Development of an Automated System for Liquidation Report Preparation

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Abstract— This study determined the current system of processes in the preparation of liquidation report for DepEd Sorsogon Province Bulan II District public schools to identify system needing to be developed to address the problems encountered in accomplishing liquidation report. The evaluation of the developed system along functionality, efficiency, usability, and reliability was undertaken. Respondents were composed of school heads, bookkeeper, disbursing officers, and BAC members from the sixteen (16) schools composing the Bulan II District. The study revealed that majority of the respondents agreed upon the setbacks that the current system poses such as the redundant effort of encoding transactions. Thus, the proposed automated system of process significantly improved the level of productivity providing accurate and reliable report while eliminating redundant efforts. Adoption of the system is therefore recommended. Frequency count, percentage, weighted mean, and rank were the statistical tools utilized in analyzing data.

Keywords— Development, Automated System, Liquidation Report, Fiscal Management.

INTRODUCTION

Information technology has increasingly improved all aspects of human endeavor, including the workplace. ICT becomes indispensable and the main resource identified by every organization as an instrument to accomplish every task to achieve productivity.

Deidrick et al. (2003), defines productivity as an important economic factor for which has a key role in evaluating the economic growth. Workplace automation was made possible with the advent of technological infrastructures.

The Philippine Government launched in the early 2000s reforms on the School-Based Management (SBM) with provisions for the schools to have autonomy on managing funds as part of the Fiscal Management. *DepEd Order No. 44, s.2015 or the Guidelines on the Enhanced School Improvement Plan (SIP) Process and the School Report Card (SRC), DepEd Order No. 60, s.2016 or the Implementation of the Financial Management Operation Manual,* and *DepEd Order No. 008, s.2019 or the Revised Implementing Guidelines in the Direct Release, Use, Monitoring, and Reporting of Maintenance and Other Operating Expenses (MOOE) allocation of schools* were issuances concentrated on providing clear guidelines and processes involved in fiscal management. Efficiency of the present varying systems utilized in the report preparation, however, has not been addressed. Resources are wasted for the revision required to every submitted report and likewise causing delay in the release of MOOE allocation for the subsequent month, as stipulated in COA DBM JC 2019-1, February 4, 2019. The present circumstance lead the researcher to delve into the possibilities of increasing productivity in LR preparation by studying the current system and developing a system that would address the problem.

METHODOLOGY

The researcher utilized purposive sampling technique in administering two sets of questionnaires to the fifty-four (54) respondents from the sixteen (16) schools comprising Bulan II District. The System Development Life Cycle (SDLC) Spiral Model was used in the system development. Frequency count, percentage, weighted mean, and rank were the statistical tools utilized in analyzing data.

The respondents of this study were comprised of the school heads, disbursing officers and/or disbursing officer-designates, and the bookkeepers and/or bookkeeper-designates from sixteen (16) public schools included in Bulan II District. This study made use of total population sampling, a purposive sampling technique where the entire population that meet the criteria are included in the research being conducted.

Table 1: The Respondents

Respondents	Frequency	Percentage
School Heads	12	100%
Disb Officer/ Designates	14	100%
Bookkeeper/ Designates	14	100%

BAC Member	14	100%
Composite Mean	**54**	**100%**

Table 1 shows the respondents with its corresponding frequency per category and the percentage of respondents who participated in the survey. Twelve (12) School Heads, and fourteen (14) disbursing officers, bookkeepers, and BAC members of the population per category participated in the conduct of the survey.

Table 2: Current System Being Utilized in the Preparation of Liquidation Reports using Weighted Mean

Indicators	WM	Interpretation
1. The current system utilized in the preparation of Liquidation Report is created using Basic MS Excel Application.	5.000	Strongly Agree
2. The current system is simple and easy to use.	2.625	Neutral
3. The forms and sheets are well-organized.	2.875	Neutral
4. The current system needs short period of time to complete a report.	2.625	Neutral
5. Errors committed decreases over time using the current system.	2.438	Disagree
6. The current system yields accurate data across all forms on the first encoding.	2.375	Disagree
7. The current system produces automatic and accurate computation.	2.250	Disagree
8. The current system addresses all your system needs in liquidation report preparation.	3.063	Neutral
9. It takes only one sitting in the preparation of liquidation report to be accomplished.	2.125	Disagree
10. You are overall satisfied in using the current system.	3.250	Neutral
Composite Mean	**2.86**	**Neutral**

