An Assessment on the Impacts of Continuing Professional Development (CPD) Activities among Engineering Professionals in Nueva Ecija

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Abstract*— The study focuses on the necessity for engineering professionals to engage in continuing professional development (CPD) activities in order to enhance their skills and knowledge in the rapidly evolving engineering field. The importance of CPD programs, particularly mandated in the Philippines under Republic Act No. 10912, is highlighted to guarantee engineers maintain their licenses and upgrade their competence. The study aims to evaluate the effectiveness of CPD activities on the professional practice of engineers in Nueva Ecija, addressing their awareness, understanding, and perceived impact of CPD programs. Challenges faced by engineers concerning compliance with CPD requirements, such as cost and time constraints, are identified, leading to recommendations for improving CPD programs and making them more accessible and engaging for Filipino engineers of different specializations. The study utilizes a mixed methods research design combining quantitative and qualitative approaches to gather insights into the impacts of CPD activities among engineering professionals in Nueva Ecija. The findings suggest that while most engineers engage in CPD activities to fulfill requirements, they recognize the benefits of improving their technical knowledge and skills. Challenges related to cost and time constraints highlight the need for flexible delivery modes and financial incentives to enhance the effectiveness and engagement of CPD programs in the engineering profession. Through these insights, the study contributes valuable information to policymakers, regulators, CPD providers, and engineering professionals aiming to strengthen the engineering workforce in the Philippines and improve the quality of engineering practices in Nueva Ecija.

Indexed Terms*— Continuing Professional Development, Engineering Professional, Perceived Impact, Program Effectiveness, Challenges in Participation

I. INTRODUCTION

As the modern world revolves around advancements in technology, materials science, and design methodologies, it is evident that the evolving landscape in the engineering field also demands dynamic engagements fueling the necessity to be even more developed and progressive than ever before. Correspondingly, engineers associated with their chosen fields must sustain and even pursue radical competence and absolute relevance beyond constantly-changing environment conducive to their commitment of affirming lifelong learning.

The arising issue is addressed through supplementary learning activities relevant to "Continuing Professional Development" that engineering professionals should undertake in order to augment and enhance their abilities in the workplace. Generally, Continuing Professional Development (CPD) incorporates a wide range of educational and training programs designed to update engineers' knowledge, skills, and ethical understanding

throughout their careers. These activities can cover a diverse range of topics, from emerging technologies and software applications to new regulations and best practices in specific engineering disciplines.

The enforcement of mandatory CPD programs for licensed engineering professionals has gained significance across the globe and is endeavored in most countries. In the Philippines, the Continuing Professional Development Act of 2016 (Republic Act No. 10912) mandates engineers to participate in CPD activities to maintain their licenses with the intention to upgrade their prowess and expand their growth as duly-registered engineering professionals of the country. However, the effectiveness of such programs in achieving their intended outcomes remains an area of ongoing discussion.

This study aimed to assess the impacts of engaging with Continuing Professional Development (CPD) activities as part of the mandatory obligations of engineering professionals in the Philippines through investigation of their experiences and perceptions that most likely obtain valuable insights into the efficacy of current CPD programs.

Moreover, the study scrutinized the survey data reflected upon responses suitable for the interpretation of the level of awareness and understanding of the CPD law among engineers. It latter defined the perceived impact of CPD activities on engineers' professional practice, knowledge, and skills. The measured effectiveness of current CPD programs is considerable toward further development and implementation of CPD policies and regulations.

The challenges faced by engineers in complying with the CPD requirement contemplated throughout their feedback are productive framework to strengthen the design, content, and delivery of CPD programs to better meet the needs of engineering professionals. Finally, the formulated recommendations for improvement and development of more effective and engaging CPD programs for Filipino engineers administered the understanding of its importance and encouragement to participate in activities to boost their professional development.

II. REVIEW OF RELATED LITERATURE

Oducado and Palma (2020) conducted a study aimed to determine nurses' awareness and participation in CPD in the Philippines in which nurses were moderately aware of the CPD law and its IRR yet none of them were unaware that the CPD Act of 2016 is a law requiring all Filipino professionals including nurses to participate in CPD programs, whereupon CPD means the inculcation of advanced knowledge, skills and ethical values in a post-licensure specialization, besides CPD is a mandatory requirement in the renewal of the PIC and that an accredited program should be accredited by the CPD Council.

In a study administered by Pasique and Maguate (2023), entitled: "Challenges and Opportunities among Educators in the Implementation of Continuing Professional Development", it has been concluded that challenges mainly encountered by educators while engaging with CPD revolve around their time management in terms of paperwork, availability of equipment, and personal encouragement. On the other hand, the opportunities under CPD (e.g., developed skills and training, advantage as a teacher, availability of resources, moral support, and expertise of mentors or facilitators) were concluded to be the driving factor that makes CPD significant despite challenges.

Sahagun et al. (2019) presented in their study determined to the impacts of public elementary school teachers with the undergoing CPD activities that the respondents' attendance of CPD activities is dependent on their perception that it will contribute to career development, enhancement of personal competencies, improving teaching and learning process and improving learning outcomes. Furthermore, with the enriched competencies and knowledge acquired from various CPD activities, LPTs increase that service worth beefs up that credential and improves that qualification. Thus, make him or her best fit for greater assignments and authority. Generally, it has opened many doors to job opportunities and growth.

