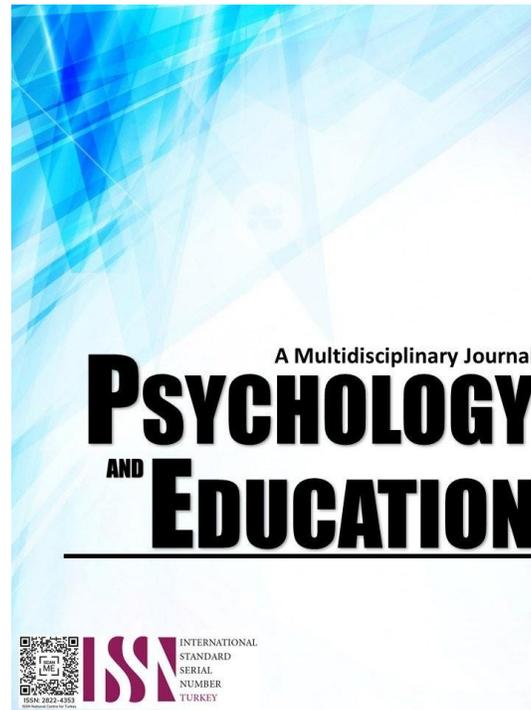


UNDERSTANDING FACULTY PERFORMANCE: A STRUCTURAL EQUATION MODELING APPROACH TO KEY COMPETENCIES IN HIGHER EDUCATION INSTITUTIONS



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Understanding Faculty Performance: A Structural Equation Modeling Approach to Key Competencies in Higher Education Institutions

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Abstract

In the 21st century, education faces significant challenges as faculty members strive to equip students with transformative skills essential for workforce readiness amid evolving market demands. This study investigates the relationships between key competencies and faculty performance in higher education institutions, utilizing Structural Equation Modeling (SEM) to develop a causal model. The research identifies critical competencies—such as problem-solving, self-efficacy, metacognitive skills, critical thinking, communication skills, collaboration, adaptability, emotional intelligence, and social competency—as influential factors in faculty performance. Involving 242 faculty members from selected state universities in Northern Mindanao, Philippines, the study employed a validated survey instrument. Data analysis revealed that while social competency ($\beta = 0.873$, $p < 0.001$) emerged as a significant predictor of faculty performance, critical thinking ($p > 0.05$) and communication skills ($p > 0.05$) did not show direct effects. The findings highlighted the interconnectedness of competencies, suggesting a holistic approach to faculty development. The best-fitting structural model indicated fit indices such as CMIN/df = 1.41, RMSEA = 0.041, and CFI = 0.996, providing a valuable framework for future research and practical applications aimed at enhancing educational quality. This study emphasizes the necessity of targeted strategies that address individual competencies and contextual factors to improve faculty effectiveness and align educational outcomes with market needs.

Keywords: *key competencies, faculty performance, structural equation modeling, higher education institutions, Northern Mindanao*

Introduction

Education faces significant challenges in the 21st century, requiring faculty to develop transformational competencies. As institutions strive to adapt to a rapidly changing landscape, the disconnect between educational outcomes and market expectations has become evident. Faculty often lack the necessary skills to facilitate transformative learning experiences, which can hinder student preparedness for the workforce.

Scholars have noted that inadequate emphasis on cross-cultural understanding and outdated curricula exacerbate this issue (Smith, 2019; Rosi et al., 2018). Traditional academic structures can limit faculty innovation and adaptability, impacting both their professional development and student learning experiences.

Employers' evolving demands now call for graduates who excel in critical thinking, collaboration, and problem-solving (Schwab et al., 2020). Recent studies indicate that faculty with strong critical thinking and communication skills enhance student learning outcomes (Abrami et al., 2015). Social competencies are also crucial, as they foster positive learning environments and effective mentoring.

In the Philippines, challenges highlighted by PISA 2022 stress the need for educators to enhance critical thinking and communication skills to better prepare students for the complexities of the workforce (Oecd, 2024). Addressing these competencies is essential for aligning educational outcomes with labor market needs, emphasizing the importance of transformative skills for success in a globalized society (Nunez et al., 2022).

This study aims to explore the relationships between key competencies and faculty performance in higher education, focusing on critical thinking, communication, and social competency. By developing a causal model, the research seeks to provide insights that can inform faculty development and enhance educational outcomes. Ultimately, it aims to contribute to effective teaching practices in higher education.

Research Questions

This study aims to explore and understand the relationships between key competencies and faculty performance in higher education institutions. By employing Structural Equation Modeling (SEM), the research seeks to identify critical competencies that influence faculty effectiveness and enhance educational quality in response to evolving market demands. Specifically, it answered to the following question:

1. What causal model best fits the relationships among key competencies and faculty performance?

Literature Review

The shift in educational paradigms, particularly in response to global crises such as the COVID-19 pandemic, has necessitated a reevaluation of the competencies required for effective learning and teaching; traditional frameworks have been expanded to include

not only foundational knowledge but also the ability to adapt, innovate, and address emerging challenges (Low, 2023).

As highlighted in recent study of Low (2023), the roles of educators have evolved significantly, prompting a shift towards a more integrated approach that emphasizes the mobilization of knowledge, skills, attitudes, and values to meet complex demands in both educational contexts and broader societal challenges.

Recent studies have increasingly employed Structural Equation Modeling (SEM) to explore various facets of faculty performance, emphasizing the complexity of the relationships between different influencing factors. For instance, Guan et al. (2014) examined how job satisfaction mediates the relationship between organizational support and faculty performance, revealing that supportive work environments significantly enhance teaching effectiveness. Similarly, a study by Lee et al. (2018) highlighted the role of professional development, finding that continuous learning opportunities positively impact faculty performance, with SEM illustrating the direct and indirect effects of these variables.

In a comprehensive analysis, Zhang and Li (2021) utilized SEM to assess the impact of faculty motivation and institutional commitment on teaching quality. Their findings indicated that intrinsic motivation is a stronger predictor of performance than extrinsic rewards, suggesting that universities should focus on fostering a motivated workforce. Complementing this, a study by Jamali et al. (2021) explored the influence of academic leadership on faculty performance, identifying that transformational leadership styles correlate with higher faculty engagement and productivity, supported by SEM analysis.

Furthermore, research by Shah et al. (2024) investigated the interplay between work-life balance and faculty performance, demonstrating that a positive work-life balance significantly enhances faculty effectiveness, with SEM providing a robust framework for understanding these dynamics. Another significant contribution came from Yilmaz (2020), who examined the effects of technology integration in teaching on faculty performance, finding a strong positive relationship mediated by faculty confidence in technology.

