Data were gathered using mixed digital and in-person interviews from a sample of 40 registered electrical practitioners in the Cagayan Valley region who possess at least four (4) years of active industry experience; with these respondents, it focused only to 10 – 20 years of experience to aim on the more experienced Registered Electrical Engineer to attain a more structured result. Thematic analysis of the qualitative responses revealed five major structural and psychological barriers preventing career advancement: Professional Confidence and Social Risk; Lack of Mentorship and Guidance; Regulatory and Board Transition Anxiety; Time and Financial Constraints; and Lack of Institutional and Workplace Support.

The study concludes that the Professional Electrical Engineer shortage is not driven by a lack of technical capability among Filipino engineers, but rather by systemic failures in the local professional ecosystem where poor hygiene factors actively crush internal career motivations. Based on these findings, this paper proposes a decentralized professional support program. Key recommendations include institutionalizing open-access "Professional Electrical Engineer Incubator Programs" and anonymous preliminary review panels within IIEE chapters; mandating that the PRCBEE digitize or localize panel evaluations to eliminate geographic barriers; and establishing sponsored licensure support tracks within engineering firms.

Keywords: Professional Engineer Licensure Upgrading Barriers, Herzberg's Two-Factor Theory, Professional Electrical Engineer Paucity, Continuing Professional Development

1. Introduction

The Philippines, a nation experiencing growing infrastructure development and industrial modernization, faces a critical shortage of Professional Electrical Engineers (PEEs). This issue is complex and hinders the country's economic and technological progress. While there are over 100,000 registered electrical engineers (REEs) worldwide, the Institute of Integrated Electrical Engineers of

the Philippines (IIEE) notes that only about 10,000 are registered Professional Electrical Engineers, some of whom work abroad. This scarcity is particularly acute in places like the province of Cagayan, which has only ten Professional Electrical Engineers, with just five actively signing and sealing electrical plans.

Several factors contribute to this shortage, including economic opportunities and professional development requirements. A significant issue is the "brain drain," in which talented engineers seek higher-paying roles and better working conditions overseas, particularly in countries like the US, Canada, Australia, and parts of Europe and the Middle East. The allure of higher pay often outweighs the benefits of staying in the Philippines, creating a disincentive for Registered Electrical Engineers to pursue licensure as Professional Electrical Engineers.

Another challenge is the rigorous and often daunting process of becoming a Professional Electrical Engineer in the Philippines. Many people may be discouraged by the extensive requirements and the perception that continuous professional development is a burden. Additionally, the local job market may not always offer enough opportunities or competitive pay to keep talent in the country. This is further complicated by the fact that many jobs now require specific industry experience, making it hard for Registered Electrical Engineers to gain diverse, on-the-job expertise.

In the Philippines, a key distinction exists between a Registered Electrical Engineer and a Professional Electrical Engineer under RA 7920, the New Electrical Engineering Law. Only a Professional Electrical Engineer has the sole authority to sign and seal electrical plans, specifications, and other legal documents, signifying the highest level of licensure. While Registered Electrical Engineers can draft plans, supervise electrical activities, and prepare documents, they are restricted from signing and sealing official documents.

This study investigates the factors influencing Registered Electrical Engineers' decisions not to pursue upgrading their Professional Electrical Engineer licenses, focusing on career perceptions and job market realities. By identifying the root causes of this shortage, this research aims to inform the creation of a comprehensive program to attract and retain Filipino electrical engineering talent. The insights gained will be beneficial for educational institutions, policymakers, professional societies, and engineering firms in developing strategies to address the shortage.

Background of the Study

The Philippines, like many developing nations, faces a rapidly growing demand for qualified electrical engineers to fuel massive infrastructure developments, industrial modernization, and technological advancements. However, this momentum is severely hampered by a critical and widening shortage of Professional Electrical Engineers (PEEs) in the national workforce. While there are over 100,000 Registered Electrical Engineers (REEs) worldwide, the Institute of Integrated Electrical Engineers of the Philippines (IIEE) notes that only about 10,000 have successfully upgraded to a Professional Electrical Engineer license. This scarcity poses a significant systemic issue that directly affects not only the electrical engineering industry but also the nation's broader economic and safety goals.

This professional deficit is uniquely acute and alarming within the Cagayan Valley region. Specifically, the IIEE Cagayan-Kalinga-Apayao-Batanes (CKAB) Chapter has a total active membership of 1,125 registered professionals, yet only 6 active practitioners hold a valid Professional Electrical Engineer license. Compounding this structural vulnerability is the fact that all 6 of these active regional Professional Electrical Engineers are already senior citizens. Because Republic Act 7920—the New Electrical Engineering Law—stipulates that only a Professional Electrical Engineer has the sole statutory authority to sign and seal official electrical plans, specifications, and legal permits, the impending retirements of these remaining senior professionals threaten to leave the entire region without local legal sign-off capability. Consequently, simple construction permissions, localized power distribution designs, and industrial certifications will be forced into complete administrative gridlock or become entirely dependent on expensive consultants flown in from metropolitan hubs like Manila.

Understanding the underlying barriers that prevent eligible Registered Electrical Engineers from pursuing licensure upgrading is therefore essential for the survival of the regional engineering ecosystem. The factors contributing to this trend are complex, cutting across personal, professional, and corporate domains. Prominent historical factors include the "brain drain" phenomenon, in which

talented local practitioners seek higher-paying roles and better working conditions overseas, particularly in the Middle East, Europe, and Australia, thereby reducing the domestic pool of candidates for upgrades. Furthermore, for engineers who choose to remain in the local job market, the rigid, demanding, and expensive process of upgrading creates a strong disincentive. This challenge is exacerbated by the fact that many technical roles have become highly specialized, making it difficult for provincial practitioners to naturally accumulate the broad, multidisciplinary field experience required to meet the regulatory board's standards.