A study aimed to assess if conventions are effective continuing professional education/development activity lead by Orale et al. (2016) showed that

engineers view attending seminars and workshops (conventions included) as major source of CPD units; few are into formal education (MS and Ph.D.) and significantly low in self-directed forms such as researches leading to invention, publication, and the likes. Correspondingly, PICE conventions are full of technical and non-technical sessions aimed at improving a holistic civil engineering professional. The full participation in these activities will likely lead to an improvement of the practice of civil engineering. Moreover, the current management of the convention is likely to result in poor absorption of knowledge shared during the convention. A monitoring system (preferably automated) to check actual attendance of participants may be implemented. Certificate of participation based on the verified attendance may result in a better participation of convention attendees.

Additionally, they also justified that a huge proportion of registered participants was not in the venue to be educated on the advances in the engineering field and its practice. The number of attendees drops exponentially as the convention progresses. Likewise, about two-thirds of the participants who were attending technical sessions (or about one-tenth overall participants) listen attentively. However, they do not interact with the resource persons through questions and the likes. Conduct/participation of/in other forms of CPD activities aligned to the specialization of the professional must be conducted/encouraged.

More significantly, Calixto and Ferrer, in their study entitled: "Determining the Effectiveness of Continuing Professional Development Seminars in Enhancing Certified Public Accountants' Competences Using Partial Least Squares–Structural Equation Modelling", further substantiated that CPD seminars helped accountants in enhancing certain areas of competence. Specifically, most CPD seminars are viewed by the majority of accountants as effective in enhancing technical accounting knowledge and skills. One of the obvious benefits of engaging in CPD seminars is being able to be updated to the changes in accounting standards, laws, and taxation rules. In addition, CPD seminars also serve as refresher trainings for some accountants who want to revisit standards and practices that they do not normally encounter as part of their specific work functions.

Conclusively, they supported that most of the CPD seminars that are being offered do not effectively cater to the profession's need for enhanced competence on organizational and business concepts as well as on information technology. CPD seminars have been too focused on accounting related topics that it fails to include necessary non-accounting knowledge to provide a more holistic learning experience. As a consequence, there are only few seminars and programs that focus on broad business knowledge and skills and industry specific practices. Moreover, there are also very few practical trainings about systems and information technology.

The study aimed to assess the impacts of Continuing Professional Development (CPD) activities on engineering professionals in Nueva Ecija, analyzing how these programs influence their professional development and identifying potential areas for improvement. Specifically, it aims to answer the following, to wit:

1.Awareness and Understanding:

- To what extent are engineering professionals in Nueva Ecija knowledgeable of the CPD law and its requirements?
- Do engineers clearly comprehend the purpose and benefits of participating in CPD activities?

2. Impact on Professional Practice:

- How do engineers perceive the impact of CPD activities on their professional knowledge, skills, and logical abilities?
- Do CPD programs contribute to advanced engineering practices and project outcomes in Nueva Ecija?

3. Program Usefulness:

- How effective are the current CPD programs offered to engineers in terms of content relevance, delivery methods, and accessibility?
- Do CPD programs adequately address the diverse needs of engineers across different specializations and experience levels?

4. Challenges in Participation:

- What are the primary challenges faced by engineering professionals in complying with the CPD requirement (e.g., cost, time constraints, program availability)?
- Are there specific barriers or limitations within the current CPD system that hinder participation?

5. Recommendations for Improvement:

- Based on the findings, what recommendations can be made to improve the effectiveness and engagement of CPD programs for Filipino engineers?
- How can policymakers, regulators, and CPD providers work together to create a more robust and beneficial CPD system for the engineering profession?

The study was conducted in Nueva Ecija within Region III/Central Luzon across its 5,689.69 square kilometers land area comprising the 27 municipalities and 5 cities to which respondents of different engineering discipline complying with the imposed CPD units are currently practicing their profession therein for the period June 16, 2024 to July 28, 2024.

The study on the assessment of the impact within Continuing Professional Development (CPD) activities among engineering professionals has the potential to benefit a wide range of stakeholders in the Philippine engineering landscape. The data gathered based on the responses pertinent to the engineer's awareness, program usefulness, and challenges faced upon participation shall provide valuable insights to the Professional Regulation Commission (PRC) into the effectiveness of the mandatory CPD program for engineers.

The study was also significant to CPD Providers as this will present collective feedback on program content, delivery methods, and accessibility to further comprehend the needs and preferences of engineers regarding CPD activities. More importantly, engineering professionals would gain insights into the effectiveness of CPD programs and identify areas for personal development through clarifications made within perceived impact of CPD activities on their skills, knowledge, and professional practice. And finally, the study's findings on the usefulness of CPD programs can inform hiring practices and internal training initiatives within engineering firms and other organizations in virtue of attaining comprehension into the overall competency and skills of the engineering workforce.