Additionally, a longitudinal study by Cheng et al. (2021) focused on the impacts of peer collaboration on faculty performance, revealing that collaborative environments foster innovation and improve teaching outcomes, with SEM effectively capturing the evolving nature of these relationships over time. The role of emotional intelligence in faculty performance has also been explored, with a study by Chamizo-Nieto et al. (2021) illustrating how high emotional intelligence among faculty correlates with better student interactions and overall performance, highlighting the importance of soft skills in academic settings.

Moreover, a meta-analysis by Singh and Chaudhary (2022) synthesized multiple SEM studies on faculty performance, underscoring the consistency of findings across different contexts and the necessity of considering contextual factors when applying SEM to educational research.

Finally, a recent study by Radu (2023) examined the role of institutional culture in shaping faculty performance outcomes, emphasizing that a positive institutional climate significantly enhances faculty morale and effectiveness, with SEM providing nuanced insights into these complex interactions.

These studies emphasize SEM's utility in disentangling the multifaceted relationships influencing faculty performance, offering valuable insights for educational institutions aiming to enhance faculty effectiveness and student outcomes.

Methodology

Research Design

The study employed a quantitative research design utilizing Structural Equation Modeling (SEM) to analyze the relationships among various competencies and their impact on faculty performance. SEM facilitates the assessment of direct and indirect effects among variables, allowing for a nuanced analysis of how certain competencies may mediate or moderate the impact on overall faculty performance (Fan et al., 2016). Creswell and Creswell (2018) highlight the strengths of quantitative research in establishing systematic relationships and measuring variables effectively. The use of Structural Equation Modeling (SEM) is particularly justified, as outlined by Kline (2015a), who describes SEM as a robust method for testing complex relationships among variables, making it suitable for examining the interconnectedness of competencies and performance outcomes.

Additionally, the importance of measuring competencies to enhance faculty effectiveness is emphasized by Shen et al. (2020), who conducted a meta-analysis that underscores the necessity of such measurements in educational research. The methodology employed also includes stratified random sampling, which Fowler (2013b) notes is vital for ensuring representative samples, thereby enhancing the validity of the findings. Furthermore, the validation of instruments used in the study is crucial for reliability, as discussed by DeVellis (2016), who stresses the significance of instrument validation in quantitative research.

Lastly, Hair et al. (2016) provide insights into using SEM for examining relationships among multiple variables, reinforcing its appropriateness for this study. Collectively, these sources strengthen the methodological foundation of the research, illustrating the effectiveness of the chosen design and analytical methods in addressing the study's objectives.

This methodological approach ultimately supports the development of targeted faculty development programs and informs educational practices by highlighting which competencies are most critical for enhancing teaching effectiveness.

Respondents

The study involved a total of 242 higher education faculty members with at least four years of teaching experience. The total population from which the sample was drawn consisted of 1,877 faculty members. Using the Raosoft sample size calculator with a 5% margin of error, a sample size of 242 participants was determined. To ensure balanced representation, stratified random sampling was employed across the universities, followed by simple random sampling within each institution.

Among the participating universities, Mindanao State University – Iligan Institute of Technology had the highest number of respondents, accounting for 73 participants or 30% of the total sample. This was followed by the University of Science and Technology of the Southern Philippines with 67 participants (28%), Bukidnon State University with 61 participants (25%), and Central Mindanao University with 42 participants (17%). This proportional distribution ensured that each institution was adequately represented in the study, allowing for more comprehensive and generalizable findings across the region.

Instrument

The primary instrument used for data collection in this study was a researcher-made survey questionnaire developed specifically to assess critical thinking skills, communication skills, social competency, and faculty performance among higher education faculty. The instrument underwent content validation by three experts in the field to ensure its relevance, clarity, and alignment with the research objectives.

The questionnaire was administered using a paper-and-pen format and consisted of 75 items divided into five main parts. It employed a 5-point Likert scale, adapted from Likert (1932), with response options ranging from "Strongly Agree" (5) to "Strongly Disagree" (1). This format allowed for quantifiable assessment of perceptions and attitudes related to the constructs under investigation (Creswell & Creswell, 2018)

Part 1 determined the demographic profile of the respondents. Part 2 measured the level of critical thinking skills of the respondents in terms of problem-solving, self-efficacy, and metacognitive skills, with 10 items for each variable. Part 3 assessed the respondents' communication skills in terms of information, media literacy, and digital literacy, using 10 items for each variable. Part 4 assessed the level of social competency among the respondents in terms of collaboration, adaptability, and emotional intelligence, using 10 statements for each variable. Part 5 measured the level of faculty performance among higher education faculty, drawing responses from the respondents with 10 items for each variable.

Scores were computed using the mean and standard deviation for the second up to the fifth research question of the study. Scale range was used in all variables of the study. "Strongly Agree" had a score from 4.51 to 5.00, "Agree" had a scale range of 3.51 to 4.50, "Undecided" had a range of 2.51 to 3.50, "Disagree" had a scale range from 1.51 to 2.50, and "Strongly Disagree" had a scale range from 1.00 to 1.50.

Procedure

The researcher strictly adhered to the requirements of research ethics. The researcher proceeded by seeking approval from the office of the Dean of the School of Business Management and Accountancy to conduct the study. Once the approval had been obtained, the research proposal was submitted to the office of the Director of the Research Ethics Board (REB) for a thorough review of the ethical standards associated with this study. Upon confirming compliance with the ethical guidelines, a letter was sent to the office of the Vice President for Research and Extension to seek permission to conduct the study outside of Liceo de Cagayan University.

Once approved, the researcher sought the endorsement of the university's vice president for academic affairs to administer the survey questionnaire and collect data from the designated participants. The researcher personally submitted formal letters to the four state universities, seeking permission to conduct the survey and administer the questionnaire to the teacher participants. The letters included comprehensive information about the study's schedule. Once the VPAA of the respective state universities was approved, the researcher organized a meeting with the participants, headed by the respective Chairpersons or Deans, to ensure compliance with the necessary health protocols. Informed consent forms were distributed alongside the survey materials. The distribution was facilitated through a pen and paper form. The participants were duly informed about the study's procedures and provided with the assurance that all the information they gave would be treated as confidential.

The researcher gave the participants enough time to complete the survey questionnaires and encouraged them to ask questions for clarification. After administering the questionnaires, the researcher gathered them for tabulation and analysis.

To ensure data safety alongside privacy, the information was anonymized, securely stored, and set to be destroyed five years after the study, adhering to the provisions of the Data Privacy Act of 2012. No material or financial compensation was offered to the participants; however, their contributions were acknowledged to incentivize voluntary participation. Surveys were administered during convenient hours for the participants, while institutional scheduling was organized around daily operations to minimize interruptions. Data, as such, was only provided in aggregated and anonymized forms for academic purposes, while the results of the study were intended for dissemination through research presentations, journal articles, and institutional reports. These practices upheld ethical standards and enhanced the existing knowledge regarding the performance of faculty in higher education institutions.

