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QUANTITATIVE FACTORS SHAPING LICENSURE EXAM PERFORMANCES: AN IN-DEPTH ANALYSIS AND IMPLICATIONS FOR EDUCATION POLICY

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Abstract

This quantitative research examined factors influencing MSU's performance in licensure exams for fisheries, agriculture, education, and accountancy. Factors like sex, income, exam timing, Latin honors, and review methods did not significantly affect scores (P-values > 0.05). However, patterns in honors and study habits warrant further exploration. The results challenge the belief that common benefits automatically lead to improved results, emphasizing the complexity of success in licensure tests and the importance of maintaining consistent academic dedication, with GPA being a strong predictor of exam success. Recommendations focus on improving classroom instruction and review sessions to enhance pass rates, especially for demanding exams like the CPALE.

Keywords: Admission Test Validity, Predictive Validity, High School Grades, College Screening Tools, Factors Influencing Licensure Performance, Quantitative Factors Influencing Licensure Examination, Policy Guidelines In Taking Licensure Examination.

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INTRODUCTION

Mindanao State University-Naawan (MSU-Naawan) is recognized as a premier institution in the fields of fisheries and marine sciences, demonstrating sustained excellence in licensure examination performance, particularly in the Bachelor of Science in Fisheries and related programs from the College of Agriculture, Forestry, and Environmental Science. In recent years, this success has extended to programs such as Bachelor of Elementary Education, Bachelor of Secondary Education, and Bachelor of Science in Accountancy, further reinforcing the institution's reputation for delivering high-quality education. However, MSU-Naawan acknowledges the inherent challenges in consistently achieving high licensure examination pass rates, as performance across various programs has shown fluctuations, ranging from exemplary to satisfactory, and occasionally unsatisfactory. A longitudinal analysis of the graduates' licensure performance would reveal a pattern of variability, with pass rates rising and falling depending on the program and cohort. This variability raises critical questions regarding the determinants of licensure examination success. Specifically, what factors most significantly influence licensure examination outcomes? Are these outcomes more strongly impacted by the intellectual and motivational capacities of the students, or by the external academic resources and support systems available to them? This research aims to identify the key predictors that affect the licensure examination performance of MSU-Naawan graduates across a range of programs, including BS Fisheries, BS Forestry, BS Agriculture, BS Accountancy, and the Bachelor of Elementary and Secondary Education. The findings will inform the development of targeted intervention programs designed to improve licensure preparation and outcomes.

Extant literature on licensure examination performance consistently highlights several key predictors. For instance, Baylan's (2018) study revealed a significant correlation between college grade point average (GPA) and performance in the Licensure Examination for Teachers (LET), suggesting that university grading practices are an effective measure of potential licensure success. However, this study also identified a weaker correlation between pre-board examination performance and LET outcomes, prompting recommendations for improving pre-board preparation and assessment validity. Similarly, Bellen et al. (2018) found that academic achievement in both college and high school significantly predicted LET performance, with regression analysis indicating that college GPA accounted for 83% of LET performance for the BEED graduates and 80% for BSED graduates in their specialization subjects. While these studies focus primarily on GPA as a predictor, they also underscore the need for further exploration of other factors such as scaffolding, social support, and the broader learning environment that may influence licensure examination outcomes. Amanonce and Macarubbo (2020) echoed these findings in their research on the relationship between college academic performance and LET results among teacher-education graduates, reinforcing the importance of academic preparation. Garcia (2013) also noted gender differences in licensure outcomes, with women outperforming men in LET. Furthermore, her study revealed strong correlations between academic performance and licensure outcomes in specialization subjects, but weaker correlations in professional education subjects, suggesting that the relationship between college performance and licensure success is complex and varies by discipline. These studies suggest

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that while college academic performance is a significant predictor of licensure examination outcomes, it is not the sole determinant. Additional research is needed to explore the impact of non-academic factors and develop comprehensive intervention strategies to enhance licensure examination success across disciplines. Hence, this research endeavor.

MATERIALS AND METHODS

This research is grounded in the Fluid-Crystallized Theory of Intelligence, formulated by Raymond Cattell and John Horn (Cattell-Horn, 1967; Brown, 2016). The theory distinguishes between two types of intelligence: fluid intelligence, which involves problem-solving and adaptability, and crystallized intelligence, which is based on accumulated knowledge from prior learning and experiences.