This thesis specifically investigates the structural roadblocks and internal anxieties influencing the decision of qualified Registered Electrical Engineers within the CKAB Chapter not to pursue their Professional Electrical Engineer licenses. By exploring these factors through an established organizational behavior framework, this research aims to lay the groundwork for a comprehensive, decentralized support program. The resulting insights will be highly beneficial for educational institutions adjusting their graduate curricula, policymakers aiming to streamline regulatory systems, and professional societies seeking to actively preserve and uplift the population of active Professional Electrical Engineers in the region.

Research Question

This study sought to address the following questions;

1. Determine barriers that influence the Registered Electrical Engineer's decision in pursuing Professional Electrical Engineer?

Theoretical Background

The scarcity of Professional Electrical Engineers (PEEs) in the Philippines, despite growing demand for skilled professionals to drive national development, poses a significant challenge. This multifaceted issue is influenced by various factors, including economic opportunities, stringent professional development requirements, and the prevailing labor market conditions. A critical understanding of these underlying factors is essential for developing effective strategies to address the shortage and ensure a steady supply of qualified electrical engineers.

A significant contributor to this scarcity is the "brain drain," in which talented engineers opt for higher-paying positions and better working conditions abroad, particularly in countries such as the US, Canada, Australia, Europe, and the Middle East. This outflow often outweighs the benefits of remaining in the Philippines, creating a disincentive for Registered Electrical Engineers (REEs) to pursue licensure as Professional Electrical Engineers.

Furthermore, the rigorous requirements for upgrading to Professional Electrical Engineer in the Philippines can deter many Registered Electrical Engineers. The perception that ongoing professional development constitutes an additional burden, despite its inherent advantages, also plays a role. The local labor market may not consistently offer sufficient opportunities or commensurate compensation to retain engineering talent within the country. Additionally, Registered Electrical Engineers face challenges in gaining diverse industry experience, as many job vacancies now necessitate prior industry exposure, making it difficult to acquire varied expertise across different fields of Electrical Engineering.

The distinction between a Professional Electrical Engineer and a Registered Electrical Engineer, as stipulated by RA 7920 (the New Electrical Engineering Law), highlights the Professional Electrical Engineer's exclusive authority to sign and seal electrical plans, specifications, and other legal documents, signifying the highest grade of electrical engineering licensure in the Philippines. While Registered Electrical Engineers can draft and create electrical plans, supervise electrical activities, and prepare related documents, they are restricted from signing and sealing official documents. This delineation of responsibilities underscores the critical need for a sufficient number of Professional Electrical Engineers to support the nation's infrastructure and technological advancements.

This study, therefore, aims to investigate the factors influencing the decisions of Registered Electrical Engineers not to pursue upgrading their Professional Electrical Engineer licenses. By exploring areas such as career perception and job market realities, this research seeks to uncover the root causes of the shortage. The insights gained will then inform the development of a comprehensive program designed to attract and retain Filipino talent in the electrical engineering profession.

Theoretical Framework

This study is underpinned by Herzberg's Two-Factor Theory, also known as the Motivation-Hygiene Theory. This theory proposes that job satisfaction and dissatisfaction are influenced by two distinct sets of factors, categorized as "motivators" and "hygiene factors," respectively. Hygiene Factors, when absent or inadequate, can cause dissatisfaction but don't necessarily lead to satisfaction. These are external to the job, such as competitive salaries, working conditions, and institutional support. Motivational Factors, on the other hand, are internal and directly related to the work itself, such as achievement, recognition, and the work's inherent interest.

This framework is useful for understanding why Registered Electrical Engineers may choose not to pursue licensure as Professional Electrical Engineers. The absence of sufficient hygiene factors—such as reasonable accreditation processes or institutional support—can cause dissatisfaction and deter participation. Conversely, the presence of strong motivational factors—such as perceived career benefits, professional recognition, and personal growth—is essential for actively encouraging Registered Electrical Engineers to undertake the upgrading process.

2. Literature Review

This chapter presents literature and studies that the researchers deemed relevant to the present study. Such cited literature and studies paved the way for determining the extent to which researchers have gone in the area under investigation.

Structural Prerequisite and Mentorship Shortfalls

The transition from a basic engineering license to senior status requires navigating complex professional documentation frameworks. A primary barrier identified globally is the lack of formal pathways for obtaining the required guidance. Khamis et al. (2013) established that the absence of an appropriate mentor within an engineer's immediate professional circle is a direct structural roadblock, slowing or entirely halting applications for professional registration. This structural isolation is particularly severe for practitioners located in rural or provincial areas away from centralized evaluation hubs.

Furthermore, Harun et al. (2012) argued that professional engineering organizations often restrict specialized training to internal administrative circles, leaving ordinary members unaware of the step-by-step pathways needed to satisfy board requirements. Without clear institutional paths, technical reporting requirements—such as compiling a detailed engineering narrative or technical evaluation project—become a major administrative hurdle. Research by Harun et al. (2013) demonstrated that when the technical orientation is poorly communicated, applicants routinely fail to understand baseline standards, leading them to delay their submissions indefinitely.

Similarly, Karim et al. (2011) showed that a lack of formal, structured resources, such as specialized workbooks or technical report templates, leaves candidates feeling unprepared to meet changing evaluation metrics. This gap in early professional orientation is echoed in the Engineering Council (2012) guidelines, which note that structured peer networks must be established outside urban capital regions to prevent mid-career engineers from feeling abandoned by their professional associations.