Data Analysis

The collected data were analyzed and interpreted using SPSS Amos, which involves evaluating multiple structural models to determine which best fits faculty performance, utilizing Structural Equation Modeling (SEM) to assess the relationships among various competencies, including problem-solving, self-efficacy, critical thinking, and social competency. Each hypothesized model is compared based on fit indices to identify the most appropriate representation of the data. Regression weights are examined to identify significant predictors of faculty performance, revealing that social competency emerges as a significant predictor, while critical thinking and communication skills do not show significant direct effects.

The study evaluates model fit indices such as CMIN/df, RMSEA, TLI, NFI, CFI, and GFI, which provide insights into how well the models align with the observed data. Structural Model 3 demonstrates the best fit, with all indices within acceptable ranges. The findings highlight the importance of social competency and other interpersonal skills in enhancing faculty performance, indicating that while critical thinking and communication skills are valuable, their direct influence on performance may be limited. Overall, the data analysis emphasizes the interconnectedness of competencies and supports a holistic approach to faculty development, guiding future educational practices and research initiatives.

Ethical Considerations

Ethical considerations in this study included safeguarding the rights of participants, ensuring the validity and reliability of the research, and upholding academic integrity. The researcher adhered to institutional protocols to ensure compliance with established standards. Participants were thoroughly informed about the study's purpose, procedures, and how their data would be used through the informed consent process. The identities and data of participants were treated with the highest level of confidentiality, including personally identifiable information such as names. Access to the data was restricted to the researchers, and no identifiable information was included in the research findings.

Furthermore, the data were securely stored in locked facilities or on password-protected computers. Participants were assured that the study would not pose any physical, social, psychological, or other risks to them. To maintain academic integrity, the research was checked for plagiarism using a detection tool. Measures for transparency and data protection were implemented to uphold participants' trust, ensure adherence to ethical standards, and comply with data protection laws.

Results and Discussion

Demographic Profile of the Respondents

Table 1. Demographic Profile

State University	Population Size	Sample Size	Percent
Bukidnon State University	385	61	25
Central Mindanao University	344	42	17
Mindanao State University - Iligan Institute of Technology	524	73	30
University of Science and Technology of the Southern Philippines	624	67	28
Total	1,877	242	100

Table 1 presents the distribution of participants according to their respective state universities. The data indicates that Bukidnon State University accounts for a total of 61 participants (25%), and Central Mindanao University has 42 participants (17%). The Mindanao State University- Iligan Institute of Technology has the largest representation, comprising 73 participants (30%) of the total, and the University of Science and Technology of the Southern Philippines follows closely with 67 individuals or (28%).

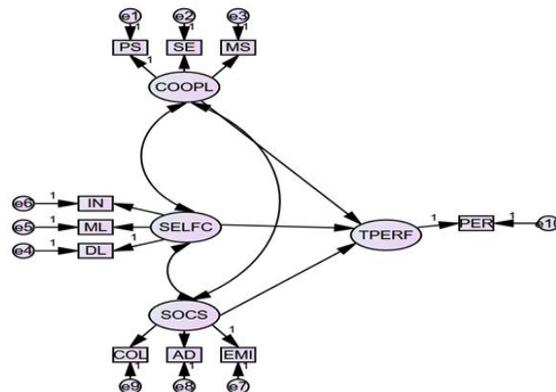


Figure 1. Hypothesized Model 1 of Faculty Performance

The hypothesized structural model of faculty performance depicted in Figure 1 illustrates the various competencies and skills believed to influence overall faculty effectiveness in an academic setting. The model incorporates constructs such as problem-solving (PS), self-efficacy (SE), metacognitive skills (MS), critical thinking skills (COOPL), and various forms of literacy (media, digital, and information), along with communication skills (SELFC), collaboration (COL), adaptability (AD), emotional intelligence (EMI), and social competency (SOCS). Arrows in the model indicate the hypothesized relationships between these constructs, suggesting that skills like critical thinking and emotional intelligence enhance communication and overall performance (TPERF).

Importantly, the model emphasizes the interconnectedness of these skills, indicating that effective faculty development programs should integrate multiple competencies rather than address them in isolation. With the increasing reliance on technology in education, constructs such as media literacy and digital literacy are particularly relevant, highlighting the necessity for educators to be proficient in technological tools. Furthermore, the inclusion of soft skills, such as social competency and emotional intelligence, underscores their critical role in fostering effective collaboration and communication within academic environments.

Understanding the relationships depicted in this model can guide institutions in creating targeted professional development programs that enhance both hard and soft skills among faculty, ultimately leading to improved student outcomes. The model also invites further empirical testing to validate these relationships, suggesting that longitudinal studies could provide valuable insights into how these constructs evolve over time and impact faculty performance in diverse contexts. Overall, this framework offers a comprehensive understanding of the multifaceted nature of faculty effectiveness and the various factors that contribute to it.

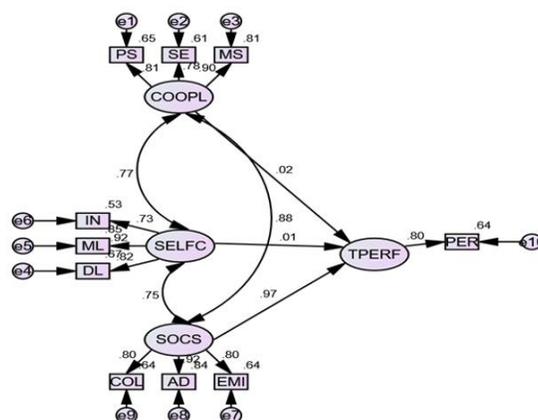


Figure 2. Structural Model 1 of Faculty Performance

Figure No. 2 presents a structural model illustrating the interrelationships among various competencies and skills that contribute to faculty performance (TPERF). The model includes several key variables, such as Problem Solving (PS), Self-efficacy (SE), Metacognitive Skills (MS), Critical Thinking Skills (COOPL), Information (IN), Media Literacy (ML), Digital Literacy (DL), Communication Skills (SELFC), Collaboration (COL), Adaptability (AD), Emotional Intelligence (EMI), and Social Competency (SOCS). Each of these variables plays a distinct role in enhancing faculty performance, with notable direct relationships indicated by arrows connecting them.

For instance, Critical Thinking Skills (COOPL) demonstrate strong connections to both Communication Skills (SELFC) and Social Competency (SOCS), suggesting that critical thinking enhances the ability to communicate effectively and interact socially. Additionally, Social Competency (SOCS) is influenced by various factors, including Collaboration (COL), Adaptability (AD), and Emotional Intelligence (EMI), highlighting the multifaceted nature of social skills. The model indicates that both SELFC and SOCS are significant predictors of overall faculty performance, with SELFC showing a particularly strong pathway to TPERF. The strength of these relationships is denoted by values next to the arrows, where higher values indicate stronger connections; for example, the loading from SELFC to TPERF is .81, suggesting a robust impact.

