# A trend analysis on the licensure examination success of teacher education program of a state university

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## Article Info

## ABSTRACT

The 21st-century education paradigm and Sustainable Development Goal (SDG) 4 aimed to produce and supply highly calibrated and qualified teachers. A professional teacher should pass the licensure examination to become a full-fledged professional teacher. However, licensure examination is one of the hurdles for beginning teachers, and failing rates were still observed among universities and colleges in the Philippines. Hence, this study aimed to evaluate the licensure examination success of teacher education graduates in one state university in the City of Malolos, Bulacan covering the years of 2019, 2022, and 2023. This study utilized quantitative trend analysis to determine the trends and success of licensure examination of the stated years. The data revealed that the trend and patterns of licensure examination for teachers (LET) results of beginning teachers for the three consecutive years are above the national passing percentage of 75% and described as satisfactory. The beginning teachers' satisfactory results produce a significant difference in the following: examination year, elementary education area of concentration, secondary education area of concentration, and examination components. Thus, the strengthening and enhancing the existing curricular and pre-board examination program should be intensified and reinforced to sustain and uplift the university's standing in terms of success rate.

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## 1.    INTRODUCTION

The 2017 United Nations Educational, Scientific, and Cultural Organization (UNESCO) provides a clear pathway on how countries worldwide would achieve equity, inclusion, and quality through the Sustainable Development Goals (SDGs). Part of its goal is to promote a transformative, outcome-based, safe, and secure learning environment and quality education. Moreover, the fourth SDG aims to produce and supply qualified teachers who adhere to the skills and competencies aligned with the national and international qualifications and standards [1], [2].

With these significant changes, universities and colleges ensure continuous improvement across areas and pillars for quality management and services leading to quality education. Thus, part of these improvements is the magnification of curriculum delivery and instruction so that students can master every topic they need in their profession. Also, part of these are the preparations and readiness of every graduate to take the licensure examination. A licensure examination is one of the hurdles that beginning teachers must pass [3]. Educational institutions in basic education and state universities and colleges, specifically in the

public sector, require all teaching personnel to take and pass the licensure examination. The teaching license is not just a certification that proves that the teacher is competent enough to teach but is also an essential factor for employment since licensing is a state obligation [4]. In other countries such as the United States, pre-service teachers must pass the licensure examination before they can be placed in the teaching profession. Moreover, it determines whether they are fitted and competent in the teaching profession [5].

In the Philippines, to become a full-fledged professional teacher, a beginning teacher who graduated with a degree in education or took an 18-unit teacher education program, must pass the licensure examination for teachers (LET). The said action is required and should comply with the mandates of Republic Act 7836 also known as the "Philippine Teachers Professionalization Act of 1994". This law enacted a qualification standard to ensure that teachers teaching in the public sector are qualified and capable. Thus, the licensure examination served as a primary indicator of a teacher's capabilities and proficiency [6]. The passing of licensure examination is a critical measure to attest to the teacher education program of one's college or university [7]. Since higher education, specifically their teacher education program is the supplier of promising education graduates, it is expected that they should invest and innovate programs to prepare these teacher education students for the quality and standard of education programs aligned to the national and international curriculum of education course [8]. The action also ensures the preparation given to the students from instruction to pre-board examination is aligned to pass the licensure examination to satisfy the needs of the local and international schools and communities [9].

In the bigger context of the Philippine higher education landscape, colleges and universities nationwide complied with this and had a quality assurance mechanism to monitor and evaluate the implementation of practice in the program [10]. Research by Guzman [11] in his study, one state university in Luzon disclosed that the LET passing rate for seven consecutive years (2010-2017) recorded a passing rate higher than the national percentage rate set. A similar study from Alfonso [12] also revealed that the comparison of LET performance revealed a higher rate as compared to the national passing percentage. In the local study, the state university ensures that the teacher education courses comply with and strictly adhere to the qualities and standards that the local and national qualifications are set. For the past three years, a satisfactory national passing rate has been observed in the teacher education program.