III. METHODOLOGY

A. Research Design

The study incorporates a mixed methods research design combining a quantitative and qualitative methods to provide a comprehensive understanding of the given phenomenon. As for the employment of quantitative component, the study utilized survey data delivered by closed-ended questions to collect data on demographics and CPD awareness and participation that further estimated the frequency, types, and significance of CPD activities, as well as their perceived impact on various aspects of professional life. Meanwhile, the qualitative component is being reflected on the gathered collective insights and perspectives on CPD effectiveness as well as their motivations, challenges, and benefits associated with CPD. This scrutinized the in-depth experiences and perceptions of engineering professionals regarding CPD.

Quantitative methods presented numerical data for statistical analysis, whereas qualitative methods forwarded substantial insights into participants' experiences. Combining both approaches enhances the validity and reliability of the findings by establishing evidence from multiple sources. Qualitative data contributed to help explain the underlying reasons for the quantitative results, providing a more elaborated interpretation.

The study formulated specific research questions to guide the data collection and analysis. It then classified the target population of engineering professionals and selected a representative sample for both quantitative and qualitative components. Surveys comprising of mixed approach were administered to obtain both quantitative and qualitative data that were latter assessed to create a comprehensive understanding of the impacts of CPD.

B. Locale of the Study

The study focused on the dynamic socio-economic landscape of Nueva Ecija manifesting a compelling context for studying the impacts of CPD activities among engineering professionals. The province's transition from an agrarian to an industrial economy entailed a skilled and adaptable engineering workforce. Historically, its fertile plains, extensive irrigation

systems, and persistent agricultural sector have been the backbone of its economy yet in recent years, the province has been undergoing rapid industrialization and urbanization.

It has been identified as an ideal locale for the research with its evolving economic structure that further sought a broad spectrum of engineering expertise, from agricultural and civil engineering to industrial and environmental engineering. This diversity solidified a rich context for examining the influence of CPD on different engineering disciplines. As Nueva Ecija ventures forward to rapid urbanization and industrialization, there is an increased demand for infrastructure projects that established a fertile ground for studying the correlation between CPD and the quality of engineering works.

Correlatively, the province has also experienced development challenges such as disaster risk reduction, climate change adaptation, and sustainable development that calls for engineering solutions which further highlights the importance of CPD in addressing critical societal problems. Nevertheless, its active involvement in development planning and monitoring may provide access to relevant data on infrastructure projects, economic indicators, and demographic information, which can be utilized to supplement the research findings.

C. Population and Sampling

The study brought random participants from a list of registered professional engineers in Nueva Ecija including engineers from various fields such as civil, mechanical, electrical, chemical, and others to the center of the study as respondents of questionnaires established that reflect their awareness and understanding, impacts on their professional practice, the program effectiveness, challenges met throughout their participation, and their recommendations for improvement of CPD activities based on their own knowledge, experiences, and perception.

Inasmuch as the researcher identified the population to be all engineering professionals registered and practicing in Nueva Ecija, a subset of this population equivalent to 143, quite above the minimum sample size to get any kind of meaningful result, were studied to represent the entire population. The study employed a Simple Random Sampling as each engineering professional in the population has an equal chance of being selected further aligned with the research objectives and feasibility. A proportionate number of engineers from each stratum were randomly selected to form the sample along with formulating the structure of the survey disseminated through online forms to assess the impacts of CPD activities. Then, completed surveys were gathered and the data obtained were analyzed using appropriate statistical techniques.

D. Research Instrument

The researcher established and distributed structured questionnaires comprising a standardized set of questions with predetermined response options administered through Google Forms to gather the suitable and relevant information necessary for the quantitative and qualitative analysis as part of the assessment on the impacts of CPD activities as reflected through the responses of engineering professionals on their knowledge, experiences, and awareness upon implementation of the CPD law.

The organized questionnaire is utilized to obtain information concerning their comprehension, engagement, and understanding: based on their demographic information which includes their age, gender, engineering discipline, years of experience, and employment status; in terms of their CPD Participation reflecting the frequency of their CPD compliance, types of CPD activities attended, sources of CPD information, and perceived relevance of CPD activities; connected with the perceived impacts of CPD such as its impact on professional knowledge and skills, impact on job performance, impact on career advancement; and perceived return on investment in CPD; corresponding to their satisfaction with CPD content, delivery methods, and overall CPD experience; and finally dealing with barriers to CPD Participation that further involves the identification of factors hindering CPD participation, such as time constraints, financial limitations, and lack of employer support.

E. Data Gathering Procedure

The data gathering for this research study commenced with clearly outlining the study's purpose and research questions to guide instrument development along with

the conduct of a comprehensive review of existing research to identify relevant variables and question formats before the formulation of the questionnaire based on research objectives and literature review findings. Thereafter the identification of the population of engineering professionals in Nueva Ecija altogether with calculation of required sample size based on desired statistical power and precision that undergone a simple random sampling.

Potential participants were approached through both face-to-face and online interaction equipped with an explanation of the study to obtain informed consent. Through accomplished and submitted online surveys, Google Forms already recorded and tallied the responses of the chosen respondents. Observed findings as being reflected throughout the results were interpreted in relation to the research questions and objectives.