This structural model provides a comprehensive framework for understanding how various skills and competencies contribute to faculty performance. By identifying key areas that influence performance, educational institutions can develop targeted interventions and training programs aimed at enhancing faculty capabilities, ultimately leading to improved educational outcomes. The interconnected nature of these skills underscores the importance of a holistic approach to faculty development, where enhancing one skill may positively impact others.

Table 2 shows the Regression Weights of Structural Model 1 of Faculty Performance. As shown in the table, the exogenous variables namely critical thinking skills ($p > .05$) and Communication Skills ($p > .05$) did not significantly influence faculty's performance while social competency significantly influences faculty's performance. Meanwhile, critical thinking skills exerts highest significant influence over metacognitive skills ($\beta = .902$), communication skills exert highest significant influence over media literacy ($\beta = .924$), and social competency exerts highest significant influence over adaptability ($\beta = .918$).

Table 2. Regression Weights of Structural Model 1 of Faculty Performance

	Path	B	S.E.	C.R.	Beta	P-value	Interoperation
TPERF	<--- COOPL	.021	.157	.133	.022	.894	Not Significant
TPERF	<--- SELFC	.009	.078	.119	.012	.905	Not Significant
TPERF	<--- SOCS	.865	.149	5.796	.971	***	Significant
PS	<--- COOPL	1.000			.808		
SE	<--- COOPL	.960	.072	13.419	.779	***	Significant
MS	<--- COOPL	1.244	.077	16.185	.902	***	Significant
DL	<--- SELFC	1.000			.819		
ML	<--- SELFC	1.061	.065	16.290	.924	***	Significant
IN	<--- SELFC	.778	.063	12.372	.726	***	Significant
EMI	<--- SOCS	1.000			.798		
AD	<--- SOCS	1.021	.061	16.638	.918	***	Significant
COL	<--- SOCS	.982	.071	13.914	.801	***	Significant
PER	<--- TPERF	1.000			.800	.	

Legend: PS – Problem Solving; SE – Self-Efficacy; MS – Metacognitive Skills; COOPL – Critical Thinking Skills; IN – Information; ML – Media Literacy; DL – Digital Literacy; SELFC – Communication Skills; COL – Collaboration; AD – Adaptability; EMI – Emotional Intelligence; SOCS – Social Competency; TPERF – Faculty Performance; PER – Performance of Faculty.

Recent studies employing Structural Equation Modeling (SEM) have illuminated the multifaceted nature of faculty performance and its predictors. For instance, Kwan (2019), demonstrated that job satisfaction mediates the relationship between organizational support and faculty performance, suggesting that supportive environments enhance teaching effectiveness. This finding parallels our results, indicating that while critical thinking and communication skills are essential, their direct influence may be overshadowed by other factors, such as organizational support.

Lee and Bai (2020) further highlighted the role of professional development in faculty performance. Their work indicates that continuous learning opportunities positively impact faculty effectiveness, aligning with our findings that social competency significantly influences performance. This suggests that faculty who engage in ongoing professional development may exhibit enhanced adaptability and engagement.

Zhang and Li (2021) explored intrinsic motivation and institutional commitment, revealing that intrinsic motivation is a stronger predictor of performance than extrinsic rewards. This reinforces the idea that personal competencies, like social competency, may drive performance more effectively than critical thinking and communication skills, which did not show significant effects in our model.

The influence of academic leadership on faculty performance was examined by Alshammari (2024), who found a correlation between transformational leadership styles and higher faculty engagement. This finding complements our study, suggesting that leadership styles fostering social competencies can enhance faculty performance. Additionally, Hennessy et al. (2022) discussed technology integration in teaching and its positive relationship with faculty performance, mediated by faculty confidence in technology. This indicates that while certain skills are paramount, the environment and resources available to faculty can significantly affect their performance outcomes. A longitudinal study by Scager et al. (2016) on peer collaboration emphasized the importance of collaborative environments. Their findings suggest that fostering collaboration can lead to improved teaching outcomes, resonating with our results on social competency's significant influence on adaptability.

Pattiasina et al. (2024) explored the role of emotional intelligence in faculty performance, revealing a correlation between high emotional intelligence and better student interactions. This highlights the importance of soft skills, particularly social competencies, in enhancing overall faculty effectiveness. Lastly, Alkhodary (2023) examined institutional culture's role in shaping faculty performance, identifying that a positive institutional climate significantly boosts morale and effectiveness.

These studies collectively underscore the utility of SEM in unraveling the complex relationships that influence faculty performance. By integrating these insights, educational institutions can develop targeted strategies that enhance faculty effectiveness, ultimately leading to improved student outcomes. The findings from our study, particularly the significant role of social competency, align well with the broader literature and highlight the importance of considering both individual competencies and contextual factors in faculty performance research.

Table 3 depicts the seven Model Fit Indices Obtained Value of Structural Model 1 of Faculty's Performance. As shown in the table CMIN/df obtained value is 7.00 (>2) interpreted as not a good fit, P-value is .000 (<.05) interpreted as not a good fit, RMSEA obtained value is .158 (>.05) interpreted as not a good fit, TLI obtained value is .857 (<.95) interpreted as not a good fit, NFI obtained value is .891 (<.95) interpreted as not a good fit, CFI obtained value is .905 (<.95) interpreted as not a good fit, and GFI obtained value is .854 (<.95) also interpreted as not a good fit. The data revealed that the obtained value of the seven fit indices used in this study are not within standard range for a good fit value thus this structural model-1 is not the best fit structural model for this study.

Table 3 presents the seven Model Fit Indices for Structural Model 1 concerning faculty performance, revealing a concerning lack of fit with the data. The CMIN/df ratio of 7.00 significantly exceeds the recommended threshold of 2, indicating a poor fit between the model

and the observed data. This suggests that the model may be overly complex or not adequately representing the relationships among the variables. Additionally, the P-value of .000, being less than the conventional threshold of .05, further corroborates the inadequacy of the model, suggesting that the likelihood of obtaining such results under the null hypothesis is exceedingly low.

