Development and Implementation of Point of Sale System (POS): Profitability Measurement for Retail Business

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Abstract

This study focused on the notification features through screen pop-ups of overdue payments and out of stock items as an innovation of the Point-of-Sale (POS) system. The developed system brings satisfaction to a retail enterprise. The researcher utilized the Microsoft Visual Studio 2012 with Microsoft SQL Server 2005 database. The model was evaluated using the ISO/IEC 25010:2011 standard. This study applied the developmental evaluative design, an approach that supports innovation researches. The evaluation of the performance of the existing system and the developed software were evaluated using a structured questionnaire. The research instrument was validated by an IT Expert to ensure the questionnaires' validity. The target clients of the study served as the respondents to achieve the purpose of the software, specifically, the owner and the cashier of the business. The quality in use model (i.e., effectiveness) and product quality model (i.e., usability, performance efficiency) were used to assess the quality of the new system. Results revealed that the new software provides efficient performance in monitoring overdue balance and out of stock items. The findings of the study leads to the conclusion that embracing technological advancement can improve the whole business operation. Retailers who deal with credit transactions must use the system to have close monitoring of the overdue payments.

Keywords: Effective strategy; Innovation; ISO/IEC 25010:2010 standard; Notification features; technology

Introduction

Retail businesses nowadays have been using Point-of-Sale (POS) in their daily sales and inventory. Managers can do better analyses about the business with POS integrated into the operation. However, some retailers accept credit options as one way to sell their products. Although POS application is one of the technological advancement in today's businesses (Fiorito et al., 2010), the recent application does not include monitoring of due dates. Proper management to the industry that offers credits to customers is necessary. Implementing proper monitoring and facilitating credit transactions significantly affect the business transaction.

The importance of employing different sales strategies equips the business establishment with a strong foundation for the success of the business. The adaptation of innovation in entrepreneurial companies proved to be a powerful way of achieving business goals (Christensen, Raynor & McDonald, 2015). More establishments faced many challenges in switching the company’s process from manual to more innovative, customize, and sustainable techniques (Mellor, Hao & Zhang, 2014). The immersion of the latest technologies processes innovation, and the
development of high technology companies have shown how regional employment and the economic change are being affected in European areas (Aydalot & Keeble, 2018). It is necessary to integrate the advancement of technology in business innovation support (Souto, 2015). The study of Weber and Bailey (2016), stated that POS system is a process, involving the acceptance, by a sender computer of a package provider, a term request to start a period for communication with a computing scheme to conduct a payment business between a trader and a buyer. Furthermore, in the study of Good et al. (2018) they claim that POS is an information technology system enchanting the usage of a supervision console, vital point, and software organization on the point of sale system.

Point-of-Sale system can effectively manage and monitor the sales and inventory of a business. However, monitoring and notification of the credit transactions are not integrated into the system.

Therefore in this study, the option for credit transactions will be added as one of the features of the developed system. For the retailers who handled credit transactions, the developed system would significantly affect the progress of the business. For an innovation to be useful, it should be replicable to resolve a particular need. This study generally aimed to develop a POS system that will manage the credit transactions of the business, which include monitoring and notifications of past due dates of the customers.

The Framework of the Study

Every software product has a trade-off between usability and functionality. Figure 1 presents the theoretical framework of the study. Profitability is one of the main concerns in business that sustains the whole operation. Figure 1 shows the different theories as to how other authors evaluate the aspect regarding retailing business. Also, Fig. 1 shows how significant is the acceptability of innovation that can bring a sustainable and productive outcome.

Methodology

This study aimed to develop a system that will focus on client satisfaction. Hence, client satisfaction is the primary measurement of success in a software project.

Research Design

This study used a developmental evaluation design, an approach that supports innovation by collecting and analyzing real-time data. The study of Patton et al. (2015), proved that the developmental evaluation process is a suited method/approach in creating innovative works.

Research Respondents

The research respondents were the direct owner and the cashier of the retail business which cater credit transactions. Research respondents voluntarily participated in the conduct of the study to determine the needed features in the developed software.
Research Instrument

In this study, the researcher patterned the questionnaire to the ISO/IEC 25010:2011 standard wherein the quality in use model through effectiveness, and satisfaction and the product quality model through performance efficiency were the tools in measuring and evaluating the system and software product quality. The researcher requested an Information Technology expert to validate the research questionnaire. The questionnaire contains information about the current system, the profitability performance, and the effectiveness of the system.