Crystallized intelligence encompasses cognitive abilities such as knowledge retention from academic training, vocabulary development, comprehension, and mastery of scientific concepts and mathematical operations. These abilities represent long-term, permanent knowledge. The administration of standardized licensure examinations is fundamentally rooted in the assessment of crystallized intelligence, as it evaluates the depth and retention of prior education and training acquired by college students. These exams are designed to measure how effectively graduates have internalized and retained information from their academic experiences. This perspective aligns with the constructivist theory of learning, which posits that individuals actively construct their knowledge through social interaction and experiential learning (Vygotsky, 1978; Fox, 2001).

Constructivism suggests that learners are not passive recipients of information but actively engage with new experiences, integrating them into existing cognitive structures, or schemas. This integration process contributes to long-term knowledge retention, which can influence future performance, such as in licensure examinations. In this study, licensure examination scores serve as an outcome measure of crystallized intelligence, reflecting the knowledge constructed through a combination of academic training and social factors. These factors, which include family support, motivation, social scaffolding from the educational institution, intensity of academic training, and preparatory activities for the licensure exam, are considered independent or predictor variables. The dependent variable is the licensure examination score. Given that licensure scores are indicative of prior learning and long-term knowledge retention, it is hypothesized that these scores are influenced by demographic and social variables.

This research adopts a quantitative-descriptive design which was aimed at identifying the predictor variables that influence the licensure examination performance of MSU-Naawan graduates for the calendar years 2021 and 2022. The study specifically sought to quantify and analyze the statistical relationships between licensure examination performance scores (the dependent variable) and the identified independent variables such as sex, family monthly income, cumulative grade-point average (GPA) from first to fourth year, level of social support, level of motivation, the intensity of review and preparedness, and socioemotional condition at the duration of the exam.

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The following statistical tools were used to achieve the objectives of this study:

1) Frequency and percentage distribution: to provide a profile of MSUN graduate respondents based on sex, college, monthly income, timing of examination, Latin honors grouping, and review strategies
2) Mean scores: to describe overall licensure performance based on profile grouping;
3) T-test and Analysis of Variance: to see if there is a significant difference in the licensure examination performance among graduates based on demographic factors such as sex, monthly family income, timing of taking the examination, Latin honors grouping, and review strategies.
4) Linear regression: to test if the indicated independent variables such as GPA, the intensity of college training/review preparedness, level of motivation, level of social support, and socioemotional condition, predict licensure examination performance.

A Google survey form was created for respondents to provide relevant information online and to indicate their personal consent and participation in the research. The survey form collected data on demographic profiles, licensure exam performance scores, and cumulative GPA after graduation.

Confidentiality clauses were included to ensure that the data gathered would be used solely for research purposes and not to harm or malign any respondent. Additionally, the Data Privacy Act was strictly followed throughout the research process, from data collection to interpretation and reporting.

Primary data from the survey questionnaires were collected according to strict data-gathering protocols, while secondary data, were analyzed using statistical tools to meet the research objectives. The respondents for this study were MSU-Naawan graduates from 2018-2022. Purposive non-randomized sampling was employed to select respondents online, focusing on individuals who voluntarily participated and provided their licensure performance data. These participants were selected based on their willingness to engage in the study and share relevant personal information:

DISCUSSIONS

Frequency and percentage distribution of the respondents in terms of nominal grouping

Table 1 outlines the nominal variables considered in this study to assess their potential influence on the licensure examination performance of MSU-Naawan (MSUN) graduates. The variables included in the analysis were: 1) sex; 2) academic program or college enrolled in; 3) family income at the time of taking the licensure exam; 4) receipt of Latin honors; 5) timing of the licensure examination; and 6) review and exam preparation strategies.

A total of 54 respondents participated in the online survey, all of whom were graduates who had taken the licensure examination and voluntarily provided relevant information. This dataset was used to quantify the factors affecting licensure performance.

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Table 1: Frequency and percentage distribution of the respondents in terms of nominal grouping

Grouping Factors	*Frequency*	*Percentage*
Sex		
Male	20	37.03%
Female	34	68.52%
College		
College of Business Administration and Accountancy	5	9.3%
College of Agriculture, Forestry, and Environmental Science	16	29.6%3
College of Education and Social Sciences	18	33.3%
School of Marine Fisheries and Technology	15	27.8%
Monthly income		
1 below P6000.00	28	51.8%
2 6001-P10,000.00	10	18.5%
3 P10,001-19,000	9	16.7%
4 P19,001-29,999	4	7.4%
5 above P30, 000	3	5.5%
Graduated with Latin Honors		
Yes, graduated with Latin honors	15	27.7%
No, did not receive any Latin honors	39	72.2%
Timing in taking the licensure exam		
Took the exam a year immediately after the graduation	42	77.8%
Too the exam a year later after graduation	12	22.2%
Review Strategies		
Combination of review strategies (review center, self review, video tutorials, etc)	18	33.3%
Focused revies in an established review center	28	51.9%
Intensive Self-review	8	14.8%
Total	**54**	**100%**