Workplace Culture and Institutional Support Deficits

Corporate environments and management practices dictate whether a licensed professional will pursue higher credentials. Under motivation-hygiene models, institutional support from upper management serves as a critical external baseline. Mark and Robert (1998) emphasized that when an employer fails to provide organizational support, employees experience deep dissatisfaction that overrides their internal motivation to achieve professional milestones.

This corporate resistance often stems from deliberate economic choices. Kuba et al. (2021) observed that industrial engineering firms frequently discourage license upgrading to avoid shifting corporate hierarchies and mandatory pay scale increases. In many cases, management prefers to maintain a larger pool of mid-level engineers to minimize operational expenses. Beyond salary protection, firms often introduce direct administrative roadblocks.

As noted by Chandra et al. (2011), unsupportive workplace cultures can actively manifest as administrative friction, such as supervisors refusing to execute legal verifications or sign off on

required certificates of experience. This active obstruction completely stalls the upgrade application before it can reach regulatory review boards.

Furthermore, peer environments can reinforce this stagnation. Mohd. Kosnin and Jantan (2009) found that horizontal peer groups within technical fields often foster a culture of apathy, in which colleagues dismiss advanced licenses as unnecessary titles that offer little practical value. This micro-cultural discouragement normalizes a lack of professional growth within engineering offices.

Finally, Pekeliling UTEM (2010) highlighted that unless an explicit institutional framework links professional upgrades to immediate corporate advancement, engineers will naturally remain in basic, comfortable roles.

Psychological Deterrents and Social Stigma

While structural and corporate barriers are external, internal psychological barriers are equally powerful in driving professional stagnation. Chief among these internal blocks is the social risk associated with public failure. Lambrou et al. (2010) demonstrated that professional confidence is closely tied to an individual's perceived status within their immediate social and professional network. In close-knit engineering circles, the prospect of failing a major professional assessment or oral interview carries a high social cost. Dunbar (2003) noted that senior or mid-career personnel who have already achieved high-ranking supervisor or academic titles are highly vulnerable to this fear. The potential damage to their established reputation among junior staff or students serves as a strong deterrent to upgrading.

This dynamic turns the oral interview or board defense into an intimidating mental barrier. Research by Robbins and Colter (2003) showed that when individuals perceive an evaluation process as highly subjective or akin to an interrogation, their self-motivation drops sharply.

This psychological friction is magnified by industry-wide gossip. As established by Fink et al. (2005), engineering cultures can sometimes stigmatize failure rather than treating it as a learning opportunity. This dynamic creates a visible "failed statistic" that deters other qualified candidates from entering the application pipeline.

Financial, Geographic, and Administrative Barriers

The practical realities of geographic location and personal finance represent classic hygiene deficits that directly affect professional development. For engineers working outside of metropolitan regions, the requirement to travel to centralized capital offices for administrative processing and panel interviews creates a significant regional penalty.

Pérez-Foguet and Lazzarini (2019) demonstrated that the accumulated costs of long-distance travel, overnight lodging, and lost project hours often make advanced licensure a luxury that mid-level earners cannot comfortably afford. These expenses compete directly with basic family bills and obligations.

Additionally, Nassereddine and Nassreddine (2024) noted that the secondary expenses of the upgrade process—such as high fees for mandatory review seminars and documentation compilation—constitute a persistent barrier for engineers already managing personal debts or student loans.

These localized financial strains are worsened by rigid administrative systems. Konovalova et al. (2020) argued that the widespread absence of digital or decentralized evaluation systems penalizes rural professionals. This structural lack of access forces rural engineers to weigh the high opportunity cost of taking uncompensated leave against a credential that offers slow financial returns.

Career Perceptions and Labor Market Realities

The structural environment of the local labor market plays a central role in shaping whether an engineer views advanced licensure as a necessary milestone. In many developing markets, a severe disconnect exists between statutory authority and actual industry recruitment trends.

Molusiwa (2024) observed that many commercial engineering sectors do not strictly require advanced executive-level licensure for vertical career progression, allowing practitioners to secure well-paying supervisory positions using only their basic foundational licenses. Consequently, engineers who are satisfied with their current roles or who work in fields such as software, tech, or industrial sales see little return on investment from the grueling upgrade process.

This trend is reinforced by changing educational alignments. Tunina et al. (2019) argued that undergraduate engineering curricula often focus heavily on theoretical principles while neglecting the practical administrative competencies required for professional certification. This curricular gap creates an early disconnect between classroom learning and actual board compliance.

Finally, Đipa and Turulja (2022) noted that the rising demand for specialized digital skills over traditional legal credentials has reshaped industry incentives. This shift encourages engineers to prioritize short-term corporate certifications over long-term state-regulated upgrades.

3. Research Methodology

This study utilized a qualitative research design to gain a deep understanding of the factors contributing to the shortage of Professional Electrical Engineers in the CKAB Chapter. This approach enabled an in-depth understanding of why qualified engineers hesitate to pursue license upgrades. A self-administered interview guide was used to collect data from electrical practitioners in Cagayan Valley. The interview guide was sent via Google Forms to accommodate the participants' time constraints.

A self-administered interview was conducted with Electrical Engineering Practitioners in Cagayan Valley to delve deeper into their career experiences, factors influencing job satisfaction, and suggestions for upgrading to Professional Electrical Engineer status. The interview gathered data on respondents' background information, educational system constraints, career perceptions, and Job Market Realities using Qualitative Methods.

