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Design of Ordering System Using Web-Based Quick Response Code (Qr Code) Technology at Paolo Fest Cafe

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A B S T R A C T

The goal of this research is to develop an efficient business process model to resolve issues related to the ordering cycle of food and beverages at Paolo Fest Café. This study employs the Research and Development (R&D) approach and follows the ADDIE methodology, which includes three stages: analysis, design, and development. The research findings underscore the need for a website system that showcases the Paolo Fest Café menu, starting from selecting the table number to checking out. Payments can be conveniently made using the name or table number and can be processed either at the cashier or by customers requesting the bill at their table. This system eliminates the need for waiters to take orders individually and simplifies the payment process for customers. Furthermore, daily or monthly transaction reports can be easily generated using the website's transaction history feature, removing the necessity for manual recalculations.

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INTRODUCTION

Along with the advancement of science and the increasingly developing economy, all organizations or companies must also develop according to the pace of the economy, which will have an impact on the growth of companies as a whole. This situation influences entrepreneurs to make efforts to develop their companies to achieve excellence. Therefore, companies must have the ability to manage Information Systems that meet their needs and can facilitate the organization's work to achieve its goals. The purpose of implementing computer information technology is to speed up and simplify the execution of the organization's tasks and functions.

Technology for mobile applications has advanced significantly in recent years, particularly in the area of food and beverage online transactions. This is demonstrated by how much easier it is to order food and beverages online without having to wait in line at the restaurant. The actors in the small, medium, and large culinary businesses are greatly impacted by this paradigm shift. Consumer expectations are met by a variety of food types and menu variations, and the growing number of new players in the culinary industry does not stop customers from attempting to purchase these foods and beverages, either directly or through online applications. For culinary business actors, however, the incorporation of sales transaction patterns does not offer the most necessary answers. A culinary business's ability to sustain and enhance its product sales performance is just as important to its success as its overall sales figures within that time frame.

Queues of patrons form in restaurants and cafés when patrons arrive at the same time and cause problems. Due to lengthy wait times, this frequently causes customer unhappiness, which leads them to either leave or hunt for other cafes or restaurants with comparable menus. Usually, the restaurant or cafe will increase its space to accommodate extra dining tables and accessories in order to accommodate more patrons. Nevertheless, expanding the dining table's capacity without also adding more management staff members may lead to other issues. Among these issues are a lot of order errors and lengthy wait periods for consumers to receive their food as a result of inefficiencies and poor customer service.

Several previous studies have been conducted to solve issues related to ordering food and drinks in restaurants or cafes. Suharianto, Lukman, Angga & Gandu (2020) analyzed the implementation of a QR Code system to improve order efficiency in restaurants and cafes to address ordering issues, where previously, the restaurant only provided one cashier for recording orders amidst busy conditions. This often led customers to leave or find another restaurant or cafe offering similar menus with faster service. The experiment results showed that the method developed in this study could significantly enhance menu service efficiency, ensure accurate service from waiters and chefs, shorten the menu ordering process, and emphasize the importance of solving these issues. This real-world study will become a full support tool for restaurant/cafe menu service. According to the test results, this new system is quick and affordable when it comes to efficiency and cost savings, which puts it

in a strong competitive position against other management improvement systems. Budi & Danang (2021) designed a web-based QR Code ordering and payment system implemented at Kedai Cangkir Gubug to address long ordering times caused by waiters manually recording orders while serving other customers. The study results explained that the implemented ordering and payment system helped facilitate the management of Kedai Cangkir Gubug, and the solution proposed by the authors was to reduce the waiters' tasks so that services could be evenly distributed by using QR Code technology for menu ordering, with the scanning tool being an Android smartphone. Payments can be made using the name or table number at the cashier or by requesting a bill at the table. This way, waiters do not need to take orders one by one, and customers can more easily make payments.