The survey revealed that a higher proportion of respondents were female (68.52%), compared to male respondents (37.03%). Among the colleges, the College of Education and Social Sciences had the largest representation, comprising 33.3% of respondents. The School of Marine Fisheries and Technology and the College of Agriculture, Forestry, and Environmental Science had comparable respondent proportions, at 27.8% and 29.6%, respectively. The College of Business Administration and Accountancy had the lowest participation (9.3%), which may be attributed to the perceived difficulty of the Licensure Examination for Accountants (LEA), discouraging recent graduates from taking it immediately after graduation.

In terms of family income distribution, the majority of respondents (51.8%) belonged to families earning ₱6,000 or below per month, a socioeconomic status significantly below the official poverty line, as defined by the Philippine Statistics Authority (PSA, 2023). Additionally, 18% of respondents reported family incomes between ₱6,000 and ₱10,000, which also falls below the poverty threshold. Only 5.5% of respondents were from families earning ₱30,000 or more, indicating a smaller proportion from higher-income brackets.

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The distribution of respondents based on whether they graduated with Latin honors shows that 27.7% of the respondents received Latin honors, while 72.2% did not. This suggests that a majority of graduates did not attain the high academic performance required for Latin honors. The distinction of Latin honors, often seen as a marker of academic excellence, is limited to a smaller segment of graduates. This data might reflect varying levels of academic achievement and may serve as an indicator for further analysis on whether receiving Latin honors correlates with higher licensure examination performance.

A significant majority of respondents (77.8%) took their licensure exam immediately after graduation, while only 22.2% delayed the exam for at least a year. This pattern indicates that most graduates prefer to take the licensure examination soon after completing their studies, potentially to capitalize on the recent academic knowledge and minimize the gap between learning and examination (Johnson, 2022). The smaller percentage of those who delayed the exam may have postponed due to various personal, financial, or academic factors, which could influence their exam readiness and performance (Lee, 2023).

The table further indicates varied preferences among graduates in terms of preferred review strategies for licensure exams. A majority, accounting for 51.9%, favor focused reviews conducted at established review centers. This preference suggests that structured environments and expert guidance at review centers are perceived as highly beneficial for thorough exam preparation. In contrast, a smaller segment, 33.3%, utilizes a combination of review strategies, including review centers, self-study, and video tutorials. This approach indicates an appreciation for a multifaceted preparation strategy, integrating different resources. Only 14.8% of graduates opt for intensive self-review, highlighting a lower reliance on self-directed study without external support. This disparity may reflect the perceived limitations of self-review compared to the comprehensive resources and support available at review centers. According to Johnson (2022) and Lee (2023), the low preference for self-review can be attributed to the need for structured guidance, greater access to resources, and the motivation provided by interacting with fellow student-reviewees.

A notable outcome of this study is the significant variation in licensure performance across different colleges, suggesting the need for tailored interventions. Educational institutions, particularly those preparing candidates for rigorous exams like the CPALE, may benefit from targeted strategies such as enhanced academic advising, curriculum reforms, and supplementary support services. Given the comprehensive nature of the CPALE and its heavy reliance on quantitative skills, students may face substantial challenges, making interventions vital for improving pass rates.

Moreover, the strong predictive value of GPA on licensure exam outcomes highlights the importance of sustained academic effort throughout one's collegiate career. This suggests that institutions like MSU at Naawan, as well as policymakers, should prioritize initiatives aimed at improving classroom instruction, enhancing review sessions, and reinforcing the foundational knowledge that supports licensure success. GPA, as a cumulative measure of academic achievement, appears to encapsulate the key skills and knowledge needed for these exams.

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Future research should explore more into the indirect influences of motivational levels, preparedness, and emotional well-being on licensure exam performance. Although the current findings do not align with broader patterns of exam success, this discrepancy suggests that contextual factors—such as individual differences, exam-specific conditions, and psychological states—may mediate or moderate the relationships between these variables and exam outcomes. Understanding the interplay of these factors could provide a clearer perspective on licensure exam success.

In light of these complexities, institutions should consider a holistic approach to exam preparation that goes beyond academic proficiency. This includes intensifying focus on review strategies that integrate diverse learning methods, fostering intrinsic motivation, and incorporating interventions aimed at managing emotional well-being and test anxiety.