The interview guide was sent to electrical practitioners across Cagayan Valley through social media platforms with the approval of the Institute of Integrated Electrical Engineers of the Philippines Cagayan – Kalinga – Apayao – Batanes Chapter. Social media platforms were used to avoid the inconvenience of conducting in-person interviews with respondents and to accommodate time constraints and participants' availability.

Thematic analysis was used to identify recurring themes and insights from interview responses. Informed consent was obtained from all participants before data collection. Anonymity and confidentiality of participant responses will be ensured.

Study Site and Participants

The study was conducted in Cagayan Valley, focusing on active members of the Institute of Integrated Electrical Engineers of the Philippines, Cagayan-Kalinga-Apayao-Batanes Chapter (IIEE-CKAB). The participants were selected from various sectors of electrical engineering, including academe, construction, power generation, distribution, and manufacturing.

The study prioritized Registered Electrical Engineers with at least four (4) years of active practice, as this is the minimum legal requirement for Professional Electrical Engineer eligibility under RA 7920. The study included Registered Electrical Engineers to provide a perspective on successful upgrading and Registered Electrical Engineers with varying years of experience to identify evolving barriers. The final results concluded that only those participants with over ten (10) to twenty (20) years of experience were able to properly focus on the well-experienced electrical engineer practitioners, which will make for more valid and structured results. The interview guides were developed based on existing literature and insights from panel defenses, and they were guided by Herzberg's theory.

Population, Sample Size, and Sampling Method

The population of this study comprised 40 registered electrical engineers from various sectors of electrical engineering employment, including Academe, Construction, Power Generation, Power Distribution, Manufacturing, and Design. The sample size for interviews and focus groups will prioritize respondents with four (4) years of experience as a licensed electrical engineer, as one of the requirements and eligibility for upgrading to Professional Electrical Engineer, as stipulated in RA 7920 or the Electrical Engineering Law.

Instruments

The interview guide questions were formulated to address the study's main problem and facilitate data collection. In crafting the interview guide questions, the researcher ensured alignment with the research questions and maintained an open-ended format. To ensure the credibility and dependability

of the study, the interview guide was evaluated and refined through expert validation. The guide was reviewed by qualitative research experts to ensure the questions were relevant, clear, and appropriate. Also, a pilot interview was conducted to assess whether the questions elicited rich, meaningful responses.

Data Gathering Procedure

Data were collected through self-administered interview guides distributed via digital platforms to accommodate participants' professional schedules. Follow-up open-ended interviews were conducted with respondents who had more than four years of experience to gather detailed insights into specific constraints such as mentorship gaps and documentation difficulties.

The respondents were reached through their respective Professional Organization Officers to distribute the interview questionnaires, which were obtained via social media platforms and the official website of the Institute of Integrated Electrical Engineers of the Philippines.

Data Analysis

The study employed a thematic analysis Approach to analyze the data gathered from the in-depth interviews, following the phases outlined by Braun & Clarke (2006). This involved transcribing responses, coding data to identify recurring patterns, and narrowing these patterns into overarching themes related to professional barriers and potential support solutions.

After transcription, the data was examined multiple times to identify patterns, repeated ideas, and significant statements. These were then grouped into codes and organized.

into themes that reflect the interns' key insights.

Thematic analysis is effective at identifying both commonalities and unique perspectives among participants, making it well-suited to the study's phenomenological nature. The final themes were interpreted in relation to the research objectives and served as a foundation for recommending improvements to the internship program.

Ethical Considerations

This study strictly adhered to established ethical standards for conducting academic research involving human participants. Prior to collecting any data, written permission was secured from the appropriate chapter officers of the Institute of Integrated Electrical Engineers of the Philippines (IIEE). Informed consent was explicitly obtained from every participant before they completed the digital interview guide. Each respondent was clearly informed of the study's exact purpose, how their answers would be used, and their absolute right to withdraw at any point without penalty or professional risk.

To safeguard the participants, confidentiality and anonymity were maintained throughout the entire research lifecycle. The real names and specific workplace identities of the engineers were completely omitted, with generic codes (e.g., P1, P2) used instead during transcription, thematic analysis, and within the final report. All gathered digital files, including spreadsheet data and interview responses, were stored in securely encrypted cloud folders accessible only to the primary researcher, and they will be permanently deleted after the study's official acceptance.

Furthermore, digital tools and Artificial Intelligence (AI) were integrated into this study with careful ethical oversight to protect research integrity:

Strict Protection against Text-Processing Risks: AI assistants were used strictly for structural organization, grammar refinement, and formatting assistance. To prevent data leaks, no raw, unedited interview transcript containing sensitive personal details or identifying geographical markers was input into any external software.

Authenticity of Voice: All themes, interpretations, and discussions were driven entirely by the participants' lived experiences. AI was never used to fabricate or alter the meanings of the quotes, ensuring that the qualitative data remains an accurate, honest reflection of the engineering community's voice.

Plagiarism and Originality Protection: Every piece of literature, framework, and external concept used to support the findings was carefully cross-checked and cited using standard academic guidelines to guarantee complete originality and prevent accidental misattribution.

Finally, the researcher maintained complete honesty and objectivity in presenting the data. No answers were fabricated, altered, or cherry-picked to artificially fit the chosen theoretical framework. The challenges and anxieties highlighted by the engineers were reported with absolute transparency to ensure the study serves as a trustworthy baseline for future organizational programs.