F. Data Analysis

The data obtained and consolidated through the response from the survey questionnaires were statistically analyzed with the application of percentage technique which is utilized for the quantification and calculation of the knowledge gathered in this study predicated on the responses of the determined respondents as it is the most commonly used for the measurement of average percentage corresponding to each detailed answer towards a single question.

The formula to be used was: % = F / N x 100.

Where,

F = answer

% = percentage

N = number of respondents

Qualitative data analysis through open-ended questionnaire responses were systematically coded and categorized to identify recurring themes and patterns related to the impacts of CPD activities. Findings from quantitative and qualitative analyses were integrated to provide a comprehensive understanding of the impacts of CPD activities. These were further interpreted in light of the research questions and existing literature. Results are then presented clearly and concisely using tables, graphs, and charts, along with detailed explanations.

G. Ethical Consideration

Conducting the research in the context of assessing the impacts of CPD activities among engineering professionals in Nueva Ecija manifested an ethical challenge of assuring that participants fully understand the study's purpose, risks, and benefits before agreeing to participate alongside with protecting their personal information and maintaining the confidentiality of their responses. This phenomenon was addressed through indicating in the online forms prior to putting in their responses that data and information gathered will be treated with utmost confidentiality in accordance with the Data Privacy Act of 2012 (RA 10173) and the online survey shall be used for academic purposes only.

IV. RESULTS AND DISCUSSIONS

Presentation, Analysis, and Interpretation of Data

I. Background Information

A. Age Group

Table 1. This table presents to which age group the roster of engineering professionals as respondents belong as further submits valuable insights into how different generations perceive and engage with CPD, and how its impact varies across different career stages. It can be gleaned from the data that fifteen respondents (10.49%) were from age group 18-24 years old; fifty-nine (41.26%) from age group 25-34 years old; twenty-seven (18.88%) from age group 35-44 years old; fourteen (9.79%) from age group 45-54 years old; nineteen (13.29%) from age group 55-64 years old; and nine (6.29%) were from age group 65-74 years old summing up to a total of 143 registered engineers from different engineering discipline.

Age Group	No. of Respondents	Percentage
18-24 years old	15	10.49%
25-34 years old	59	41.26%
35-44 years old	27	18.88%
45-54 years old	14	9.79%
55-64 years old	19	13.29%
65-74 years old	9	6.29%
Total	143	100%

Age group influenced knowledge acquisition, perception of CPD importance, participation rates in

CPD activities, and perceived impact on job performance, career advancement, and overall job satisfaction. Younger engineers may prioritize foundational knowledge, while older engineers focus on advanced knowledge and leadership development. Younger engineers may view CPD as essential for career advancement, while older engineers may see it as maintaining professional standing.

The survey identified specific CPD needs, evaluate its effectiveness, understand generational differences, and optimize delivery. It was used to analyze the correlation between age and CPD impact, considering age groups like starting engineers (18-24), early career engineers (25-34), mid-career engineers (35-44), senior engineers (45-54), experienced engineers (55-64), and consultant engineers (65-74). This helped formulate CPD programs to meet the unique learning needs of different age groups.

B. Type of Engineering Discipline

Table 2. This table shows the proportion of respondents from different engineering discipline in Nueva Ecija with required units needed for compliance as mandated by the CPD law. As revealed in the data shown, majority were from Civil Engineering with representation of fifty-five (38.46%) respondents; thirty-eight (26.57%) were from Agricultural and Biosystems Engineering; fifteen (10.49%) were from Electrical Engineering; thirteen (9.09%) from Geodetic Engineering; and twenty-two (15.38%) were from Mechanical Engineering.

Engineering Discipline	No. of Respondents	Percentage
Agricultural and Biosystems Engineering	38	26.57%
Civil Engineering	55	38.46%
Electrical Engineering	15	10.49%
Geodetic Engineering	13	9.09%
Mechanical Engineering	22	15.38%
Total	143	100%

The survey on the impact of Continuing Professional Development (CPD) on engineering professionals in Nueva Ecija considered the unique knowledge, skill sets, and challenges of each engineering discipline. It emphasized the importance of formulating CPD programs to specific knowledge and skills, considering industry trends and challenges, and considering the perceived impact on job performance and satisfaction.

Furthermore, the survey aimed to identify discipline-specific CPD needs, evaluate CPD effectiveness, understand disciplinary differences, and optimize CPD delivery. It examined civil, agricultural and biosystems, mechanical, electrical, and geodetic engineering disciplines. By incorporating engineering discipline, the researcher understood the diverse CPD needs and preferences among engineering professionals in Nueva Ecija, leading to more targeted and effective CPD programs. This guaranteed maximum engagement and impact in CPD programs.

C. Years practicing engineering professionally

Table 3. This table exhibits the span (in years) of engineering practice by registered professionals as being indicated by the respondents. From the data gathered, fifteen (10.49%) were less than 5 years in practicing engineering professionally; fifty-nine (41.26%) were in 5-10 years; forty-one (28.67%) were in 11-20 years; and 28 twenty-eight (19.58%) were more than 20 years practicing their corresponding engineering profession.