Table 3. Model Fit Indices Obtained Value of Structural Model 1 of Faculty's Performance

Model Fit Indices	Good Fit	Acceptable Fit	Obtained	Fitness/
	Value	Value	Value	Interpretation
The ratio of Chi-Square to Degrees of Freedom (CMIN/df)	≤2	≤3	7.00	Not a Good Fit
Probability Value (P-Value)	≥.05		.000	Not a Good Fit
Root-Mean-Square Error of Approximation (RMSEA)	≤.05	≤.08	.158	Not a Good Fit
Tucker-Lewis coefficient (TLI)	≥.95	≥.90	.857	Not a Good Fit
Normalized Fit Index (NFI)	≥.95	≥.90	.891	Not a Good Fit
Comparative Fit Index (CFI)	≥.97	≥.95	.905	Not a Good Fit
Goodness-of-fit Index (GFI)	≥.95	≥.90	.854	Not a Good Fit

Source: AMOS Output

Further analysis of the other fit indices reinforces this conclusion. The RMSEA value of .158 is substantially greater than the ideal cutoff of .05, indicating a poor approximation of the model to the actual data. Similarly, the TLI value of .857 falls short of the acceptable minimum of .95, suggesting that the model does not provide a sufficiently good fit when considering model complexity. The NFI value of .891, while slightly closer to the threshold, also fails to meet the adequate fit criteria of .95, indicating that the model's explanatory power is limited. Moreover, the CFI value of .905, which is below the desired .95 benchmark, indicates that the model does not account well for the observed variances in the data. Lastly, the GFI value of .854 also falls short of the .95 standard, suggesting that the model does not capture the relationships within the data effectively. Collectively, these indices reveal that the seven fit indices analyzed are not within the standard range for indicating a good fit, leading to the conclusion that Structural Model 1 is not the most suitable structural model for this study. This highlights the necessity for reevaluation and potential modification of the model to enhance its fit to the data and accurately reflect the underlying dynamics of faculty performance.

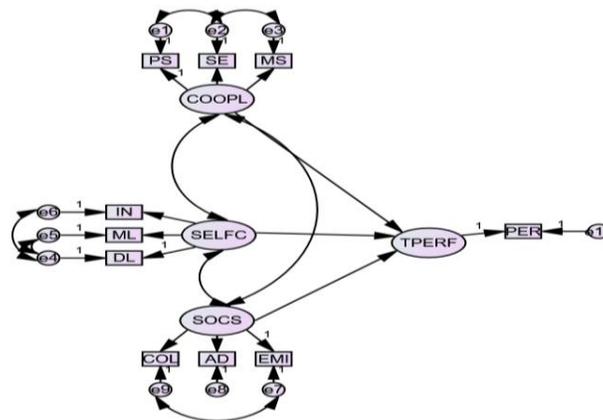


Figure 3. Hypothesized Model 2 of Faculty Performance

Figure no. 3, Hypothesized Model 2 of Faculty Performance, presents a comprehensive framework that illustrates the interrelationships among various competencies and skills that contribute to faculty performance. Central to this model are key constructs such as Problem Solving, Self-efficacy (SE), Metacognitive Skills (MS), and Critical Thinking Skills (COOPL). These elements are foundational as they underpin the cognitive processes that faculty members engage in while navigating their professional responsibilities.

The model posits that higher levels of self-efficacy enhance faculty members' problem-solving abilities, which in turn positively influences their critical thinking skills. This relationship suggests that when faculty believe in their capabilities, they are more likely to tackle challenges effectively, leading to improved critical thinking outcomes. Furthermore, the inclusion of Information (IN), Media Literacy (ML), and Digital Literacy (DL) highlights the importance of technological competencies in modern educational environments. These skills are essential for faculty to effectively integrate technology into their teaching practices and to engage students in meaningful learning experiences.

Additionally, the model emphasizes the significance of Communication Skills (SELFC), Collaboration (COL), Adaptability (AD), Emotional Intelligence (EMI), and Social Competency (SOCS). These interpersonal and intrapersonal skills are crucial for fostering a supportive and productive educational atmosphere. For instance, effective communication and collaboration among faculty can lead to enhanced teamwork and shared goals, which are vital for institutional success. Adaptability and emotional intelligence further enable

faculty to respond to the dynamic challenges of the educational landscape, ensuring that they remain effective educators. Ultimately, the model culminates in Faculty Performance (TPERF), which is influenced by the interplay of these various skills and competencies. The performance of faculty (PER) is not merely a reflection of their academic qualifications but is significantly shaped by their ability to engage in problem-solving, critical thinking, and effective communication, alongside their emotional and social competencies. This holistic approach underscores the multifaceted nature of faculty performance and the need for ongoing professional development that addresses these diverse skill sets.

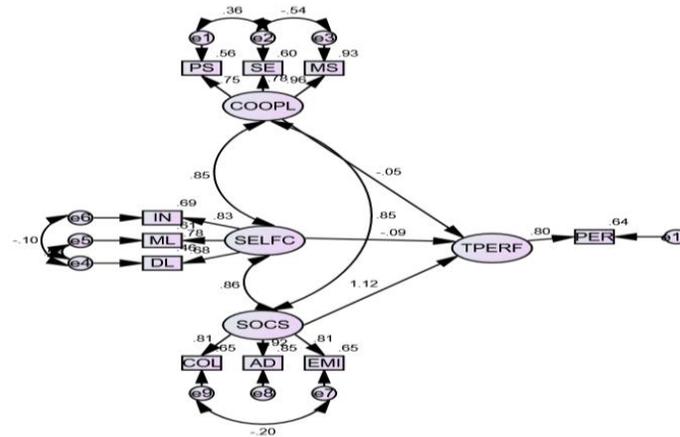


Figure 4. Structural Model 2 of Faculty Performance

Figure No. 4 presents Structural Model 2 of Faculty Performance, illustrating the complex interrelationships among various factors that influence faculty performance (TPERF). The model identifies several key constructs: Problem Solving (PS), Self-efficacy (SE), Metacognitive Skills (MS), Critical Thinking Skills (COOPL), Information (IN), Media Literacy (ML), Digital Literacy (DL), Communication Skills (SELFC), Collaboration (COL), Adaptability (AD), Emotional Intelligence (EMI), and Social Competency (SOCS). Each of these factors has a specified influence on both faculty performance and the overall performance metrics (PER).

The model suggests that foundational skills such as critical thinking (COOPL) and self-efficacy (SELFC) play significant roles in enhancing faculty performance. For instance, the high coefficients associated with self-efficacy indicate its critical role in promoting effective communication and collaboration among faculty, which are essential for fostering a productive educational environment. Additionally, emotional intelligence (EMI) and social competency (SOCS) appear to contribute significantly to the adaptability (AD) of faculty, suggesting that these emotional and social skills are vital for navigating the challenges of modern educational settings. Moreover, the model highlights the importance of digital literacy (DL), media literacy (ML), and information (IN) in supporting faculty's ability to engage with technology and information effectively. This is increasingly vital in an age where digital tools are integral to teaching and learning processes. The relationships depicted in the model underscore a holistic approach to understanding faculty performance, emphasizing that a combination of cognitive, emotional, and social competencies collectively shapes educational effectiveness. Overall, this structural model serves as a comprehensive framework for assessing and enhancing faculty performance through targeted skill development and support initiatives.