Differences in performance scores based on grouping factors

Table 2 presents the analysis of the mean scores and mean score differences when the respondents are grouped based on sex, college, family income, review strategies used, Latin honors, and timing of exam. The analysis of licensure exam performance reveals no statistically significant differences across several grouping factors. When comparing exam scores by sex, males score an average of 79.3, while females score slightly higher at 79.8. However, the mean score difference of 0.050 and a p-value of 0.654 indicate that this difference is not statistically significant. This suggests that sex does not play a critical role in licensure exam performance, aligning with previous studies that show gender is often not a determining factor in academic achievement and professional examinations (Johnson, 2022).

Table 2 also presents the comparison of licensure exam performance across various colleges (CBAA, CAFES, CESS, and SMFT), with a focus on determining whether significant differences exist between them. The data shows that the College of Business Administration and Accountancy has a mean licensure performance score of 76.01. In contrast, the College of Agriculture, Forestry, and Environmental Science reports a higher mean score of 82.44, the College of Education and Social Sciences leads with 83.21, and the School of Marine Fisheries and Technology registers a mean score of 81.11. With a total mean score difference between the maximum and minimum mean score of 7.02 and a p-value of 0.000, the data indicates a statistically significant difference in licensure performance scores among colleges. Notably, the minimum performance score of 72.3 was obtained by a respondent from the College of Business Administration and Accountancy (CBAA) who took the Certified Public Accountant Licensure Examination (CPALE); while the maximum or the highest score (86) was obtained by a respondent from the College of Business Administration and Accountancy (CESS) who took the Licensure Examination for Teachers (LET).

The significant difference between the College of Business Administration and Accountancy and other colleges suggests that students in this college may face distinct challenges or have less effective preparation compared to their peers in other disciplines. Previous research supports the notion that academic programs with varied curricular structures, student support systems, and assessment formats can result in differential student outcomes (Tinto, 2012;

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Pascarella & Terenzini, 2005). The higher performance in the College of Education and Social Sciences aligns with studies showing that students in education programs often benefit from robust pedagogical training and reflective practice, which can enhance academic success (Darling-Hammond, 2006). However, it should be empirically ascertained that a comparison of the performances between the colleges is not statistically accurate in this case considering that the passing trend between the various licensure examinations significantly varies – with a shallow percentage passing rate in CPALE. The most recent passing rate for the Licensure Examination for Accountants (LEA) in the Philippines, held in May 2024, was only 30.28%, with 3,155 passers out of 10,421 examinees (PRC, 2024). This result is in line with past trends, where the CPA licensure exam typically has a low passing rate, reflecting the challenging standards of the profession. The passing rate for the CPALE tends to fluctuate, but it is often low compared to other licensure exams in the country. In some years, only around 25% to 35% of examinees pass the exam, reflecting its difficulty (Fernandez, 2022; Tan, 2020).

With a mean score difference of 4.23 and a P-value of 0.183, table 2 further presents the effect of monthly income on exam performance, which indicates that family income has no significant impact on licensure exam scores. Graduates with incomes between P19,001 and P29,999 achieve the highest mean score (81.48), while those earning above P30,000 score the lowest (77.23), but these variations are not statistically significant. This finding implies that economic background may not heavily influence exam outcomes, countering assumptions that higher-income students automatically have better access to resources that translate into higher scores (Lee, 2023).

Regarding the timing of the exam, graduates who take the exam within a year after graduation average 80.21, compared to 79.40 for those who delay the exam by more than a year. The mean score difference of 0.81 and a p-value of 0.505 suggest that timing does not significantly influence licensure examination performance. This could imply that whether a graduate takes the exam immediately or later does not impact the preparedness or outcome, possibly due to individual study habits and persistence rather than timing (Turner, 2021).

Moreover, graduates with Latin honors score higher (81.42) compared to those without honors (79.21), but the mean score difference of 2.21 and a p-value of 0.059 suggest that the difference is not statistically significant, although it is approaching the threshold for significance. This could suggest that while academic excellence during undergraduate studies may lead to higher scores (Amanonce, J.T., Macarubbo, A. (2020); Garcia, 2013; Quiambao, 2015), it does not guarantee a statistically significant advantage in licensure exams, reinforcing the idea that exam success is multifactorial (Baylan, 2018).

Finally, review strategies used by the takers do not significantly affect exam outcomes, with graduates using a combination of strategies scoring the highest (80.8), followed by those enrolled in a review center (79.6) and those relying solely on self-review (78.2). The mean score difference of 2.6 and a P-value of 0.056 indicate that while a combination of strategies is associated with slightly higher scores, the difference is not statistically significant. This suggests that the use of varied review methods may enhance learning, but the benefit is not definitively superior compared to focused or individual strategies (Patel, 2021).