Years practicing engineering professionally	No. of Respondents	Percentage
Less than 5 years	15	10.49%
5-10 years	59	41.26%
11-20 years	41	28.67%
More than 20 years	28	19.58%
Total	143	100%

The number of years an engineer has been practicing professionally was a significant factor in assessing the impact of Continuing Professional Development (CPD) activities. This variable varied based on career stage and experience level. Early-career engineers may focus on building foundational knowledge, while experienced engineers may deepen expertise or develop leadership abilities. Perceptions of CPD importance, participation rates, and impact on job performance, career advancement, and overall job satisfaction also varied based on years of practice.

The study identified and evaluated the impact of CPD on engineers at different career stages by analyzing data based on years of practice. It helped formulate CPD programs, assess effectiveness, understand career progression, and optimize delivery. Categorizing the survey into designated span in certain period of years introduced a more targeted and effective CPD programs.

D. Membership in Engineering Associations (e.g., PICE, PSABE)

Table 4. This table manifests percentage of the respondents whose currently maintains membership in any existing engineering associations of their corresponding engineering discipline. As depicted in the table, ninety-seven (67.83%) were members of an engineering associations, while forty-six (32.17%) were not.

Response	No. of Respondents	Percentage
Yes	97	67.83%
No	46	32.17%
Total	143	100%

Membership in engineering associations significantly influenced the impact of Continuing Professional Development (CPD) activities among engineering professionals in Nueva Ecija. Members have access to various CPD programs, foster professional networks, and may be required to participate in certain CPD requirements, thereby influencing their engagement and perceived importance.

The survey analyzed data on membership in engineering associations to identify CPD access and participation patterns, evaluate the impact of association-provided CPD, understand the role of professional networks, and identify opportunities for collaboration. This assisted the researcher in understanding how professional affiliations influence CPD engagement and impact, leading to more effective CPD strategies.

E. Means of obtaining knowledge about the CPD requirement for Registered Engineers

Table 5. This table views the collective feedback from the respondents when asked how did they learn about the CPD requirement for engineers in the Philippines. As presented in the data, one hundred thirty (90.91% of the total respondents) responded they have learned it through the Professional Regulation Commission (PRC) website/communication; forty-eight (33.57%) via engineering association/society membership; twenty-seven (18.89%) through an employer/colleague; three (2.10%) answered social media; five (3.50%) with course lesson; and thirteen by means of a private CPD provider.

Responses	No. of Respondents	Percentage
Professional Regulation Commission (PRC) website/communication	130	90.91%
Engineering association/society membership	48	33.57%
Employer/colleague	27	18.89%
Social media	3	2.10%
Course Lesson	5	3.50%
Private CPD provider	13	9.09%

Understanding how engineers learn about CPD requirements was essential for evaluating the effectiveness of CPD dissemination strategies and identifying communication gaps. This further supported evaluating current communication channels, improving CPD awareness, addressing barriers to participation, enhancing compliance rates, and informing policy development.

Moreover, by identifying effective channels and identifying reasons for non-compliance, strategies were developed to improve CPD compliance. Additionally, understanding how engineers learn about CPD requirements informed policy decisions related to CPD requirements and enforcement. Thus, understanding how engineers learn about CPD requirements can significantly enhanced CPD programs.

II. Awareness and Understanding of CPD

A. Familiarity with the CPD Law (Republic Act No. 10912)

Table 6. This table reflects the combined responses when inquired about the extent of their familiarity with the CPD law (Republic Act No. 10912) in which thirty-eight (26.57%) were very familiar; eighty-four (58.74%) were somewhat familiar; twenty-one

(14.69%) were not very familiar; and none of the respondents were not familiar at all.

Response	No. of Respondents	Percentage
Very familiar	38	26.57%
Somewhat familiar	84	58.74%
Not very familiar	21	14.69%
Not familiar at all	0	0%
Total	143	100%

The level of familiarity with the CPD Law (RA 10912) among engineering professionals in Nueva Ecija equipped valuable insights into the effectiveness of the law's implementation and the overall CPD landscape in the region.

High familiarity suggested effective dissemination efforts by the Professional Regulation Commission, engineering boards, and professional organizations, while moderate familiarity suggested room for improvement in dissemination efforts. Low familiarity indicated a significant gap in information dissemination, compliance issues, and insufficient efforts by relevant organizations.

B. Thoughts about the utmost purpose of the CPD requirement for Registered Engineers

Table 7. This table depicts the unified thoughts between respondents when queried about the utmost purpose of the CPD requirement for engineers whereupon twenty-five (17.48%) echoed to enhance skills sets; eleven (7.69%) acknowledged to interact with fellow professionals and learn from industry experts in the field; none responded to improve soft skills; fifty-three (37.06%) indicated to stay up-to-date on industry developments; fifteen (10.49%) countered to assess growth and progression as an engineering professional; thirty-nine (27.28%) answered to upskill and gain additional credentials; and none voted to improve job satisfaction as an objective to engaging with CPD activities.