Based on several problem solutions from previous studies, the proposed solution to address the issues at Kafe Paolo Fest is to design and create a Business Process Modeling Notation (BPMN) for ordering using web-based QR Code technology. To understand the overall needs of Kafe Paolo Fest, an analysis of the activities at Kafe Paolo Fest was conducted with the help of Business Process Management techniques. The results of this analysis serve as the basis for designing the Accounting Information System, which will then be tested to determine the application's efficiency level in facilitating business processes with the goal of solving the problems occurring at Kafe Paolo Fest.

The purpose of this research is to identify the problems occurring and provide solutions that meet the needs of Kafe Paolo Fest. From the analysis of the existing problems, the researcher will design an ordering product Accounting Information System that meets the needs of Kafe Paolo Fest.

THEORETICAL REVIEW

Accounting Information System

Here are some definitions from various accounting specialists so that you may fully comprehend what an Accounting Information System (AIS) is. According to TM Books (2017), "An Accounting Information System is a system that collects, records, stores, and processes data to produce information for decision-makers." John (2016) states that "An Accounting Information System is a system that collects, records, stores, and processes data to produce information for decision-makers." As stated by Krismiaji (2015), "An Accounting Information System is a system that processes data and transactions to produce useful information for planning, controlling, and operating a business." These expert viewpoints lead to the conclusion that an accounting information system (AIS) generates information through data processing that is utilized for company planning, control, and operation. The provision of accounting and financial data is the role of an AIS.

Functions of the Accounting Information System

A well-implemented AIS is expected to provide or produce quality and useful information for management and other information users in decision-making. The AIS is designed to meet its functions. The quality of an information

system can affect management in internal control, as the generated information is used in decision-making. An AIS's duties include gathering and archiving information regarding the organization's resources, personnel, and activities; converting that data into information so that management can plan, carry out, oversee, and assess those resources, personnel, and activities; and putting in place sufficient controls to protect organizational assets and data (Marshall B. Romney and Paul John Steinbart, 2016:11).

Characteristics of the Accounting Information System

The characteristics of an AIS work according to regulations that follow company standards. The data handled by an AIS is tailored to the company's needs. An AIS should have the following characteristics (Krismiaji, 2015):

1. Relevance: The function of accounting is to present quantitative data that can be used for company decision-making. Due to its vital function, the presented data must be maintained to ensure high quality. Balance sheets, income statements, cash flow statements, changes in equity, and notes to financial statements are examples of financial reports in accounting. Relevant financial reports are essential. A business needs to be aware of the information's relevance. If relevance is lacking, decision-makers will find the provided information useless, even if other qualities are met. Therefore, do not underestimate relevance as it is a crucial quality characteristic of information. Users should use appropriate methods to create relevance in the company's financial reports.
2. Verifiability: The next quality characteristic of accounting information is verifiability. Measurements cannot entirely escape considerations and effective opinions. Human involvement in the measurement and presentation of information means the process is not solely based on objective reality. To enhance the usefulness of financial reports, the information must be verified and independently measured.
3. Understandability: Accounting information quality must also be understandable. The information must be expressed in a form and terms that can be understood. Accounting information that is only understood by one party is useless, as financial reports are meant to be accessible to all those who require them.
4. Timeliness: The provided information must be delivered as soon as possible to serve as a basis for decision-making. If financial reports are delayed or not timely, decision-making will also be delayed. In reality, economic developments and changes occur rapidly, so these reports must be prepared timely.
5. Neutrality: Financial data must be objective, focused on the interests of users generally, and independent of the wants or preferences of any one party. Information must be neutral and should not present information that benefits only one party. To create accurate financial reports that provide quality accounting information and integrate all accounting recording processes, it must be supported by adequate accounting software that meets the company's needs.

Definition of Ordering

Ordering is the process, act, or method of ordering or making an order. The term "booking" has the same meaning as ordering. According to experts quoted by Darmawan, ordering is the acceptance of customer orders for a product. Following the order is the delivery of the product safely to the customer; in general terms, ordering is an agreement to reserve a place between two or more parties, which can include booking a room, seat, or other spaces at a specific time with its service product. Ordering encompasses all activities related to managing inventory or stock at the distribution point of the product and keeping records of all transaction orders.