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Table 2: Differences in the licensure performance scores when grouped based on sex, monthly income, honors/awards grouping, timing in taking the exam, and review strategies used

Grouping factor	Licensure Exam Score Mean	Score Mean difference	P value	Remarks
Sex				
Male	79.3	0.050	0.654	No significant difference
Female	79.8			
College				
College of Business Administration and Accountancy	76.01	7.2	0.000	Significant difference
College of Agriculture, Forestry, and Environmental Science	82.44			
College of Education and Social Sciences	83.21			
School of Marine Fisheries and Technology	81.11			
Monthly income				
1 below P6000.00	79.92	4.23	0.183	No significant difference
2 6001-P10,000.00	78.22			
3 P10,001-19,000	80.69			
4 P19,001-29,999	81.48			
5 above P30, 000	77.23			
Did you take the exam within a year after graduation?				
Yes, I took the exam within a year after graduation	80.21	0.81	0.505	No significant difference
No, I took the exam a year later after graduation	79.40			
Did you receive Latin honors during graduation?				
Yes, I graduated with Latin honors	81.42	2.21	0.059	No Significant difference
No, I did not receive any Latin honors	79.21			
Review Strategies				
Combination of review strategies	80.8	2.6	0.056	No significant difference
Enrolled in a review center	79.6			
Self-review only	78.2			

Maximum score: 86; minimum 72.3

Regression analysis of predictors of licensure examination performance

Table 3 examines the predictors of licensure exam performance and presents various factors with their respective p-values to assess statistical significance. Based on the data, factors such as level of readiness ($p = 0.680$), level of motivation ($p = 0.057$), socioemotional condition before and during the exam ($p = 0.421$), and training and exposure ($p = 0.500$) are not significant predictors of exam performance in this study. Each of these factors shows a *p-value* above the standard significance threshold of 0.05, indicating a weak or non-existent statistical relationship with exam outcomes. Although socioemotional conditions and prior training are not significant predictors in this study, these factors may still play indirect roles. For instance,

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training and emotional well-being might influence long-term academic engagement rather than immediate exam performance (Durlak et al., 2011). While the results here do not indicate significance for motivation, it is important to note that other research has consistently demonstrated the influence of the level of motivation and level of readiness towards examination performance. For example, Schunk, Pintrich, and Meece (2010) emphasized that motivation plays a critical role in driving student engagement and effort, which are linked to better exam outcomes. Similarly, Richardson, Abraham, and Bond (2012) pointed out that the motivational level of students and their readiness or preparations before taking exams, are factors that contribute to performance success or failure. Interestingly, despite the non-significance of motivation and readiness in this study, previous research has consistently shown their importance in academic performance, particularly intrinsic motivation, which plays a critical role in sustained effort and achievement in academic contexts, and students who exhibit higher levels of readiness tend to perform better in examination (Madsen, L., & Abraham, A. (2020).

On the other hand, the Grade Point Average (GPA) of the respondents (p-value of 0.028) is identified as a significant predictor. This implies that a student's GPA has a meaningful correlation with exam performance, aligning with research that often finds cumulative academic achievement to be an important factor in future success on standardized assessments (Amanonce, J.T., Macarubbo, A.,2020; Garcia, 2013; Quiambao, 2014; Richardson et al., 2012; Robbins et al., 2004). Considering that GPA is a product of both intellectual prowess and diligence, learning in college and the amount of effort put in by the students to study significantly affect their future performance in any professional examination (Kuncel, Credé, & Thomas, 2005; Madsen, L., & Abraham, A. (2020).

Table 3: Regression analysis of predictors of licensure examination performance

Exam Factors	P value	Remarks
Level of readiness	0.680	Not a significant predictor
Level of motivation	0.057	Not a significant predictor
Socioemotional condition before and during the exam	0.421	Not a significant predictor
Training and exposure	0,500	Not a significant predictor
Grade Point Average (GPA)	0.028	**Significant predictor**

In conclusion, the analysis reveals that none of the examined factors—sex, monthly income, timing of the exam, Latin honors, or review strategies—demonstrate statistically significant effects on licensure exam scores, as indicated by their respective P-values exceeding the 0.05 cut-off. However, the near-significant trends observed in the variables of Latin honors and review strategies suggest these areas warrant further investigation. These findings challenge the assumption that traditionally perceived advantages, such as academic distinctions or specific preparation techniques, directly translate to better exam performance, underscoring the multifaceted nature of success in licensure examinations.

Licensure exam performance is influenced by a dynamic combination of factors, and a comprehensive approach to student readiness will be key in enhancing success rates.

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