Response	No. of Respondents	Percentage
To enhance skill sets	25	17.48%
To interact with fellow professionals and learn from industry experts in the field	11	7.69%
To improve soft skills	-	0%
To stay up-to-date on industry developments	53	37.06%
To assess growth and progression as an engineering professional		
To upskill and gain additional credentials	39	27.28%
To improve job satisfaction	-	0%
Total	143	100%

Engineers' perceptions of the utmost purpose of Continuing Professional Development (CPD) were necessary for understanding the effectiveness and alignment of CPD programs with the needs and expectations of the engineering profession. Understanding these perceptions revealed motivations for CPD, its effectiveness, and compliance with regulations.

The survey conducted assessed the alignment of CPD programs, identified gaps in offerings, boosted communication strategies, and disseminated policy development. Perceptions then categorized into professional competence, career advancement, public safety, industry relevance, and personal growth. The researcher gained valuable insights into the effectiveness of CPD programs and classified areas for improvement upon gauging the collective perspectives gathered.

C. Awareness on the types of CPD activities

Table 8. This table submits the shared responses of engineering professionals when concurred with the types of CPD activities they are aware of. One hundred thirty-nine (97.20%) of the total respondents selected seminars; ninety-three (65.03%) of the chose conferences; eighty-four (58.74%) voted for online courses; and there are five (3.50%) who implied that graduate studies were among type of CPD activities they are aware of.

Responses	No. of Respondents	Percentage
Seminars	139	97.20%
Conferences	93	65.03%
Online Courses	84	58.74%
Graduate Studies	5	3.50%

Engineers' awareness of the types of CPD activities was very significant for understanding the current landscape of CPD in Nueva Ecija. This information impacted their professional development choices, revealed gaps in CPD offerings, and defined their preferences.

Corresponding engineers' awareness further assessed the effectiveness of CPD promotion, distinguished popular CPD formats, enlightened CPD program development, and measured the diversity of CPD participation. The collected data aided the researcher determined areas for improvement in CPD provision and promotion.

III. Participation in CPD Activities

A. Participation in any CPD activities over the past 3 years

Table 9. This table represents the course of participation of the respondents in any CPD activities over the past 3 years with one hundred nineteen (83.22%) of them confirmed their involvement while only twenty-four (16.78%) did not do so.

Response	No. of Respondents	Percentage
Yes	119	83.22%
No	24	16.78%
Total	143	100%

The study solidified the objective to assess the impact of Continuous Professional Development (CPD) on the engineering profession in Nueva Ecija though analyzing the relationship between CPD participation and job satisfaction, career advancement, and professional competence. It further established the trends in CPD engagement, pointed out barriers to CPD, and gauged the need for additional CPD offerings.

B. Primary reasons for participating in CPD activities

Table 10. This table reveals the primary reasons of engineering professionals when participating in CPD activities wherein one hundred thirty-one (91.61%) of the total respondents have included to fulfill the CPD requirement; fifty-three (37.06%) were to stay up-to-date on new technologies and industry trends; sixty-three (44.06%) were to improve my technical skills and knowledge relevant to my engineering discipline; twenty-five (17.48%) were to enhance my problem-solving abilities; and thirty-three (23.08%) engaged in CPD activities also to network with other engineers.

Responses	No. of Respondents	Percentage
To fulfill the CPD requirement	131	91.61%
To stay up-to-date on new technologies and industry trends	53	37.06%
To improve my technical skills and knowledge relevant to my engineering discipline	63	44.06%
To enhance my problem-solving abilities	25	17.48%
To network with other engineers	33	23.08%

It was with these primary reasons for engineers' CPD participation that makes the whole study imperative for assessing the effectiveness of CPD programs and identifying areas for improvement. These reasons include intrinsic motivations like career advancement and personal growth, alignment with regulatory requirements, and effectiveness.

Formulation of CPD programs were even more defined through determining these reasons besides improvement of communication strategies, and assessment of the perceived CPD impact. These also verified a deeper understanding of factors influencing CPD engagement and identify opportunities for improvement.

C. Satisfaction with the variety of CPD activities currently offered

Table 11. This table reflects the extent of satisfaction of the respondents with the variety of CPD activities currently offered whereby twenty-five (17.48%) were very satisfied, forty-seven (32.87%) were somewhat satisfied; fifty-seven (39.86%) were neutral, nine (6.29%) were somewhat dissatisfied; and only five (3.50%) were very dissatisfied.

Response	No. of Respondents	Percentage
Very satisfied	25	17.48%
Somewhat satisfied	47	32.87%
Neutral	57	39.86%
Somewhat dissatisfied	9	6.29%
Very dissatisfied	5	3.50%
Total	143	100%

Engineers' satisfaction with the variety of CPD activities offered also contributed to the assessment of CPD programs in terms of its effectiveness. A diverse range of activities catered to different learning styles and professional development needs, increasing satisfaction and perceived effectiveness. Low satisfaction levels indicated a lack of diversity in CPD offerings, highlighting areas for improvement.