The Accounting Information System's Ordering Objectives

a. To offer data for overseeing newly launched business ventures..
b. to enhance the information generated by the current system in terms of quality, accuracy, and organization.
c. To enhance accounting control and internal checks, thereby improving the reliability of accounting information and providing complete records of the company's accountability and protection.
d. To reduce or minimize clerical costs in maintaining accounting records in a company.

Functions of the Accounting Information System for Ordering

According to Bodnar and Hopwood (2014:13), the function of the information system is responsible for data processing. Initially, this function began with a simple organizational structure involving a few people. Now, it has evolved into a complex structure involving many specialists. Additionally, the AIS functions as a data storage system, making data systematic and reducing error rates in business processes.

Business Process Modeling Notation

The main takeaway from this study is that business experts may easily create succinct business process models using the core set of BPMN elements. Along with defining message and information flows between process participants, BPMN also defines process syntax. An effective method for making sure processes are well-defined and simple to follow is BPMN modeling (BPMN 2.0, 2011). Since BPMN is a graphical notation designed to promote communication among diverse stakeholders—end users, business experts, software developers, and workflow modelers—involved in design and development, it is expressive enough to support a variety of business process modeling methods.. BPMN's flexible syntax enables many levels of business process modeling. In summary, it records business viewpoints and associates the primary system features with the specifics that are required in executable models (Weske, 2012).

Providing a common notation that is understandable to all business actors is the main objective of BPMN. Therefore, between business process design and process implementation, BPMN can provide a standardized bridge. The language used in BPMN enables all parties involved to communicate processes

clearly, comprehensively, and efficiently within the organization. Scenarios include (Monakova, Brucker, & Schaad, 2012; Recker, 2010; Volzer, 2010):

a. Modeling for discovery involves utilizing fundamental BPMN features, specifying the key process details, and rapidly capturing processes with process owners.
b. Modeling for documentation: Visualizing key system behaviors from a business perspective in more detail than the aforementioned models.
c. Modeling for analysis (redesign): Adding further behavioral details to the model to facilitate process analysis and improvement.
d. Modeling for execution: Specifying processes with the required details for automated execution.
e. Modeling interactions: Representing communication in cross-organizational business processes.
f. Modeling semi-structured processes: Creating flexible semi-automatic processes.

Business Process

The majority of the literature pertaining to the definition of business processes has surfaced in the 1990s, with numerous authors offering their own interpretations that all share the same denotation of guiding business processes toward specific objectives and emphasizing particular elements. To characterize business processes, most academics employ the notions of activities, sequences, inputs, and outputs. Havey (2005) describes business processes as only particular, sequential guidelines for resolving business issues. According to various prominent definitions, business processes are comprised of associated components such as process inputs, the process itself, workflow or input transformation, human and computerized resources, and outputs (Agerfalk, Goldkuhl, & Cronholm, 1999; Becker, Kugeler, & Rosemann, 2003; Fan, 2001; Lonchamp, 1993; Saxena, 1996). Additional definitions take a different approach. This demonstrates how definitions are generally identical in meaning. There are notable variations in the focus placed on specific facets of corporate procedures. For instance, Agerfalk et al. (1999) emphasize the necessity of specific activity organization and structure inside business processes. Castellanos, Casati, Dayal & Shan (2004) and Fan (2001) both highlight how corporate procedures should be goal-oriented. Business processes are defined with a stronger client orientation by Davenport & Short (1990), Gunasekaran & Kobu (2002), and Hammer & Champy (1993), whilst Irani et al. (2002) place more emphasis on the requirement for distinct inputs and outputs. Because the term "business process" has been discussed in a number of academic fields, Völkner & Werners (2000) support the idea that there isn't a single, widely acknowledged definition for it. Despite a wide range of interpretations, there are four basic components that distinguish each business process: distinct inputs, a sequence of precisely defined tasks or activities carried out, computerized and human resources, and distinct outputs that add value for clients.