Despite the compliance and adherence to the national and international standards, vis-à-vis the LET performance of the universities and colleges, the results for every examination year varied. Some records and studies have disclosed findings that the understudied locale recorded low scores in the licensure examination. To wit, Antiojo [13] revealed in one state university, the licensure exam was low and exam takers who failed the exam had low scores. Binayao and Dales [14] expressed that there were universities and colleges with teacher education programs that performed lower than the national passing rate. Nool and Ladia [15], as cited in the study of Molina *et al.* [16] disclosed poor LET performance among teacher education institutions in Central Luzon from 2009-2016. In the setting of the study, it was also observed a low passing rate, especially for first-time licensure exam takers. This can be explained by the taker's preparation due to the pandemic and other variables such as workload and profession, and family-related matters. Moreover, there are observed variations in the performance of the teacher education graduates' pre-board examination and performance and the licensure exam performance [16].

Given with literature and studies above, it becomes the pragmatic action of the researchers to dissect and extrapolate the licensure examination success, as guided by the quantitative trend analysis method, of one state university in the City of Malolos, Bulacan. The examination years covered are 2019, 2022, and 2023. The years 2020 and 2021 are not included in the exam period due to the abeyance of office as hit by the COVID-19 pandemic. It was resumed in the year 2022 when the majority of the Filipino people got their vaccines and the establishment of health protocol guidelines. The analyzed findings of the study will be used to develop a management and pedagogical implication that could be turned into the basis for developing a proposed supplemental enhancement program to the existing pre-board examination review program of the locale of the study. It has also become necessary for researchers to provide research-based implications and evidence to strengthen and magnify the teacher education program of the understudied university. Furthermore, the findings of the study will provide baseline data for further program strategies and continuous improvement for the other researchers who will study and dissect the same parameter for further improvement of the teacher education program in the university.

Statement of objectives: the study aimed to determine and evaluate the performance of teacher education graduates in the LET for the last three examination years (2019, 2022, and 2023) in one state university in the Province of Bulacan. Specifically, this study aims to dissect the following specific objectives:
- Determine the performance level of passing rate trend of first-taker teacher education graduates in general education, professional education, and subject specialization for 2019, 2022, and 2023.
- Describe the trend of the overall performance rate of teacher education graduates based on the identified examination period.

- Compare the overall performance level of passing rate trend of first-taker teacher education graduates when grouped according to the examination period of 2019, 2022, and 2023.
- Compare the overall performance rate of first-taker teacher education graduates under the Bachelor of Elementary Education (BEEd) program when grouped according to area of concentration.
- Compare the overall performance rate of first-taker teacher education graduates under the Bachelor of Secondary Education (BSEd) program when grouped according to area of concentration.
- Compare the overall performance rate of first-taker teacher education graduates under the BEEd program when grouped according to board examination components as to general education and professional education for BEEd takers and general and professional education and specialization for BSEd takers.
- Compare the overall performance rate of first-taker teacher education graduates under the BSEd program when grouped according to board examination.
- Propose management implications and limitations of the study.

## 2. METHOD
### 2.1. Research design
This study used quantitative trend analysis. This research design aimed to evaluate the given data to analyze the patterns and tendencies in a specified period. Xu et al. [17] explained that trend analysis is a technical analysis procedure that attempts to predict movement based on the observed trend data. In application to research, the study of Quendangan et al. [18] utilized quantitative trend analysis to gauge and examine the acquired numerical data of licensure examination success of one university in the Philippines. Since the present study is looking at the patterns of the success rate of one state university as to the LET, it becomes the action of the researchers to utilize the same research design for the betterment of data analysis and interpretation.

### 2.2. Sources of data
Since data mining and documentary analysis are used in the study, this research does not use respondents or participants and also there is no actual data collection tool such as survey questionnaire or interview protocol guide. Thus, this study utilized the certified documents on the results of licensure examinations for teachers from the Philippine Professional Regulation Commission (PRC). The data utilized for the analysis covered the examination years of 2019, 2022, and 2023.

The samples of the study were 1,348 examinees covering the examination years of 2019, 2022, and 2023. The sampling technique utilized was purposive sampling in compliance with the posted inclusion criteria such as: i) the examinees were first takers in the licensure examination and ii) took the examination in the stated years' coverage. The other data such as the results of repeaters and those who failed in the exam were excluded from the data analysis.

### 2.3. Data analysis
The primary source of data was taken from the certified documents from the PRC. The data was manually tabulated only to gather the necessary data needed to dissect the study. The researchers utilized JASP statistical software version 0.18.3, a statistical software. The manually gathered data was analyzed and interpreted using percentages and further scrutinized by looking at the trends and changes in the examinees' performance in LET in cognizance of the years of examinations included. Furthermore, the researchers used a t-test for independent samples and analysis of variance (ANOVA) to compare the mean percentage following the groupings of strata. Shapiro-Wilk test ascertained the normality of data ($p>0.05$) while Levene's test was used to evaluate the homogeneity of variance ($p>0.05$) [3].