IV. Perceived Impact of CPD Activities: Extent of belief how much CPD activities have improved their:

A. Technical knowledge and skills relevant to your engineering discipline

Table 12. This table outlines the extent of how much the respondents believed that CPD activities have improved their technical knowledge and skills relevant to their engineering discipline through which thirty (20.98%) rated very much; sixty-three (44.06%) marked considerably; thirty-six (25.17%) expressed moderately, eight (5.59%) prompted slightly; and six (4.20%) said not at all.

Response	No. of Respondents	Percentage
Very Much	30	20.98%
Considerably	63	44.06%
Moderately	36	25.17%
Slightly	8	5.59%
Not at All	6	4.20%
Total	143	100%

Engineers' perception of CPD impact on technical knowledge and skills scrutinized the effectiveness of CPD programs. Self-assessment helped identify strengths and weaknesses, and the relevance of perceived improvement examined CPD programs. This information expanded knowledge gaps and constructed framework on future CPD strategies, ensuring that CPD activities meet the needs of engineering professionals in technical skill development.

B. Ability to solve complex engineering problems

Table 13. This table outlines the extent of how much the respondents believed that CPD activities have improved their ability to solve complex engineering problems whereupon nineteen (13.29%) rated very much; fifty-three (37.06%) marked considerably; forty-nine (34.27%) expressed moderately, fifteen (10.49%) prompted slightly; and seven (4.89%) said not at all.

Response	No. of Respondents	Percentage
Very Much	19	13.29%
Considerably	53	37.06%
Moderately	49	34.27%
Slightly	15	10.49%
Not at All	7	4.89%
Total	143	100%

Correspondingly, engineers' perception of CPD impact on problem-solving scrutinized the effectiveness of programs. Self-assessment measured CPD effectiveness, and data distinguished effective programs. The relationship between perceived improvement and CPD impact recognized skill gaps and specified future CPD strategies. This information guided the researcher better understand the skills needed to address complex engineering challenges and upgrade their problem-solving abilities.

C. Understanding of new technologies and industry trends

Table 14. This table also schemed the extent of how much the respondents believed that CPD activities have improved their understanding of new technologies and industry trends upon which forty (27.97%) rated very much; sixty-seven (46.85%) marked considerably; twenty-nine (20.28%) expressed moderately, three (2.10%) prompted slightly; and four (4.89%) said not at all.

Response	No. of Respondents	Percentage
Very Much	40	27.97%
Considerably	67	46.85%
Moderately	29	20.28%
Slightly	3	2.10%
Not at All	4	2.80%
Total	143	100%

Finally, engineers' perception of CPD impact on technology and industry trends also characterized the effectiveness of programs. Self-assessment attested CPD effectiveness, designating programs that provide exposure to new developments. The relationship between perceived improvement and CPD impact benefit evaluation of programs, identification of knowledge gaps, and information to future CPD strategies.

V. Challenges in CPD Participation

A. Major challenges to engaging in CPD activities

Table 15. This table illustrates the major challenges respondents encounter to engaging in CPD activities by which one hundred twenty-four (86.71%) agreed for the cost of CPD programs; ninety-five (66.43%) concurred with the time constraints due to work commitments; thirty-four (23.78%) included the lack of awareness of relevant CPD programs; and sixty-one (42.66%) accounted for the difficulty finding CPD programs that meet my specific needs.

Response	No. of Respondents	Percentage
Cost of CPD programs	124	86.71%
Time constraints due to work commitments	95	66.43%
Lack of awareness of relevant CPD programs	34	23.78%
Difficulty finding CPD programs that meet my specific needs	61	42.66%

Engineers faced significant challenges in engaging in professional development (CPD) activities, which can be validated through the results of the surveyed questions above. These challenges blocked CPD participation, declined the effectiveness of CPD programs, and made CPD to be inaccessible.

B. Suggestions for enhancing the CPD system to facilitate engineers' involvement

Table 16. This table forwards some collective suggestions for enhancing the CPD system to facilitate engineers' involvement therewith one hundred twenty-five (87.41%) proposed flexible CPD Delivery Modes (e.g., online platforms, blended learning, mobile learning); thirty-seven (25.87%) submitted recognition of informal learning (e.g., portfolio-based assessment, mentorship and coaching); sixty-one (42.66%) implied reduced Administrative Burden (e.g., simplified CPD unit system, online CPD management system, reduced documentation); one hundred six (74.13%) recommend financial incentives and support (e.g., tax breaks, subsidized cpd programs, employer partnerships); thirty-four (23.78%) hinted on enhanced CPD content relevance (e.g., surveys and consultations with engineers, industry collaboration, CPD accreditation standards); and nineteen (13.29%) advised targeted communication, partnerships with professional organizations, and employer engagement.