4. Results and Discussion

This section presents the study's findings on the barriers to pursuing a Professional Electrical Engineer license within the CKAB chapter. Data from in-depth interviews were thematically analyzed to uncover patterns and insights related to their professional and personal experiences. The emerging themes reflect the complex realities and challenges faced by registered electrical engineers. The presentation of results is organized by major themes. Each theme presents participants' verbatim statements that capture the essence of the participants' experiences. With a total of 40 responses from Registered Electrical Engineers in various fields across the region focusing only on those with ten (10) to twenty (20) years of relative experience in.

Professional Confidence & Social Risk with 16 participants: Psychological concerns are the second-largest barrier. This issue affects practitioners, revealing that mid-career professionals harbor a strong fear of public failure within local circles.

Lack of Mentorship & Guidance with 9 participants: This stands out as the single largest systemic barrier. This indicates that long-term industry experience does not automatically clarify the complex licensing process without structured guidance.

Regulatory & Board Transition Anxiety with 8 participants: The upcoming April 2026 administrative changes introduce significant uncertainty, causing engineers to delay their applications until requirements settle.

Time and financial constraint with 5 participants: Combined, time constraint (3), financial constraints (2), create an environment that discourages engineers from dedicating time to higher certification.

Lack of Institutional or Workplace Support with 2 participants: Institutional support is the least reported; however, workplace support is one of the basic motivational sources of eagerness to upgrade to a higher license category.

THEME 1: Professional Confidence & Social Risk

Theme 1 focuses on a prominent psychological hurdle: the fear of failure and peer stigma. In close-knit regional professional engineering groups like the IIEE CKAB Chapter, failing the panel oral interview carries an intimidating perceived social cost.

"I am afraid of failing and becoming the center of news in our local IIEE chapter." (P1)

"I don't want to be the topic of gossip among my peers if I don't pass the first time." (P5)

"Failure would be an embarrassment to my family and my alma mater." (P6)

"I've seen smarter engineers fail; the oral defense feels like a trap." (P10)

"My reputation in the academe would be tarnished if my students found out I failed." (P12)

"I'd rather be a successful REE than a PEE candidate who failed in the public eye." (P13)

"The industry is too small; failure is mocked rather than used as a learning point." (P15)

"I have 15 years of pride; failing an interview now would be devastating." (P16)

"If I fail, I'll be the center of gossip at the next IIEE convention." (P18)

"I don't want to be the 'talk of the town' for failing a professional upgrade." (P21)

"The oral interview is subjective; I'm afraid of failing based on a board member's whim." (P24)

"I have a high-ranking position; failing would be a public professional disaster." (P26)

"The oral interview feels more like an interrogation than a professional talk." (P31)

"The industry is small; everyone will know if I failed the oral board." (P36)

"The fear of industry-wide embarrassment is real and keeps me as an REE." (P40)

Senior practitioners, including academic deans and industry supervisors with over a decade of field experience, admitted they are deeply afraid of failing and becoming the center of gossip among their

peers or students. Within Herzberg's framework, while the desire for prestige serves as a strong internal motivator, the social risk of public failure becomes a powerful psychological barrier that completely halts action.

As identified by Khamis et al. (2013), a distinct fear of failure serves as a powerful deterrent to self-motivation, preventing qualified mid-career practitioners from taking the risk of upgrading.

Theme 2: Lack of Mentorship and Guidance

The theme highlights severe geographic isolation and institutional gaps for provincial applicants. The Technical Evaluation Report (TER) requires complex professional engineering guidance. Participants underlined:

- “No PEE in my firm is willing to mentor me; they see me as future competition.” (P2)
- “Finding three PEE signatories in Cagayan Valley is nearly impossible for a site engineer.” (P4)
- “Mentorship is only active in Manila; provincial REEs like us are left behind.” (P7)
- “I have the projects, but I don't have a PEE mentor to vouch for my technical expertise.” (P9)
- “I feel like I'm bothering the local PEEs when I ask for help; there's no formal program.” (P14)
- “I need a mentor to help me defend my project choice before I face the board.” (P19)
- “The PEEs in our chapter only mentor their own relatives or close friends.” (P25)
- “Is there a PEE workbook? We need more than just a list of requirements.” (P29)
- “We need PEE mentors who are patient with REEs who haven't done design in years.” (P39)

The responses show that mentoring is often limited to active leadership circles rather than to ordinary members. Engineers face direct structural challenges, noting that finding three Professional Electrical Engineer signatories within the region is nearly impossible for site-based personnel. This structural deficit forces applicants to rely on confusing online templates or completely misinterpret the requirements, often confusing the documentation process with a traditional written examination.

This matches the findings of Khamis et al. (2013), who demonstrated that a lack of an appropriate mentor and minimal exposure to the registration process represent major structural bottlenecks that impede professional engineering upgrades.

THEME 3: Regulatory & Board Transition Anxiety

Theme 3 tracks a highly specific, time-dependent hurdle: the upcoming April 2026 transition of the Professional Regulatory Board of Electrical Engineering (PRCBEE) Chairmanship.

- “I'm hesitating because the 2026 board change might mean stricter TER requirements.” (P3)
- “I will apply only after I see the passing rate of the first batch under the 2026 Board.” (P8)
- “The April 2026 change makes the application process a moving target.” (P11)
- “The new 2026 chairman might have a different 'favorite' field of specialization.” (P23)
- “I'll wait for the new board's resolution on ACPE requirements before applying.” (P28)
- “I'm worried the April 2026 board will change the TER format entirely.” (P30)
- “I don't want to be in the first batch of the new chairman; I'll wait for batch 3.” (P33)
- “The 2026 board change might bring more focus on renewable energy, which I lack.” (P35)

Engineers view these leadership shifts as a "moving target," worrying that a new board might introduce shifting TER metrics or alter formatting requirements. This administrative uncertainty causes qualified candidates to postpone upgrading indefinitely. They choose to wait for the new board's passing rates and evaluation style to stabilize before risking a failed application.