Data Collection and Analysis

Figure 2 shows the data gathering procedure of the study. In the assessment phase, questionnaires were given to the respondents to gather the needed information. Designing of the whole operation of the system takes place in the design phase. The developed system used Microsoft Visual Studio 2012 application for the frontend and Microsoft SQL Server 2005 as the database where data will be stored. Next is the implementation of the software through installation and testing to the retail business of the target client. The evaluation was done to determine the performance of the developed system. Benchmarking to other retail industries was also done to test the performance of the system.

Figure 3 presents the flow of the system.

Results and Discussions

Table 1 presents the results of the evaluation of the existing system.

Assessment of the Existing Sales and Inventory System The Sheallzy Enterprises existing sales and inventory generated reports manually. Table 1 shows the assessment result.

Results averred that the existing sales and inventory system used is not effective. The management saw very dissatisfied and fail to agree on its performance. Ncube (2017) showed that manual reports through writing, and with the presence of calculators are highly inefficient and inappropriate. These things require a lot of hard works, time-consuming, and can be erroneous. Bae and colleagues (2016), averred that doing manual inventory
Table 1. Assessment of the existing sales and inventory system

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Weighted Mean of Existing Sales and Inventory System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction</td>
<td>1.64</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>1.21</td>
</tr>
<tr>
<td>Performance efficiency</td>
<td>1.29</td>
</tr>
</tbody>
</table>

Note: 1.00-1.75 - Very Dissatisfied; Not Effective; Very Disagree
1.76-2.50 - Dissatisfied; Less Effective; Disagree
2.51-3.25 - Satisfied; Effective; Agree
3.26-4.00 - Very Satisfied; Very Effective; Very Agree

monitoring is incredibly hard.

**Design of the Developed System**

The following figures present the design of the developed system. Fig. 4 displays the main menu. Fig. 5 shows the cash/credit transaction. Fig. 6 shows the stocks payable report. Fig. 7 shows the notification features of the system.

Assessment of the Developed System

Table 2 shows the evaluation of the implemented system.

Results revealed that the implementation of the developed system was effective. The management saw very satisfied, and agreed that the developed software has better performance efficiency compared to the existing system Orr and colleagues (2015), stated that the POS system could satisfy the management’s needs in accounting sales and inventory. The innovation of an old Point-of-Sale System to a new and more acceptable system that suits the clients want to be seen very important. The transformation from a manual to a more
### Table 2. Evaluation of the developed system

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Weighted Mean of Existing Sales and Inventory System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction</td>
<td>3.64</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>3.14</td>
</tr>
<tr>
<td>Performance Efficiency</td>
<td>3.07</td>
</tr>
</tbody>
</table>

Note: 1.00-1.75 - Very Dissatisfied; Not Effective; Very Disagree  
1.76-2.50 - Dissatisfied; Less Effective; Disagree  
2.51-3.25 - Satisfied; Effective; Agree  
3.26-4.00 - Very Satisfied; Very Effective; Very Agree

Figure 7. Notification form

technology acceptance environment plays a vital role in every enterprise (Rese et al., 2014).

### Conclusions

This study aimed to develop and implement an innovative software of the current POS system in a retail enterprise that will manage the credit transactions of the business. Client satisfaction is the primary concern of the management to have a successful business.

A notification feature through screen pop-ups were added as innovation of the old POS system to achieve the objectives of the study. Based on the results, the performance of the developed system is effective that satisfies the need of the business of the target client.

Implementation of the developed system in retail businesses that offer credit transactions can significantly affect the whole operation. Manual monitoring the customer’s payment due dates are not efficient and may lead to bankruptcy. Therefore, embracing the use of technology in the business operation can maximize the profit and progress of the business.

Client requirements are distinct. The craft of every software project is selecting a method that will satisfy customers’ needs.

### Recommendations

The findings of the study will best applied to retail enterprises that cater to credit-based transactions. It is best to provide a system and method whereby the real-time status of a retailing business that handles credit transaction to maintain sustainability and promote slow-moving items to minimize the inventory carrying costs.

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