METHODOLOGY

In order to create the business process for an object that has problems with the previously implemented business process, this research employs a qualitative method with a case study approach. Because it sees reality holistically (as a whole), dynamically, and without dividing it into research variables, the qualitative technique is said to be more helpful for generally recognizing problems (Sugiyono, 2019). Paolo Fest Café is the selected item. It is a food and beverage company that specializes in ordering process cycle inefficiencies.

Primary and secondary data sources are needed to support this research. Field observations at Paolo Fest Café and interviews with staff members who are directly involved in the ordering procedure provided the primary data. Direct observation allowed for the understanding and recognition of the people involved, the present business process flow from ordering, and the operations carried out. Customer transaction checks between the cashier and the admin were also conducted. Secondary data was obtained through literature studies sourced from the internet, journal articles, and books related to business process management, as well as documents belonging to Paolo Fest Café, such as ordering data, daily transaction reports, and other documents. Business process management materials are needed to facilitate modeling the business process using BPMN.

RESULTS

Based on the above analysis, it can be identified that several factors cause issues in the ordering process at Paolo Fest Café, including customer queue buildup. These factors should be easier to organize if the café can transform its business process into a more structured and efficient one by leveraging technology, thus eliminating manual recording. This can minimize queue buildups and reduce the time needed for interdepartmental reporting. Specifically, a website can be developed to facilitate employees in inputting orders, which are then connected to the cashier system. Consequently, the output of this research is an improved depiction of the currently implemented business process (as is) to a more effective and efficient developed business process (to be).

DISCUSSION

Business Process Optimization Analysis

Based on the analyzed issues, a business process is needed to address the shortcomings of the previous ordering stages. The ordering process requires a feature that simplifies order selection for customers, facilitating them in inputting and choosing their orders, with the form directly connected to the cashier system for order reporting and speeding up the reporting process. This ensures that the cashier can promptly respond to order forms sent within a relatively short time. Previously, this process was done manually. An effective ordering system provides a beneficial domino effect on subsequent stages by minimizing errors and accelerating orders, making the café's transaction process more accurate and

organized through system design improvements. The requirement to create and implement a good, dependable, supportable, economical system that can adapt to the needs of both customers and employees is growing. Optimizing performance requires all actors and components to work together in harmony, which can only be achieved through accurate and efficient business procedures. In order to generate revenue, businesses, as well as people or groups working together, engage in business activities (Osijo & Sudarmiatin, 2023). backed by economist and philosopher Adam Smith (1723–1799), who claimed that when people specialize in carrying out particular activities, the division of labor can lead to gains in qualitative production. Because technology makes information sharing between users easier, the integration of computerized information systems (SIA) into corporate operations is essential. The ability to adapt business operations to environmental changes at the lowest possible cost and maintain a dynamic system that continues to provide consumers with valuable products and services are prerequisites for the rapid changes in the environment (Kale, 2019).

Business Process Modeling

Business Process Modeling Notation (BPMN) is the tool of choice when designing a new business process because it can accurately depict the process flow. The roles involved in each process as well as their flow from beginning to end are clearly illustrated by BPMN. This provides a clear thread of information exchange, making it easier to implement the intended ordering process. Presented below are Figure 1, the currently implemented ordering business process model (as is), and Figure 2, the proposed and designed BPMN (to be).