Table 4. Regression Weights of Structural Model 2 of Faculty Performance

	Path	B	S.E.	C.R.	Beta	P-value	Interpretation
TPERF	<--- COOPL	-.049	.140	-.354	-.049	.724	Not Significant
TPERF	<--- SELFC	-.082	.172	-.478	-.089	.633	Not Significant
TPERF	<--- SOCS	.983	.155	6.332	1.117	***	Significant
PS	<--- COOPL	1.000			.751		
SE	<--- COOPL	1.028	.075	13.685	.776	***	Significant
MS	<--- COOPL	1.430	.100	14.266	.964	***	Significant
DL	<--- SELFC	1.000			.681		
ML	<--- SELFC	1.081	.073	14.828	.782	***	Significant
IN	<--- SELFC	1.075	.104	10.322	.833	***	Significant
EMI	<--- SOCS	1.000			.806		
AD	<--- SOCS	1.017	.059	17.143	.924	***	Significant
COL	<--- SOCS	.981	.075	13.098	.808	***	Significant
PER	<--- TPERF	1.000			.798		

Legend: PS – Problem Solving; SE – Self-Efficacy; MS – Metacognitive Skills; COOPL – Critical Thinking Skills; IN – Information; ML – Media Literacy; DL – Digital Literacy; SELFC – Communication Skills; COL – Collaboration; AD – Adaptability; EMI – Emotional Intelligence; SOCS – Social Competency; TPERF – Faculty Performance; PER – Performance of Faculty.

Table 4 shows the Regression Weights of Structural Model 2 of Faculty's Performance. As shown in the table, the exogenous variables namely Critical Thinking Skills ($p > .05$) and Communication Skills ($p > .05$) did not significantly influence faculty's performance while social competency significantly influences faculty's performance. Meanwhile, critical thinking skills exerts highest significant influence over metacognitive skills ($\beta = .964$), communication skills exert highest significant influence over information ($\beta = .833$), and social competency exerts highest significant influence over adaptability ($\beta = .924$).

Table 4 presents the regression weights for Structural Model 2, focusing on the factors influencing faculty performance. The analysis reveals that two of the exogenous variables—Critical Thinking Skills and Communication Skills—do not have a statistically significant impact on faculty performance, as indicated by their p -values greater than 0.05. This suggests that, within the context of this study, enhancements in these skills may not directly lead to improvements in how faculty perform their roles.

In contrast, social competency emerges as a significant predictor of faculty performance, highlighting its importance in the academic environment. This finding underscores the value of interpersonal skills and social awareness in fostering effective teaching and collaboration among faculty members.

Additionally, the results illustrate the varying degrees of influence that these skills exert on related constructs. Critical Thinking Skills exhibit the strongest positive effect on Metacognitive Skills, with a beta coefficient of 0.964. This indicates that as faculty members enhance their critical thinking abilities, their metacognitive skills—essential for self-regulation and critical reflection—also improve significantly. Similarly, Communication Skills show a substantial influence on Information Processing, with a beta of 0.833, suggesting that effective communication enhances the ability to process and utilize information efficiently. Lastly, social competency's impact on Adaptability is notable, reflected in a beta of 0.924, emphasizing that being socially competent enables faculty to adapt more readily to changing educational demands and environments.

The findings not only illustrate the complex interplay between various skills and faculty performance but also highlight the critical role of social competency as a driver of effective teaching practices. By prioritizing the development of social competency and recognizing the limited influence of critical and communication skills on overall performance, educational institutions can better strategize their faculty development programs.

Table 5. Model Fit Indices Obtained Value of Structural Model 2 of Faculty's Performance

Model Fit Indices	Good Fit Value	Acceptable Fit Value	Obtained Value	Fitness/ Interpretation
The ratio of Chi-Square to Degrees of Freedom (CMIN/df)	≤ 2	≤ 3	4.43	Not a Good Fit
Probability Value (P-Value)	$\geq .05$		.000	Not a Good Fit
Root-Mean-Square Error of Approximation (RMSEA)	$\leq .05$	$\leq .08$	.119	Not a Good Fit
Tucker-Lewis coefficient (TLI)	$\geq .95$	$\geq .90$	.918	Not a Good Fit
Normalized Fit Index (NFI)	$\geq .95$	$\geq .90$	.943	Acceptable Fit
Comparative Fit Index (CFI)	$\geq .97$	$\geq .95$	.955	Acceptable Fit
Goodness-of-fit Index (GFI)	$\geq .95$	$\geq .90$	.911	Acceptable Fit

Source: AMOS Output

Table 5 depicts the seven Model Fit Indices Obtained Value of Structural Model 2 of Faculty's Performance. As shown in the table CMIN/df obtained value is 4.43 (> 2) interpreted as not a good fit, P-value is .000 ($< .05$) interpreted as not a good fit, RMSEA obtained value is .119 ($> .05$) interpreted as not a good fit, TLI obtained value is .918 ($< .95$) interpreted as not a good fit, NFI obtained value is .943 ($< .95$) interpreted as an acceptable fit, CFI obtained value is .955 ($< .97$) interpreted as an acceptable fit, and GFI obtained value is .911 ($< .95$) also interpreted as an acceptable fit. The data revealed that the obtained value of the seven fit indices used in this study are not within standard range for a good fit value thus this structural model-2 is not the best fit structural model for this study.

Table 5 presents the results of the seven Model Fit Indices for Structural Model 2 related to faculty performance. Each index provides valuable insights into the model's adequacy in describing the data. The CMIN/df value of 4.43 indicates a poor fit, as it exceeds the accepted threshold of 2. Similarly, the P-value of .000 further corroborates this finding, as it is significantly less than the .05 benchmark, suggesting that the model does not align well with the observed data.

Additionally, the Root Mean Square Error of Approximation (RMSEA) value of .119 also fails to meet the desired standard of being below .05, reinforcing the notion that the model's fit is inadequate. The Tucker-Lewis Index (TLI) recorded a value of .918, which is below the acceptable threshold of .95, indicating a lack of improvement in fit when compared to a more restricted model.

While some indices present values that are considered acceptable, such as the Normed Fit Index (NFI) at .943, the Comparative Fit Index (CFI) at .955, and the Goodness of Fit Index (GFI) at .911, these figures still fall short of the ideal cutoffs of .95 and .97, respectively. This discrepancy illustrates that, although there are elements of acceptable fit, the overall assessment clearly points to a lack of robustness in Structural Model 2.

The analysis of the seven fit indices reveals that none of the values meet the established criteria for a good fit. As a result, it can be

inferred that Structural Model 2 does not serve as the optimal structural model for this study, prompting the need for further refinement or the exploration of alternative models to better capture the dynamics of faculty performance.