Table 2 showed current system being utilized by the respondents in the preparation of liquidation reports using weighted mean. Presented ten indicators to strengthen and to have a clear understanding of the readers about the study. In indicator 1, the current system utilized in the preparation of liquidation report is created using Basic MS Excel Application with the weighted mean of 5.0 which was interpreted as strongly agree. For the current system is simple and easy to use having a weighted mean of 2.625 and interpreted as neutral. Likewise, in the forms and sheets are well-organized having a weighted mean of 2.875, the current system needs short period of time to complete a report also having a weighted mean of 2.625, the current system addresses all your system needs in liquidation report preparation with 3.063 and the overall satisfaction of respondents in using the current system with 3.250. All these indicators were interpreted as Neutral.

Moreover, errors committed decreases over time using the current system with a weighted mean of 2.438, the current system yields accurate data across all forms on the first encoding with 2.375, current system produces automatic and accurate computation 2.250, taking only one sitting in the preparation of liquidation report to be accomplished with 2.125, these indicators are all interpreted as disagree.

These mean that respondents are knowledgeable in Basic MS Excel Application. Problems, however, may arise in preparing liquidation reports since, according to them, current system does not produce automatic and accurate computation across all forms on the first encoding. This implies that the current system does not satisfy its users in terms of system performance. The results imply that it is necessary to develop a system that would cater the needs of the personnel involved in the preparation of liquidation report.

These findings are in congruence with the study conducted by Kendrigan and Bray (2011) stating that one of the ways businesses can ease the burden of compliance and business reporting while enhancing the speed and consistency of report delivery is through automation.

- *The level of agreement of the respondents on the existing system in terms of Accuracy of data, Reliability of data, Efficiency of the existing system; and the complexity of the existing system*

Table 3 presents the level of agreement of the respondents on the existing system in terms of accuracy of data, reliability of data, efficiency of the existing system, and the complexity of the existing system. The indicators current system requires redundant effort of encoding with 'agree' interpretation with 3.854 weighted mean, and thoughts on the possible improvement of the current system with 4.396 weighted mean.

Table 3: Level of Agreement of the Respondents

Indicators	WM	Interpretation
The information provided by the current system is comprehensible.	3.167	Neutral
The current system requires redundant effort of encoding.	3.854	Agree
The current system yields accurate data across all forms on the first encoding.	2.167	Disagree
The current system serves its purpose.	2.917	Neutral
Key requirements in terms of report reliability are met by the current system.	3.042	Neutral
It is easier to check for errors in the accomplished report.	3.083	Neutral
I have other thoughts on the possible improvement of the current system.	4.396	Agree
The overall productivity of the personnel involved in liquidation report preparation is reasonable.	3.167	Neutral
The current system efficiently produces timely report.	2.875	Neutral
You are overall satisfied with the current system.	3.167	Neutral
Composite Mean	**3.18**	**Neutral**

The rest of the indicators were interpreted as neutral such as information provided by the current system is comprehensible with 3.167, current system serves its purpose with 2.917, key requirements in terms of report reliability are met by the current system with 3.042, it is easier to check for errors in the accomplished report with 3.083, overall productivity of the personnel involved in liquidation report preparation is reasonable with 3.167, the current system efficiently produces timely report with 2.875, and user's overall satisfaction with the current system with 3.167. The respondents disagree with the indicators the current system yields accurate data across all forms on the first encoding with 2.167. The composite mean has a value of 3.18 and interpreted as neutral. It also means that the current system did not satisfy the needs of the respondents.

These results suggest that it is necessary to improve the current system in accordance with the need of the personnel involved in liquidation report preparation to generate accurate and reliable information in their financial statements. Further, a system that is efficient with high percentage of usability would be an advantage. In a study on the impact of AI in accounting processes conducted by Chukwuani et al. (2020), it was underscored that the use of AI technology cannot be avoided by firms, especially if they want to remain relevant in business in the nearest future. The efficiency, speed, and accuracy of Artificial Intelligence are yet to be matched. Accountants just have to welcome the AI technology and integrate it into maximizing professional output. Technological breakthroughs are undeniably offering significant advancements in all human endeavor. Accuracy and reliability are some of the benefits of automation brought about by technology. Yet, it is in the hands of those who are in authorities whether to embrace or not, this transformation to maximize its full potential.