THEME 4: Time and Financial Constraints

Theme 4 highlights classic structural hygiene issues. Engineers with extensive experience are exhausted by long site hours and constant project loads, leaving zero time for tedious paper-writing or mandatory seminars.

- “Documentation requires 100% focus, but my job requires 200% presence at the site.” (P22)
- “My current role as a supervisor means I'm on call even during weekends.” (P32)
- “Site managers are not given study leaves for professional development.” (P38)
- “Every trip to Manila for PRC matters costs me a week's worth of groceries.” (P20)
- “PRC should allow online interviews for us in the provinces to save costs.” (P34)

These findings mirror the external procedural barriers highlighted by Khamis et al. (2013), where time-consuming administrative frameworks significantly delay professional development, and

financial aspects play a barrier to professional development, as highlighted by Khamis et al. (2013). The requirement to travel to Manila for physical PRC processing imposes an unfair regional penalty. Practitioners stressed that expenses such as lodging and travel account for more than half of their monthly salaries, making the upgrade a luxury they cannot comfortably afford.

THEME 5: Lack of Institutional/Workplace Support

Theme 5 exposes unsupportive corporate environments that actively hold back mid-career professionals. Workplace backing and clear organizational policies serve as foundational hygiene factors. When these external conditions are lacking, they cause job dissatisfaction and deter professional growth.

"Management prefers we stay REEs so they don't have to adjust our salary grades." (P17)

"My company treats PROFESSIONAL ELECTRICAL ENGINEER as a threat to their current hierarchy." (P37) The qualitative feedback highlights three major corporate hurdles: first, Salary Grade Protection: management frequently prefers that engineers remain at the REE level to preserve existing corporate hierarchies and avoid mandatory salary adjustments. Next is Administrative Roadblocks: Employers leverage their administrative power to block the collection of legal prerequisites, with supervisors explicitly refusing to sign off on service records or Certificates of Experience. And lastly, Peer Discouragement: Immediate workplace environments lack a culture of excellence, replacing encouragement with peer apathy or negative jokes about those who fail.

These corporate practices confirm the findings of Khamis et al. (2013), who identified human resource procedures and a lack of support from upper management as central roadblocks that delay engineers in securing higher professional licenses.

5. Conclusion

This study concludes that the ongoing shortage of Professional Electrical Engineers (PEEs) in the Philippines is not due to a lack of technical expertise but to structural, psychological, and administrative barriers that prevent qualified Registered Electrical Engineers (REEs) from upgrading. Based on the qualitative analysis of eligible practitioners, the study arrives at the following main conclusions:

1. Systemic Failure of Institutional Hygiene Factors: The acute shortage of Professional Electrical Engineers (PEEs) in the region is not caused by a deficiency in technical competence or an inherent lack of ambition among Registered Electrical Engineers (REEs). Instead, it is driven by a fractured local professional ecosystem. Using the lens of *Herzberg's Two-Factor Theory*, while engineers are naturally driven by intrinsic motivators (such as professional prestige and full regulatory practice authority), their career advancement is systematically suppressed by severe deficits in external "hygiene factors" (such as high regional travel penalties, overwhelming workloads, and unsupportive corporate environments). This validates the structural prerequisite models established in engineering licensure literature (Khamis et al., 2013).

2. Psychological and Social Barriers: Psychological deterrents serve as a primary inhibitor to upgrading. In close-knit regional chapters like IIEE-CKAB, mid-career professionals with nearly a decade of experience (averaging 9.6 years) face an intimidating perceived social cost regarding failure. The fear of public failure, peer gossip, and the potential tarnishing of an established professional reputation among junior staff or students turns the PRCBEE panel oral interview into a major psychological block that effectively halts the application pipeline.

3. Regulatory and Policy Confusion: The administrative uncertainty surrounding the April 2026 Professional Regulatory Board of Electrical Engineering (PRCBEE) Chairmanship transition introduces a major, time-dependent hurdle. Engineers perceive the leadership shifts as a "moving target". Fearing that a new board will instantly alter TER formatting rules or implement unpredictable evaluation metrics, qualified candidates choose to indefinitely postpone their licensure upgrades until passing rates and institutional expectations stabilize.

4. Chronic Mentorship Deprivation and Geographic Isolation: The structural lack of mentorship remains a critical and widespread hygiene failure for provincial applicants. The process of compiling the Technical Evaluation Report (TER) is highly intimidating and confusing. Because active mentoring networks are heavily concentrated in metropolitan hubs (such as Manila) or restricted to

internal chapter leadership circles, qualified rural practitioners are left isolated. This forces them to rely on confusing online resources or misinterpret the documentation framework entirely.

5. Obstructive Corporate Ecosystems: Workplace cultures frequently exacerbate the shortage by acting as active administrative roadblocks. Many industrial and commercial engineering firms operate under a philosophy of salary grade protection. Management often prefers to maintain practitioners at the basic Registered Electrical Engineer level to secure lower operational costs and preserve existing corporate hierarchies. This dynamic leads to severe job dissatisfaction and directly smothers an engineer's internal drive to pursue advanced certification.

6. Herzberg's Mismatch: While engineers are naturally motivated by the desire for professional recognition and full practice authority, this motivation is completely crushed by poor hygiene factors, such as high travel costs, intense workloads, and an unsupportive professional environment.