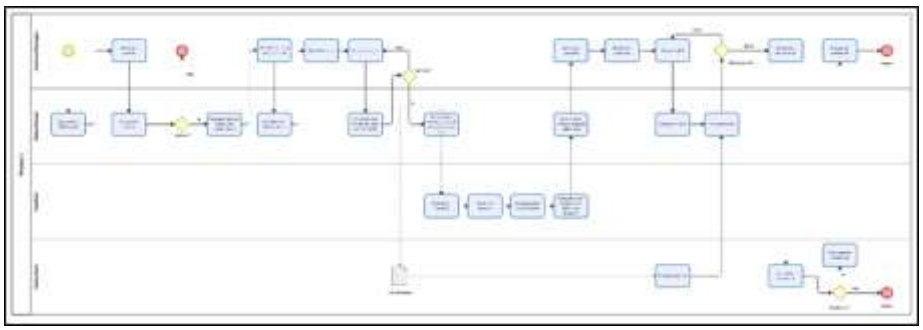

Figure 1. Cafe Paolo's Current FnB Ordering Business Process (As Is)

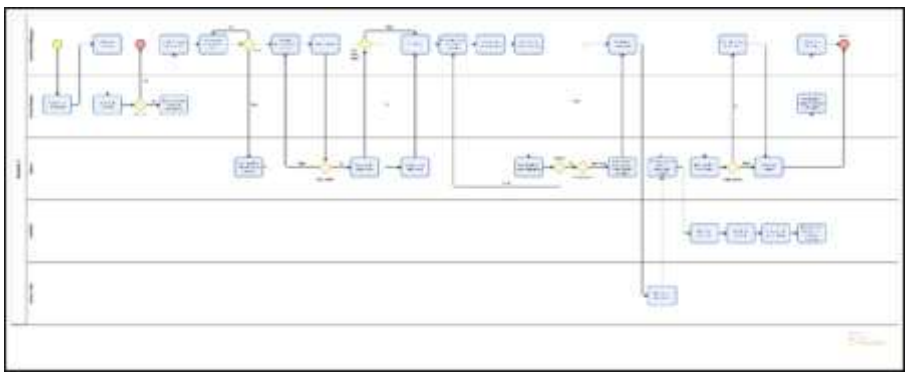

Figure 2. Cafe Paolo's Design FnB Ordering Business Process (To Be)

Figure 2 shows the (to be) business process built based on a website to improve the prior business process, whereas Figure 1 shows the existing business process done traditionally. The cashier, waiter, chef, and customer are the same actors who appear in both figures. But there are enhancements in the stages of the business process that are planned and easily apparent in the sections for customers and cashiers, increasing the process's precision, efficacy, and efficiency. The business procedure is still carried out traditionally in Figure 1, where customers are welcomed to sit if there are seats available. The waiter then gives them the menu book and waits for them to select their order. This approach leads to inefficiency, lengthy wait times, and sluggish service.

In Figure 2, the business process is designed for a website system, allowing customers to select their orders directly by scanning a barcode available at each table. After choosing their orders, customers are directed to the payment page where they can pay virtually or in cash at the cashier. The system automatically displays the customer's order in the cashier and kitchen system. This reduces queue lengths and facilitates easier payment for customers. The cashier and kitchen can also improve service speed.

CONCLUSIONS AND RECOMMENDATIONS

Based on the research findings and the discussions presented, it can be seen in the case of Paolo Fest Café that the design of a new web-based ordering business process, integrated with an Information System Application (SIA), provides several solutions to the existing problems. This business process design facilitates all parties involved, including customers, waiters, cashiers, and the kitchen. Furthermore, it may be argued that providing services in accordance with the established aims is greatly aided by effective and efficient business processes. It is crucial to study and design a new business process utilizing business process management and notation, which serves to evaluate, test, execute, and enhance business processes, in order to address problems brought on by inefficient business processes.

FURTHER STUDY

Based on the direct experience of the researcher during this research process, there are several limitations encountered that future researchers should pay more attention to in order to further refine their studies. This research, like any other, has its shortcomings that need continuous improvement in future studies. Some of the limitations of this research include:

1. The research object was focused only on one café, namely Paolo Fest Café, which is just one among many other cafés that also require internal system improvements.
2. In the data collection process, the information provided by the sources was limited to those involved, namely the cashier and customers of Paolo Fest Café.

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