## 3. RESULTS AND DISCUSSION
### 3.1. Trend analysis of LET of the teacher education program of one state university in the City of Malolos, Bulacan from the examination years of 2019, 2022, and 2023
As in Table 1 presents the LET performance of the first-taker beginning teachers from 2019, 2022, and 2023. It shows that the LET performance of elementary and secondary education graduates based on the examination year varies as shown by the given percentage scores. In the general education component, elementary education graduates recorded a satisfactory rating in the years 2019, and 2022 while examination year 2023 recorded a very satisfactory rating. The secondary education graduates recorded a satisfactory rating in 2019 and a very satisfactory rating in 2022 and 2023. The study shows that the three-year performance patterns that secondary education graduates performed much compared to elementary education graduation as the general education component is concerned. Moreover, the findings expect that elementary

education graduates should be the ones who excel more in this component since in the teaching field they are the ones who will teach general education and other related subject areas.

However, the findings illuminate that the percentage rate of elementary education graduates is lower compared to secondary education graduates. In the professional education component, elementary education graduates recorded a satisfactory rating in the year 2019 while very satisfactory ratings are recorded in the years of 2022 and 2023. The secondary education graduates have consistently scored a very satisfactory rating. The findings correlate with the study of Abao *et al.* [3] which in the three-year performance analysis, secondary education graduates got a better percentage rating compared to elementary education graduates.

But despite the good standing of secondary education in general and professional education components, the ratings in their field of specialization (major) are rated as satisfactory for three years of performance analysis. Though it is satisfactory, the mean percentage disclosed (78.91, 79.07, and 79.81) is somehow alarming since it is their field of specialization and the subjects that they are going to teach in basic and higher education [19], [20]. Future actions should be focused on intervening and enhancing the pre-board review program to ensure that the graduates possess proficient to highly proficient levels of mastery and understanding of the subject matter [21].

As in Table 2 presents the overall performance of the first-taker beginning teachers from the three performance years: 2019, 2022, and 2023. The trends of the percentage rating per year reveal that an increase in licensure examination performances is observed. The findings disclose positive implications since an increase in the percentage rate is observed. This further connotes that both elementary and secondary are performing well in the board examination. Also, it gives the impression that the curriculum delivery and implementation are responsive to the needs of the students and aligned with the given national and international qualification standards [22], [23]. It is evident by a sound improvement in the percentage rate performance of LET takers per year. The preparations and close monitoring and evaluation of the pre-board program produce a significant remark to the program implementation in the teacher education courses [24]. This action coincides with the graduates' performance in the licensure examination. Candelario-Aplaon and Hernandez [25] explained that proper technical assistance and closed monitoring helped the test taker pass the licensure examination. It also contributed to an overall improvement in the institutional passing percentage.

Table 1. LET performance of first taker beginning teachers from 2019, 2022, and 2023

| Examination | Subject/area of concentration | Percentage rate per examination year | | |
|---|---|---|---|---|
| | | 2019 | 2022 | 2023 |
| LET-elementary | General education | 82.74 (S) | 81.90 (S) | 84.74 (VS) |
| | Professional education | 81.66 (S) | 84.06 (VS) | 83.37 (VS) |
| LET-secondary | General education | 81.59 (S) | 83.71 (VS) | 83.36 (VS) |
| | Professional education | 84.07 (VS) | 83.98 (VS) | 85.34 (VS) |
| | Specialization | 78.91 (S) | 79.07 (S) | 79.81 (S) |
| Overall | General education | 82.17 (S) | 82.81 (S) | 84.05 (VS) |
| | Professional education | 82.87 (S) | 84.02 (VS) | 84.61 (VS) |
| | Specialization | 78.91 (S) | 79.07 (S) | 79.81 (S) |

Note: 75-83.33=satisfactory (S), 83.34-91.66=very satisfactory (VS), and 91.67-100=outstanding (O). Adopted from the study of Abao *et al.* [3].

Table 2. Overall LET performance of first taker beginning teachers from 2019, 2022, and 2023

| Examination | Percentage rate per examination year | | |
|---|---|---|---|
| | 2019 | 2022 | 2023 |
| LET-elementary | 82.09 (S) | 83.20 (S) | 84.22 (VS) |
| LET-secondary | 81.51 (S) | 81.93 (S) | 82.73 (S) |
| Overall | 81.80 (S) | 82.57 (S) | 83.48 (VS) |

Note: 75-83.33=satisfactory (S), 83.34-91.66=very satisfactory (VS), and 91.67-100=outstanding (O). Adopted from the study of Abao *et al.* [3].