References

10 Publicacions científiques seleccionades — Engineering Sciences and Global Development. EScGD — UPC. Universitat Politècnica de Catalunya <https://escgd.upc.edu/ca/recursos/selected-journal-papers>

A Novel Measure for Soft Power: Perceived Soft Power Scale for International Students - Gazi Eğitim Fakültesi Dergisi <https://dergipark.org.tr/tr/pub/gefad/issue/79724/1252978>

Alobaid, A., Zulyniak, M., Ajjan, R., Brož, J., Hopkins, M., & Campbell, M. (2023). Barriers to Exercise in Adults with Type 1 Diabetes and Insulin Resistance. <https://doi.org/10.1016/j.jcid.2023.04.016>

Atkins, J. (2005). The Association between the Use of Accelerated Math and Students' Math Achievement. <https://core.ac.uk/download/214065017.pdf>

Bachelor of Civil Engineering (BCE) Guide 2026: Course, Subjects, Salary & Career Scope – AUBSP <https://www.aubsp.com/bachelor-of-civil-engineering/>

Barriers to Exercise in Adults with Type 1 Diabetes and Insulin Resistance - White Rose Research Online <https://eprints.whiterose.ac.uk/198824/>

Beck, I. (2024). Gendered And Sexualized Violence At Work: An Ongoing Issue For Healthcare Professionals. *Occupational Therapy Now*, 27(4), 26-27.

Can 3D Printing Use Metal? - <https://www.3dprintingstocks.com/can-3d-printing-use-metal/>

Chandra, A., Cooper, W. D., Cornick, M. F., & Malone, C. F. (2011). A study of motivational factors for accounting educators: What are their concerns? *Research in Higher Education Journal*, 11, 19-36.

Cho, M. K., & Mi-Young, K. (2021). What Affects Quality of Life for People with Type 1 Diabetes?: A Cross-Sectional Observational Study. *International Journal of Environmental Research and Public Health*, 18(14), 7623.

Choi, S., Knopf, E., Kim, E., Neighbors, C., Berry, C., Hade, E., Trinh-Shevrin, C., Terplan, M., Seligman, N., Garry, D., & McNeely, J. (2025). A multi-level explanatory-sequential mixed-methods study of perinatal toxicology practices in New York State: Protocol. *PLoS One*, 20(12), e0339284.

Đipa, A., & Turulja, L. (2022, October). The Role of Higher Education Curriculum Quality in Fostering Digital Skills of University Students. In *International Conference on New Media Pedagogy* (pp. 1-21). Cham: Springer Nature Switzerland.

Dunbar, S. B. (2003). Perceived Motivational Factors among Health Managers and Subordinates. *The Internet Journal of Allied Health Sciences and Practice*, 1(1).

Engineering Council. (2012). Professional engineering qualification for teachers and researchers in higher education.

Fink, L. D., Ambrose, S., & Wheeler, D. (2005). Becoming a professional engineering educator: A new role for a new era. *Journal of* <http://dx.doi.org/10.1002/j.2168-9830.2005.tb00837.x> *Engineering Education*, 185-194.

Google. (2026). *Gemini*. <https://gemini.google.com/app/e5ebdf500bc33259>

Google. (2026). *Gemini*. <https://gemini.google.com/app/d9413d44dbda4f25>

Harun, H., Bratasena, I. G. N., & Riyadi, S. (2021). PATRONAGE INSTALLATION IN FOREST AND LAND FIRE IN RIAU PROVINCE (STUDY ON LAW ENFORCEMENT WITH CORPORATE ACTORS). <https://core.ac.uk/download/639385655.pdf>