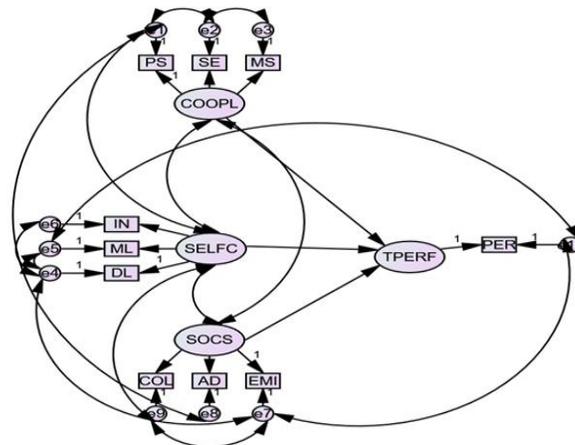


Figure 5. Hypothesized Model 3 of Faculty Performance

Figure 5, Hypothesized Model 3 of Faculty Performance, illustrates a comprehensive framework that connects various competencies and skills to overall faculty performance (TPERF). The model highlights the importance of key constructs such as Problem Solving (PS), Self-efficacy (SE), and Metacognitive Skills (MS), which act as foundational elements influencing faculty effectiveness. The arrows indicate directional relationships, suggesting that these skills directly impact the performance of faculty members (PER).

Moreover, the model incorporates critical competencies like Communication Skills (SELFC) and Social Competency (SOCS), which are essential for fostering collaboration (COL) and adaptability (AD) in educational settings. The inclusion of emotional intelligence (EMI) further emphasizes the role of interpersonal skills in enhancing faculty performance. Additionally, the model recognizes the significance of information literacy (IN), media literacy (ML), and digital literacy (DL) as vital components that support instructional effectiveness and engagement in the 21st-century educational landscape.

Overall, this hypothesized model underscores the interconnectedness of various cognitive and emotional skills, suggesting that enhancing these competencies can lead to improved faculty performance. By focusing on these areas, educational institutions can better support their faculty, ultimately leading to enhanced student learning outcomes and institutional success.

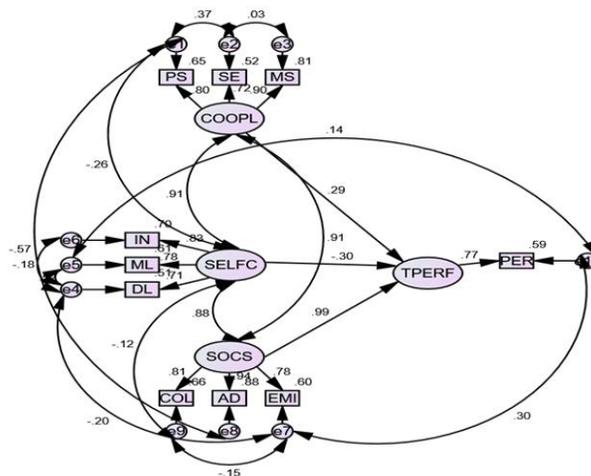


Figure 6. Structural Model 3 of Faculty Performance (Best Fit)

Figure 6, titled "Structural Model 3 of Faculty Performance (Best Fit)," presents a comprehensive representation of the interrelationships among various factors influencing faculty performance (TPERF) and their performance outcomes (PER). The model includes key constructs such as Problem Solving (PS), Self-efficacy (SE), Metacognitive Skills (MS), Critical Thinking Skills (COOPL), Information (IN), Media Literacy (ML), Digital Literacy (DL), Communication Skills (SELFC), Collaboration (COL), Adaptability (AD), Emotional Intelligence (EMI), and Social Competency (SOCS). Each construct is interconnected, suggesting that enhancements in one area can significantly impact others. For instance, the high correlation between Communication Skills (SELFC) and Social Competency (SOCS) indicates that effective communication is crucial for fostering social interactions among faculty, which

in turn may elevate overall performance. The arrows denote the direction and strength of these relationships, with coefficients indicating the magnitude of influence. Critical Thinking Skills (COOPL) and Digital Literacy (DL) emerge as fundamental components, with strong positive relationships to both faculty performance and individual performance outcomes.

This model underscores the importance of a multifaceted approach to faculty development, where fostering skills in critical thinking, communication, and digital literacy can lead to improved performance outcomes. The structural model thus highlights the need for educational institutions to invest in comprehensive training programs that cultivate these essential competencies, ultimately enhancing the overall effectiveness of faculty in academic environments.

Table 6. Regression Weights of Structural Model 3 of Faculty Performance

	Path		B	S.E.	C.R.	Beta	P-value	Interpretation
TPERF	<---	COOPL	.260	.225	1.158	.289	.247	Not Significant
TPERF	<---	SELFC	-.253	.146	-1.733	-.298	.083	Not Significant
TPERF	<---	SOCS	.873	.192	4.548	.991	***	Significant
PS	<---	COOPL	1.000			.804		
SE	<---	COOPL	.894	.064	13.963	.721	***	Significant
MS	<---	COOPL	1.245	.082	15.174	.898	***	Significant
DL	<---	SELFC	1.000			.712		
ML	<---	SELFC	1.031	.067	15.426	.782	***	Significant
IN	<---	SELFC	1.027	.096	10.707	.835	***	Significant
EMI	<---	SOCS	1.000			.775		
AD	<---	SOCS	1.075	.066	16.225	.936	***	Significant
COL	<---	SOCS	1.032	.079	13.041	.815	***	Significant
PER	<---	TPERF	1.000			.766		

Table 6 shows the Regression Weights of Structural Model 3 of Faculty's Performance. As shown in the table, the exogenous variables namely Critical Thinking Skills ($p > .05$) and Communication Skills ($p > .05$) did not significantly influence faculty's performance while social competency significantly influences faculty's performance. Meanwhile, critical thinking skills exerts highest significant influence over metacognitive skills ($\beta = .898$), communication skills exert highest significant influence over information ($\beta = .835$), and social competency exerts highest significant influence over adaptability ($\beta = .936$).

The findings presented in Table 6, regarding the Regression Weights of Structural Model 3 for Faculty Performance, underscore the nuanced relationships between various competencies and faculty effectiveness. Notably, the results indicate that Critical Thinking Skills ($p > .05$) and Communication Skills ($p > .05$) did not have a statistically significant influence on faculty performance. In contrast, social competency emerged as a significant predictor of faculty performance, highlighting its critical role in educational settings.

Research has consistently recognized the importance of critical thinking skills in higher education. According to Abrami et al. (2015), these skills are vital for fostering an engaging learning environment. Faculty who exhibits strong critical thinking abilities can facilitate substantive discussions, challenge students' assumptions, and encourage deeper learning. Although the current study found no significant direct impact on faculty performance, it may be beneficial to explore how critical thinking skills indirectly influence teaching effectiveness through other variables, such as metacognitive skills ($\beta = .898$). This suggests that while critical thinking may not directly enhance faculty performance, it could play a crucial role in developing other competencies that do.