- *The problems encountered in the preparation of liquidation reports along the identified variables*

Table 4 shows problems encountered in the preparation of liquidation reports along the identified variables. Time-consuming report preparation requiring not only one sitting to accomplish the task is the first in the rank of problems encountered; followed by the system's inability to produce automatic and accurate computation being the second on the rank; third, the current system do not yield accurate data across all forms on the first encoding; fourth rank is errors committed increases over time using the current system; and the fifth rank is the current system is not simple and easy to use and the current system needs long period of time to complete a report. This reflects that the personnel involved in the report preparation are knowledgeable with the use of MS Excel application. However, the lack of automation process in accomplishing report hinders personnel productivity and the need for advancement is evident.

Table 4: Problems encountered in the Preparation of Liquidation Reports

Problems	Frequency	Rank
It takes not only one sitting in the preparation of liquidation report to be accomplished.	45	1
The current system cannot produce automatic and accurate computation.	40	2
The current system yields not accurate data across all forms on the first encoding.	38	3
Errors committed increases over time using the current system.	35	4
The current system is not simple and easy to use.	32	5.5
The current system needs long period of time to complete a report.	32	5.5
The forms and sheets are not well-organized.	28	7
The current system did not address all your system needs in liquidation report preparation.	25	8
You are overall not satisfied in using the current system.	23	9
The current system utilized in the preparation of Liquidation Report is created using Basic MS Excel Application is not updated.	15	10
Composite Mean	**3.18**	**Neutral**

This is in consonance with the findings of the study conducted by Staaby et al. (2021) stating the involvement of employees with process expertise provides new opportunities for organizations to both develop their automation initiatives and facilitate meaningful work.

Table 5A: *Evaluation of the Developed System along Functionality*

Indicators	WM	Interpretation
It is easy to find the information I need in the report.	4.625	Strongly Agree
The system functions in accordance to my expectations.	4.750	Strongly Agree
I find the various functions in the system were integrated.	4.875	Strongly Agree
The system provided adequate functions to accomplish a liquidation report.	4.813	Strongly Agree
I am overall satisfied with the processes involved in the liquidation report preparation utilizing the newly developed system.	4.875	Strongly Agree
Composite Mean	**4.788**	**Strongly Agree**

The preceding results imply that the developed system provides adequate functions to accomplish a liquidation report. It was supported by the composite mean of 4. 788 and interpreted as strongly agree, indicating that new system passed the functionality assessment of the users/personnel involved in report preparation.

Table 5B reflects the evaluation of developed system along usability with indicators, weighted mean, and interpretation.

Along the system is simple and easy to use with 4.938, the system has a pleasant user-interface with 4.625, feel comfortable utilizing the system with 4.5, the system screen is clear and organized with 4.5 and the prior skill is sufficient and applicable in utilizing the new automated system in LR preparation with 4.625. These results having an interpretation of strongly agree.

Table 5B: Evaluation of the Developed System along Usability

Indicators	WM	Interpretation
The system is simple and easy to use.	4.938	Strongly Agree
The system has a pleasant user-interface.	4.625	Strongly Agree
I feel comfortable utilizing the system.	4.500	Strongly Agree
The system screen is clear and organized.	4.500	Strongly Agree

My prior skill is sufficient and applicable in utilizing the new automated system in LR preparation.	4.625	Strongly Agree
Composite Mean	**4.638**	**Strongly Agree**

This means that the newly developed system is strongly usable as perceived by the respondents and that prior skill is sufficient and applicable in utilizing the new automated system in LR preparation through the support of composite mean with WM of 4.638.