## 3.2. Comparative analysis and significant differences of the LET performance of first takers beginning teachers

The data from Table 3 reveals that there is a statistical variation in the LET performance of the first-taker beginning teachers when the examination year is considered. The comparison of the p-value (0.000) to the 0.05 level of significance showed that the comparative analysis produces a statistically significant result and the LET performance per examination years produces a significant difference since the p-value is less than 0.05 alpha set. The effect size value of $\eta^2=0.5$ indicates a very large effect of year on LET performance. This means that 50% of the total variance in LET performance scores can be explained by

differences across the years (2019, 2022, and 2023). The post-hoc analysis found that 2022 and 2023 LET Performance is better than 2019. This remarkable performance justifies the variations among three years' performances. The year of examination has a strong influence on LET performance. About half of the improvement in scores can be attributed to differences across years, with 2022 and 2023 performing significantly better than 2019. Moreover, the trend of LET performance further elucidates that the performances of first-taker teacher education graduates are increasing and justifies the statistical differences that existed between 2019, 2022, and 2023. Dagdagui and Mang-usan [24] explained the licensure examination teachers' performance varies. The post-hoc analysis explains that examination components for every examination year are different from each other.

Table 3. Comparative analysis of LET performance of first taker beginning teachers when examination year is considered

| Year | LET performance | f-value | p-value | $\eta^2$ | Decision | Interpretation | Significant post-hoc |
|------|-----------------|---------|---------|----------|----------|----------------|----------------------|
| 2019 | 81.80 | 3.081 | 0.000 | 0.5 | Reject Ho | Significant | 2022>2019 |
| 2022 | 82.57 | | | | | | 2023>2019 |
| 2023 | 83.48 | | | | | | |

As in Table 4 presents the t-value results on the comparison of LET performance of BEEd test takers as to the area of concentration offered by the state university namely, general education (generalist) and early childhood education. It is found that their performances reveal a significant difference (t-value=4.023; p=0.004<α=0.05). The effect size value of $\eta^2$=0.2 indicates a large effect of area of concentration on LET performance. This means that 20% of the variance in LET performance can be explained by differences in area of concentration, specifically between general education (generalist) and early childhood education. These test takers took the same two sets of tests for the exam; their performance varies depending on the way they understood and perceived the given test items. Also, their preparations and health conditions are factors to consider resulting in variations of perception in taking the licensure examination. It is also noted in the findings from the post-hoc analysis that early childhood education graduates performed well compared to the generalist graduates for the three-year performance analysis.

Table 4. Comparative analysis of overall LET performance of first taker beginning teachers under BEEd when area of concentration is considered

| Area of concentration | LET performance | t-value | p-value | $\eta^2$ | Decision | Interpretation | Significant post-hoc |
|-----------------------|-----------------|---------|---------|----------|----------|----------------|----------------------|
| General education (generalist) | 80.67 | 4.023 | 0.004 | 0.2 | Reject Ho | Significant | Early childhood>generalist |
| Early childhood education | 82.11 | | | | | | |

As in Table 5 shows that the f-value results on the comparison of LET performance of BSEd test takers as to the area of concentration to wit, English, Filipino, mathematics general science, social studies, music, arts, physical education, and health (MAPEH), technology and livelihood education (TLE), and values education. The findings present that the LET performance of beginning teachers under the BSEd performed significantly differently in the area of concentrations' components (f-value=1.728; p=0.002<α=0.05). The effect size value of $\eta^2$=0.409 indicates a large effect of area of concentration on LET performance. This means that approximately 40.9% of the total variance in LET performance is explained by differences in specialization, which reflects a substantial and practically meaningful impact, not just a statistically significant one. Furthermore, post-hoc analysis findings reveal that the performance of BSEd social studies test takers is much superior to other areas of specialization such as mathematics, MAPEH, and TLE. The performance of BSEd mathematics test takers is better in values education, English, and Filipino. Moreover, Filipino majors are performing well compared to TLE, general science, and English. The analysis demonstrates variations in the percentage rate of each area of concentration vary significantly. The test takers have different ways and views on how they have answered the test items given during the exam period.