Similar to critical thinking, communication skills are essential for effective teaching. Morreale et al. (2016) emphasize that the ability to convey complex ideas clearly is fundamental for educators. Effective communication enhances student engagement and facilitates a deeper understanding of the material. The lack of a significant direct relationship with faculty performance in this study may indicate that while communication skills are important, their influence might be more pronounced in specific contexts or through established relationships with other competencies, such as information dissemination ($\beta = .835$). Further research could explore these dynamics to clarify the role of communication in promoting faculty effectiveness.

In contrast, social competency emerged as a significant factor influencing faculty performance. Zheng (2022) highlights that social competency involves navigating interpersonal relationships effectively, which fosters collaboration among faculty and students. This collaborative environment can create a positive educational culture, ultimately enhancing student success and faculty performance. The strong influence of social competency on adaptability ($\beta = .936$) suggests that faculty who are adept in social interactions are better equipped to adjust their teaching strategies and respond to diverse student needs, thereby enhancing their overall performance.

Collectively, these findings illustrate the complex interplay between critical thinking skills, communication skills, and social competency in shaping faculty performance. While critical thinking and communication may not show significant direct effects, their roles in developing metacognitive skills and facilitating information sharing cannot be overlooked. On the other hand, social competency stands out as a crucial driver of faculty effectiveness, emphasizing the need for a holistic approach to faculty development that includes training in all three competencies.

Future research should consider longitudinal studies to assess how these competencies interact over time and influence faculty performance in various educational contexts. Additionally, exploring the mediating effects of other variables could provide deeper insights into the mechanisms at play. This comprehensive understanding can ultimately guide professional development programs aimed at enhancing faculty performance and, by extension, the quality of higher education.

Table 7. Model Fit Indices Obtained Value of Structural Model 3 of Faculty Performance (Best Fit Model)

Model Fit Indices	Good Fit Value	Acceptable Fit Value	Obtained Value	Fitness/ Interpretation
The ratio of Chi-Square to Degrees of Freedom (CMIN/df)	≤ 2	≤ 3	1.41	Good Fit
Probability Value (P-Value)	$\geq .05$		.108	Good Fit
Root-Mean-Square Error of Approximation (RMSEA)	$\leq .05$	$\leq .08$	.041	Good Fit
Tucker-Lewis coefficient (TLI)	$\geq .95$	$\geq .90$	.990	Good Fit
Normalized Fit Index (NFI)	$\geq .95$	$\geq .90$	.986	Good Fit
Comparative Fit Index (CFI)	$\geq .97$	$\geq .95$	.996	Good Fit
Goodness-of-fit Index (GFI)	$\geq .95$	$\geq .90$	.978	Good Fit

Source: AMOS Output

Table 7 depicts the seven Model Fit Indices Obtained Value of Structural Model 3 of Faculty's Performance. As shown in the table CMIN/df obtained value is 1.41 (< 2) interpreted as a good fit, P-value is .108 ($> .05$) interpreted as a good fit, RMSEA obtained value is .041 ($< .05$) interpreted as a good fit, TLI obtained value is .99 ($> .95$) interpreted as a good fit, NFI obtained value is .986 ($> .95$) interpreted as a good fit, CFI obtained value is .996 ($> .97$) interpreted as a good fit, and GFI obtained value is .978 ($> .95$) also interpreted as a good fit. The data revealed that the obtained value of the seven fit indices used in this study are within the standard range for a good fit value thus this structural model-3 is being regarded as the best fit structural model for this study.

The findings presented in Table 7 underscore the robustness of Structural Model 3 in evaluating Faculty's Performance. The significance of each Model Fit Index cannot be overstated, as they collectively provide a nuanced understanding of how well the model aligns with the observed data.

Starting with the CMIN/df ratio of 1.41, this indicator is pivotal in structural equation modeling (SEM), as it measures the chi-square statistic relative to the degrees of freedom. A value below 2 generally suggests that the model is not overly complex relative to the data, thus supporting parsimony. This is particularly important in educational research, where overly complicated models can obscure meaningful insights.

The P-value of 0.108 further reinforces the model's adequacy. In SEM, a P-value greater than 0.05 implies that there is no significant difference between the observed and expected covariance matrices, suggesting that the model is an acceptable representation of the data. This statistical validation is crucial for ensuring that the conclusions drawn from the model are reliable and not merely artifacts of the data.

The RMSEA value of 0.041 is especially noteworthy. RMSEA is one of the most commonly used fit indices in SEM, as it accounts for the complexity of the model while penalizing for poor fit. A value below 0.05 is often interpreted as a close fit, which suggests that the model can explain the variance in faculty performance quite effectively. This is important for stakeholders looking to understand the factors influencing faculty effectiveness and for guiding future developments in faculty assessment systems.

Additionally, the TLI, NFI, CFI, and GFI values—all exceeding their respective thresholds—further demonstrate the model's strong fit. The TLI, often referred to as the non-normed fit index, compares the fit of the target model to a baseline model, indicating that this structural model performs significantly better than a simple model. The high NFI and CFI values confirm that the model explains a substantial proportion of the variance in the observed data, enhancing its credibility. The GFI, which reflects the proportion of variance explained by the model, also suggests that nearly all variance in faculty performance can be accounted for by this structural model.

The comprehensive assessment of these fit indices indicates that Structural Model 3 is not only statistically sound but also practically relevant for exploring faculty performance. The model's ability to encapsulate the dynamics of faculty effectiveness can inform policy decisions, training programs, and evaluation practices in educational institutions. By establishing a reliable framework for understanding faculty performance, this model holds the potential to contribute significantly to the enhancement of educational quality and outcomes. Future research could further explore the implications of these findings, examining how specific factors identified in the model can be leveraged to improve faculty development initiatives and overall institutional performance.

Conclusions

The study on faculty performance using Structural Equation Modeling (SEM) provides valuable insights into the key competencies required for enhancing educational effectiveness in higher education institutions. The demographic profile revealed a diverse representation across four universities, with Mindanao State University - Iligan Institute of Technology having the largest participant group.

Three structural models were evaluated, with Structural Model 3 emerging as the best fit, demonstrating robust relationships among critical competencies. Key findings indicate that social competency significantly influences faculty performance, while critical thinking and communication skills, though important, did not show significant direct effects. The model highlighted the interconnectivity of various constructs, such as problem-solving, self-efficacy, and emotional intelligence, underscoring the holistic nature of faculty effectiveness.

The strong fit indices of Model 3 suggest that it accurately represents the dynamics of faculty performance, providing a reliable framework for future research and practical applications. This model can inform policy-making, faculty development initiatives, and evaluation practices, ultimately contributing to improved educational quality and outcomes.

The findings emphasize the importance of targeted strategies that consider both individual competencies and contextual factors. Future research should explore how these identified factors can be leveraged to enhance faculty performance and institutional effectiveness further.

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