Table 5C: *Evaluation of the Developed System along Efficiency*

Indicators	WM	Interpretation
The system is compatible with most hardware specifications.	4.750	Strongly Agree
The system is cost-effective.	4.875	Strongly Agree
Required information input is significantly reduced.	4.938	Strongly Agree
I am able to accomplish report quickly using the system.	4.750	Strongly Agree
I believe that utilizing the system would improve my working productivity.	4.625	Strongly Agree
Composite Mean	**4.788**	**Strongly Agree**

It is evident in Table 5C the evaluation of the developed system along efficiency using weighted mean and interpretation. The system is compatible with most hardware specifications has 4.750, the system is cost-effective with 4.875, required information input is significantly reduced with 4.938, accomplish report quickly using the system with 4.750 and believing that utilizing the system would improve working productivity with 4.625.

It means that respondents evaluated the developed system along efficiency with the composite mean of 4.788 meaning they strongly agree that the system is usable.

Table 5D reflects evaluation of the developed system along reliability. The respondents assessed that the system yields automatic computations with 4.813, system produces accurate computations with 4.938, identified encoding errors are easily detected with 4.625, identified encoding errors are easily corrected with 4.563 and the system significantly produces error-free reports also having 4.563. These results have an interpretation of strongly agree.

Table 5D: *Evaluation of the Developed System along Reliability*

Indicators	WM	Interpretation
The system yields automatic computations.	4.813	Strongly Agree
The system produces accurate computations.	4.938	Strongly Agree
Identified encoding errors are easily detected.	4.625	Strongly Agree
Identified encoding errors are easily corrected.	4.563	Strongly Agree
The system significantly produces error-free reports.	4.563	Strongly Agree
Composite Mean	**4.700**	**Strongly Agree**

It means that respondents strongly agree that the new developed system was reliable in preparing liquidation reports.

The preceding results of the evaluation on the developed system along functionality, usability, efficiency, and reliability reflects that the proposed system passed the assessment of the person involved in LR preparation along identified variables. System functionality, usability, efficiency, and reliability present in the proposed system is considerably high.

In consonance with the conducted by Chung and Leite (2009) On Non-Functional Requirements in Software Engineering, they stressed the importance of having system requirements in software construction. The purpose of the software system needs to be well-defined in terms of the functions that the software will perform. These, what they referred to as, Non-functional requirements served as the user standards and expectations on the performance of the software. They added, such non-functional requirements may be communicated with the user and developer so that the end-product will behave as expected.

This study has been guided with the user standards before being developed. The fifth indicator on the evaluation in terms of functionality of the developed system reflects the overall satisfaction on the person involved in LR preparation is high, indicating that the

standards and/or expectations of the end-users are met. This supports further the idea that the developed system be considered for utilization.

CONCLUSION

Based on the findings, the following conclusions were drawn:

1. The respondents are knowledgeable in Basic MS Excel Application which the current system of process was made.
2. The respondents' experiences in utilizing the system required several phases to accomplish a report. Also, the system does not produce automatic and accurate computation.
3. The current system is performing below the satisfaction of the personnel involved in report preparation in terms of accuracy and reliability. Also, the existing system can be considered complex and low in efficiency.
4. The respondents' thoughts on the possibility of the system be improved indicates that development of a new system of process be proposed. The researcher addressed the result of the first survey with the introduction of a newly developed system referred to as DepEd Sor-Bulan II Automated System for Liquidation Report Preparation.
5. The new system proposed provided adequate functions and overall satisfaction of the end-users were met. As to the evaluation of functionality, usability, efficiency, and reliability, the newly developed system passed the standards and expectations set by the respondents.

RECOMMENDATIONS

Based on the conclusions of the study, the following recommendations are made:

1. The current system of process in liquidation report preparation may be improved. Since personnel involved in the liquidation report is already familiar with manipulation of MS Excel application, it would be best that a new system be proposed and built using MS Excel.
2. To better improve the performance of the existing system, additional features may be added to ensure the accuracy and reliability of the report generated. This will also lessen the complexity of manipulating the system thereby improving its efficiency.
3. To address the problems encountered, a system may be developed to improve its performance. Redundant efforts on the part of the personnel involved in liquidation report preparation would be eliminated.

4. It is highly suggested that the newly developed system be proposed for utilization. A user manual may likewise be developed to aid the personnel involved with the proper use of the system.
5. Adoption of the spiral model, suggesting iterative nature of system development, may be continued. Possible system improvements be considered when the need arises.
6. Further studies and investigations be conducted in relation to the present study. Focusing and identifying variables such as security and accessibility may be infused in the future studies.

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