As in Table 6 posits the t-value results of LET performance of BEEd test-takers in terms of the examination components, general education and professional education. Data shows a profound and significant difference between the performance of elementary education graduates in terms of general education and professional education. Thus, significant difference in the LET performance of beginning teachers under the BEEd when the examination component is recorded (t-value=0.067; p=0.003<α=0.05).

The effect size value of η²=0.9 indicates an extremely large effect of examination component on LET performance. This means that 90% of the variance in LET performance can be attributed to differences between the general education and professional education components. The post-hoc findings show that beginning teachers with a BEEd performed better in the LET professional education area than in general education. It can be inferred from the analysis that BEEd test takers are more inclined and have a broad and wide understanding of professional education courses. The findings observe that the curriculum delivery and assessment procedures affect how the students learn the theories and praxis of the teaching profession [26]. The findings conformed to the analysis of Bejerano and Rocamora [27] where professional education is more significant than the general education results in the board examination.

Table 5. Comparative analysis of overall LET performance of first taker beginning teachers under BSEd when area of concentration is considered

| Area of concentration | LET performance | f-value | p-value | η² | Decision | Interpretation | Significant post-hoc |
|---|---|---|---|---|---|---|---|
| English | 81.1 | 1.728 | 0.002 | 0.409 | Reject Ho | Significant | Soc. stud>math, |
| Filipino | 83.9 | | | | | | VE, TLE, MAPEH |
| Mathematics | 77.8 | | | | | | Math>VE, Fil, Eng |
| General science | 85.4 | | | | | | Fil>TLE, science, |
| Social studies | 85.1 | | | | | | Eng |
| MAPEH | 81.4 | | | | | | |
| TLE | 82.2 | | | | | | |
| Values education | 81.4 | | | | | | |

Table 6. Comparative analysis of overall LET performance of first taker beginning teachers under BEEd when examination components is considered

| Examination components | LET Performance | t-value | p-value | η² | Decision | Interpretation | Significant post-hoc |
|---|---|---|---|---|---|---|---|
| General education | 83.13 | 0.067 | 0.003 | 0.9 | Reject Ho | Significant | Prof. ed>gen. ed |
| Professional education | 83.20 | | | | | | |

As in Table 7 illuminates the f-value results on the comparison of LET performance of BSEd test takers as to the examination components, general education, professional education, and specialization. The LET performance of beginning teachers under the BSEd performed significantly differently on the three examination components (f-value=2.802; p=0.000<α=0.05). The effect size value of η²=0.5 indicates a large effect of examination component on LET performance. This means that 50% of the total variance in LET performance can be explained by differences among the examination components general education, professional education, and specialization. It is similar to the findings of Botengan *et al.* [28] who disclosed that professional education components recorded a higher percentage compared to general education and areas of specialization. Furthermore, post-hoc analysis findings reveal that the performance of BSEd test takers in general education is greater compared to specialization. Professional education is also better than general education and specialization. The results contradict [27], [29] analyses of which professional education is the most difficult component to pass. The results imply that students much appreciated the curriculum delivery and assessment procedure of professional education courses. Also, they are excelling more on the theoretical and practical principles of professional education as compared to the two remaining exam components. Furthermore, the variations on the percentage rate of each exam component vary significantly and the test takers have different ways and views on how they have answered the test items given during the exam period. The diversity among test-takers is based on the perception and evaluation of the given test items and diversity in thinking and learning depends on the learning styles of the test-takers.

Table 7. Comparative analysis of LET performance of first taker beginning teachers when examination is considered

| Examination components | LET performance | f-value | p-value | η² | Decision | Interpretation | Significant post-hoc |
|---|---|---|---|---|---|---|---|
| General education | 82.89 | 2.802 | 0.000 | 0.5 | Reject Ho | Significant | Gen. ed>specialization |
| Professional education | 84.46 | | | | | | Prof. ed>specialization |
| Specialization | 79.26 | | | | | | Prof. ed>gen. ed |

## 3.3. Implications of the study

The licensure examination plays a significant role for every professional, especially in teacher education programs since it is a national qualification and gives them a fulfillment to be a professional and

licensed teacher. The licensure examination is not only for the graduates but also for the university or college where he finished his/her degree. The findings denote a positive and continuous motion to the teacher education program. The teacher education program will become more conscious about the curriculum delivery and assessment procedures to attest whether the pre-service teachers and comply with the competency and standards set [30].