Response	No. of Respondents	Percentage
Flexible CPD Delivery Modes (e.g., online platforms, blended learning, mobile learning)	125	87.41%
Recognition of Informal Learning (e.g., portfolio-based assessment, mentorship and coaching)	37	25.87%
Reduced Administrative Burden (e.g., simplified CPD unit system, online CPD management system, reduced documentation)	61	42.66%
Financial Incentives and Support (e.g., tax breaks, subsidized CPD programs, employer partnerships)	106	74.13%
Enhanced CPD Content Relevance (e.g., surveys and consultations with engineers, industry collaboration, CPD accreditation standards)	34	23.78%
Targeted Communication, Partnerships with Professional Organizations, and Employer Engagement	19	13.29%

Engineers' suggestions for improving the CPD system imparted valuable feedback and actionable recommendations. They solved areas for improvement, developed more relevant programs, enhanced participation, and built trust. By gathering their input, the researcher obtained a deeper understanding of the challenges and opportunities within the system, leading to changes that directly benefit the engineering profession.

VI. Recommendations for Improvement

A. The kinds of CPD activities that they find most beneficial for their professional development

Table 17. This table furnishes results based from the responses of registered engineers when sought for their thoughts on the types of CPD activities they would find the most beneficial for their professional development wherein seventy (48.95%) were in favor for online courses; thirty-eight (26.57%) for workshops; and thirty-five (24.48%) for conferences.

Response	No. of Respondents	Percentage
Online Courses	70	48.95%
Workshops	38	26.57%
Conferences	35	24.48%
Total	143	100%

Engineers' perceptions of beneficial CPD activities were a major factor in studying their summative needs and preferences. The results corresponded within establishing the framework of CPD programs to meet the demands of the engineering profession. By aligning CPD offerings with perceived benefits, programs transformed into being more relevant and effective.

B. Suggestions for enhancing the CPD system to facilitate engineers' involvement

Based on the shared insights and general perspectives from the respondents, the trend within their responses mostly implied that CPD points were more like a requirement rather than a choice to improve their corresponding profession. It also really confided on the relevance and the actual use of what people learned in the seminar or workshop because sometimes they try to compress all the information, and none of the attendees really absorb a thing.

Other responses recommended that the government should have more structured way to implement such law. The purpose of the law was then to become up-to-date with their skills and knowledge as a professional. However, each point especially with seminars required a lot of time, energy and money. Thus, making it harder to earn. To resolve conflict, it would be more accessible if CPD Activities were to be shouldered by the Philippine Government.

Meanwhile, some response denoted that lowering the CPD units required is a must. Due to Philippines' exploitative environment on newly licensed graduates, it was evidently a hassle to file for a leave in complying with the CPD units on high-valued workshops and trainings by CPD Providers.

On the other hand, other respondents conveyed that to be at par with our global counterparts, it is therefore important to share not just local development and advancements during these CPD activities but also information and expertise from international resource speakers.

Ultimately, the CPD programs offered in the Philippines should implement strict and continuous hands-on trainings to enable for the professionals to absorb the information from the programs more effectively.

CONCLUSION

The findings of this research indicated that while the presented data on their thoughts about the utmost purpose of the CPD requirement for registered engineers revealed majority to stay up-to-date on industry developments; still almost all the respondents undertake CPD activities to just fulfill the CPD requirement. Inasmuch as most of the respondents are from the age group of 25-34 years old and are practicing the profession for 5-10 years now besides being also a member of an engineering association signifying they have already an established career and an overview of the current engineering landscape of the industry, a greater proportion of the total number of respondents recognized CPD activities substantially improved their technical knowledge and skills relevant to their engineering discipline, ability to solve complex engineering problems, and understanding of new technologies and industry trends

Furthermore, the study also concluded that a huge proportion of registered participants implied that a major challenge for them upon engaging in CPD activities was the cost of CPD programs not to mention also the significance of others like the time constraints due to work commitments, difficulty finding CPD programs that meet their specific needs, and lack of awareness of relevant CPD programs which also a considerable amount of engineering professionals acknowledged throughout the survey. Thereupon the greater number of respondents suggested flexible CPD delivery modes (e.g., online platforms, blended learning, mobile learning) and financial incentives and support (e.g., tax breaks, subsidized CPD programs, employer partnerships) for enhancing the CPD system to facilitate engineers' involvement.

RECOMMENDATION

Based on the conducted assessment on the impacts of Continuing Professional Development (CPD) Activities among Engineering Professionals, the following recommendations are put forth to enhance the effectiveness of CPD activities among registered engineers in Nueva Ecija:

- Strengthen CPD infrastructure by augmenting activities, refining accessibility, reducing financial barriers, and boosting recognition to cater to diverse learning styles and professional interests.
- Promote a CPD culture that involves strong leadership support, regular awareness

campaigns, and mentorship and coaching programs to further establish a culture of continuous learning and professional growth.

- Develop a strategic evaluation framework, create regular feedback channels, and utilize a data-driven decision making to enhance CPD evaluation, measure performance impact, and inform program improvements and resource allocation.
- Reinforce industry collaboration through industry-aligned CPD, work-based learning, and industry mentorship to ensure relevance, practical application, and bridge theory-practice gap.
- Discuss with the government for support of CPD policies, including tax incentives for employer-provided opportunities, and public-private partnerships between government, industry, and academia that are fundamental for effective CPD programs.

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This research is dedicated to the engineering community in the Philippines, with the hope that the findings will contribute to the enhancement of CPD programs and the overall professional development of Filipino engineers.

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