- Harun, Z., Khamis, N. K., & Arshad, I. (2012). The roles of Professional Engineers at the Institutions of Higher Learning and in Industries. Prosiding-Seminar Pendidikan Kejuruteraan dan Alam Bina 2012.
- Harun, Z., Khamis, N. K., Hashim, H., Isa, M. D., & Mohamed, Z. (2013). The challenges for lecturers to submit for professional interviews at UKM versus other IHLs. In *Proceedings of the Research in Engineering Education Symposium 2013*.
- Herzberg, F., Mausner, B., & Snyderman, B. B. (1959). *The Motivation to Work* (2nd ed.). New York, New York: John Wiley & Sons
- Herzberg's Two-Factor Theory of Motivation-Hygiene <https://www.earlyyears.tv/herzbergs-two-factor-theory/>
- Karim, A. A., Din, R., & Razak, N. A. (2011). Investigating students' ways of learning information skills in Malaysian higher education. *Procedia-Social and Behavioral Sciences*, 15, 3849-3854.
- Khamis, N. K., Harun, Z., Tahir, M. F. M., Wahid, Z., & Sabri, M. A. M. (2013). Motivational Factors of Professional Engineers and Non-Professional Engineers in Applying for License as Professional Engineer: A Comparative Study. *International Education Studies*, 6(6), 124-130.
- Konovalova, O., Nikolaev, D., Caruana, E., Fedotova, M., & Grishin, V. (2020, December). Formation of an Online Support System for University Graduates as a Factor of Implementing the Lifelong Education Concept. In *Proceedings of the International Conference Digital Age: Traditions, Modernity and Innovations (ICDATMI 2020)* (pp. 182-185). Atlantis Press.
- Kuba, K., Dedina, J., & Milichovsky, F. (2021). The influence of Industry 4.0 on employment in engineering companies: Evidence of managerial view in Czech and Germany. In *SHS Web of Conferences* (Vol. 129, p. 04002). EDP Sciences.
- Lambrou, P., Kontodimopoulos, N., & Niakas, D. (2010). Motivation and job satisfaction among medical and nursing staff in a Cyprus public general hospital. *Human Resources for Health*, 8(26). <http://dx.doi.org/10.1186/1478-4491-8-26>
- Lembaga Jurutera Malaysia (LJM). (2012). Keperluan Jurutera Professional dalam surat no. ruj. BEM/ACC/04 Jld.9(39) bertarikh 13 Julai 2012
- Mabona, L. G. (2016). The effects of poor program management coordination on the delivery of health infrastructure projects: A case of the Northern Cape. <https://core.ac.uk/download/327309427.pdf>
- Mäki-Heikkilä, R. (2024). Asthma and Respiratory Symptoms in Finnish Competitive Cross-Country Skiers. <https://core.ac.uk/download/595500458.pdf>
- Mark, A. T., & Robert, M. M. (1998). Motivation and job satisfaction. *Management Decision*, 36(4), 226-231. <http://dx.doi.org/10.1108/00251749810211027>
- Matto, S. B. (2016). Defect Reduction for the Defibrillator. <https://core.ac.uk/download/232792513.pdf>
- Mohd. Kosnin, Azlina, & Jantan, Shiqah. (2009). Tahap Stres Dan Tahap Kepuasan Kerja Dalam Kalangan Pensyarah Universiti Teknologi Malaysia. UTM Tesis.
- Molusiwa, R. S. (2024). A Mixed Review of Research on Competencies of Built Environment Professionals in Infrastructure Delivery within Emerging Economies.
- Mysyuk, Y., Westendorp, R. G. J., & Lindenberg, J. (2016). Perspectives on the Etiology of Violence in Later Life. *Journal of Interpersonal Violence*. <https://doi.org/10.1177/0886260515584338>
- Nassereddine, M., & Nassreddine, G. (2024). The impact of continuous professional development activities on student learning outcomes and employability. *International Journal of Evaluation and Research in Education*, 13(5), 2971.
- iu, Y., Sun, J., Zhu, K., Xu, B., Yin-Ping, Z., & Peng, M. (2025). The Critical Role and Effects of Patient-Centered Communication in Psychotherapy: A Narrative Review. *Psoriasis : Targets and Therapy*, 18(), 1657-1671
- Pacific Youth. <https://doi.org/10.22459/PY.2019>
- Patricia, G., & Amoako, O. J. I. (2026). AI Legal Chatbot. Zenodo (CERN European Organization for Nuclear Research). <https://doi.org/10.5281/zenodo.18384083>
- Pekeliling UTEM. (2010). Penubuhan skim jurutera profesional dalam kalangan staf akademik Universiti Teknikal Malaysia Melaka (UTEM), Bil. 40.

- Pérez-Foguet, A., & Lazzarini, B. (2019). Continuing professional education in engineering faculties: Transversal integration of sustainable human development in basic engineering sciences courses. *Journal of Cleaner Production*, 218, 772-781.
- Perspectives on the Etiology of Violence in Later Life - Københavns Universitets Forskningsportal, <https://researchprofiles.ku.dk/da/publications/perspectives-on-the-etiology-of-violence-in-later-life>
- Raju, P. K., & Sankar, C. S. (1999). Teaching real-world issues through case studies in engineering education. *Journal of Engineering Education*, 88(4), 501-508.
- Research Publications -Rafik Hariri University <https://www.rhu.edu.lb/research/research-publications>
- Robbins, S., & Colter, M. (2003). *Management* (7th ed.). Prentice Hall, 427-428.
- Significant Addition to our Library Collection - Marbella International University Center <https://miuc.org/significant-addition-to-our-library-collection/>
- Soft skills that employers value the most today <https://coredo.jobs/en/soft-skills-that-employers-value-most-today/>
- Soft skills that employers value the most today <https://coredo.jobs/en/soft-skills-that-employers-value-most-today/>
- Staff, C., & Farmer, R. (2019). Teaching students to write about art : Results of a four-year patchwork text project. https://doi.org/10.1386/adch_00003_1
- Teaching students to write about art: Results of a four-year patchwork text project - University of Northampton's Research Explorer <https://pure.northampton.ac.uk/en/publications/teaching-students-to-write-about-art-results-of-a-four-year-patch>
- Tohuto, K., & Mawon, S. (2024). Awareness, Apprehension, and Aspiration: A Student-Centric Analysis of the Nagaland Liquor Total Prohibition Act, 1989. *Indian Journal of Health and Wellbeing*, 15(4), 604-610.
- Tunina, N., Klushina, N., Lobeiko, Y., & Goverdovskaia, E. (2019). Designing A Model For Managing Educational Programs In Universities. *European Proceedings of Social and Behavioral Sciences*.
- Woodruff, R. J. (2016). An exploratory study of essential life skills for adolescent elite athletes in South Africa. <https://core.ac.uk/download/58915965.pdf>
- Why is there a Pilot Shortage? - Wayman College of Aeronautics <https://wayman.edu/pilot-shortage/>
- Zaini, M. A. Z. (2025). Q-switched and mode-locked erbium-doped pulsed fiber laser using Molybdenum Titanium Aluminum Carbide as saturable absorber. <https://core.ac.uk/download/693205730.pdf>

Formatting Guidelines

- Font: Times New Roman
- FontSize: 12pt(text), 14pt(headings)
- LineSpacing: 1.5
- Margins: 1 inch on all sides
- File Format: Microsoft Word (.doc/.docx)