The university provides quality assurance to further determine the students' competence and capabilities and their readiness in taking the licensure examination should be assessed and evaluated. As monitored by the proper office, the Student Policy and Program Development Office, the success rate should be studied, and further professional development programs to sustain or even increase the licensure performance of the students. Quality assurance mechanisms should be magnified for those who failed the licensure examination to aid their learning losses and challenges in taking the licensure examination that become the reason they failed it [31].

### 3.4. Limitations of the study

Despite the rigor and systematic approach employed in conducting this research, certain limitations were identified that may have influenced the scope and depth of the findings. These limitations are as follows:

− Only the results of the LET passer, specifically the first takers from the years 2019, 2022, and 2023 are included in the data mining of the study. A follow-up study including the examination year 2024 may give new insights into the trends of licensure examination.
− Only the LET results of the main campus are included in the study. A longitudinal study must be conducted and include the external campus and include in the post-hoc analysis to check and validate the licensure performance of all graduates of the teacher education program.
− Only first timers are considered in the study to check and develop patterns about the trends of licensure examination success rate. To widen the scope of dissection, the longitudinal study and future researchers may include the repeaters who passed the given examination year, and it is encouraging to make a comparative analysis of the performance of first-time takers and repeaters. Furthermore, include those takers under the CPTE program in widening the scope of the sample.
− A purely quantitative approach is the methodology and design of the study. A qualitative exploration of the preparations and perceptions of first takers should be explored to widen the perspectives about the licensure rate success and deepen the understanding of the phenomenon being dissected.

### 4.   CONCLUSION

Based on the findings, this study concludes that the trends analysis of three years licensure examination performance of teacher education graduates produced a significant increase. This connotes that an improvement and increase in the percentage rate was observed. Therefore, the instructional practices and learning acquisition in the teacher education program are aligned with the standards and qualifications of teacher education institutions and the professional regulation commissions. The findings also conclude that graduates of secondary education performed well compared to elementary education graduates but there is only a slight difference in their performance. Furthermore, a significant difference was observed in the licensure examination percentage rate was observed when examination year, area of concentration, and examination components were considered.

This study recommended that there should be monitoring and strengthening the curriculum delivery in the BEEd graduates and create an enhancement program strategy to further reinforce learning retention in general education courses. Also, monitoring and strengthening the curriculum delivery and evaluation on the area of specialization of BSEd since it has a low percentage compared to general education and professional education. The examinees and future test-takers should be engaged in active collaboration among the teacher education program of the main campus and the external campuses. To make this in reality, before the end of the semester, a program and/or workshop should be conducted to strengthen the learnings of every pre-service teacher in the teaching profession and preparations and readiness for the licensure examination. Build more partnerships with other review centers to strengthen the pre-board review program of the university and to technically assist the graduates who failed in the licensure examination. Lastly, future researchers may replicate the study to affirm or refute the disclosed findings. Moreover, they can utilize the same research design and include a qualitative approach to make the findings more viable as reference and baseline data for the university for further program development.

## AUTHOR CONTRIBUTIONS STATEMENT

This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

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|---|---|---|
| C  : **C**onceptualization | I  : **I**nvestigation | Vi : **Vi**sualization |
| M : **M**ethodology | R  : **R**esources | Su : **Su**pervision |
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| Fo : **Fo**rmal analysis | E  : Writing - Review & **E**diting | |

## CONFLICT OF INTEREST STATEMENT

The authors declared no conflict of interest related to the conduct, authorship, and publication of this study.

## INFORMED CONSENT

The authors have full documentation and disseminated informed consent prior to the participation of some personnel in the study. Moreover, the researchers observed outmost confidentiality to the data used in this study.

## ETHICAL APPROVAL

The completed manuscript was submitted to the Research and Management Office of a state university in the City of Malolos, Bulacan for ethics review. After the review, necessary revisions and suggestions were considered in the manuscript for its betterment. This manuscript complied with all the ethical compliance as stated in the suggestions and recommendations. The researchers firmly observed the following: there is no name of the examinee was declared and mentioned, the name of the understudied university was not disclosed, and proper citations and referencing were used in compliance with the promotion of national and international standards of copyright laws. Finally, the researchers declared no conflict of interest in conducting this study.

## DATA AVAILABILITY

The data that support the claims and findings of the study are openly available in international repositories such as Google Scholar, Web of Science, Scopus, and Directory of Open Access Journals (DOAJ).

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