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An Online Inquiry and Information Management System in Bicol Garments

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Abstract—Information management plays a very significant role in an organization. It helps the organization manage files and documents in an organized way. The main objective of this study is to propose a system that would help improve the process of handling and recording customer information as well as enhance communication between the customer and the business organization. In order to ensure the improvement of the process in Bicol Garments, the proponents have identified the following problems: manual listing and processing of customers' information and job orders; as well as communication problems. With this, business process management was used for modeling and reengineering the workflow process. The study utilizes business process management to show the existing process and the proposed new process for Bicol Garments. By analyzing the As-Is process, the proponents noticed several problems in the current process and proposed a To-Be BPMN in order to resolve the issue. The experimentation in the study also shows that the use of the proposed system will improve the current process at Bicol Garments and provide ease of access to the customer. The study has proposed several protocols to help improve the process. These protocols were simulated in several instances and have shown improvements. However, the result of this study cannot be completely generalized because it has not yet been implemented in Bicol Garments.

Keywords-As-Is Model, Clothing line, Information Management System, Job-Order, To-Be Model

I. INTRODUCTION

Information, as we know it nowadays, incorporates both electronic and physical data. The organizational structure must be capable of overseeing this data throughout the data lifecycle, regardless of source or format (information, paper reports, electronic archives, sound, video, etc.) for conveyance through various channels, including mobile phones and web interfaces.

Bicol Garments is a clothing line business located at J. Lukban Extension Daet, Camarines Norte, in which they provide services such as making uniforms (school uniforms, jerseys, etc.), repairing clothes, selling garments, and many more. Bicol Garments was established in 2009 and is owned by Mr. Emmanuel Revez and Mrs. Cynthia Revez. This type of business operates on manual processing of information, which leads to many problems: (1) manual processes sometimes cause missing or forgotten job orders; (2) manual listing of customers' orders of Bicol Garments is prone to data loss and misinformation; (3) the available communication is through text, and it's hard to identify the specific person. The problem stated above occurs when information and communication are not managed properly.

In order to help Bicol Garments, the researchers proposed a system entitled "Bicol Garments Online Inquiry and Information Management System" that enables the business to manage customers' information and allows the customers to inquire about and view ordered products online without creating an account. The proposed system will also have a chat function in order to enhance communication between the customer and the organization. This study focuses on the process of Bicol Garments, which handles customer information, orders, listings, communication, etc. This study aims to develop a system that will improve the overall process in Bicol Garments.

II. RELATED LITERATURE

This section gives an overview of the research that has been done on the topic of information management in a clothing store. The researchers read the following articles to gain a better understanding of how information management is maintained and managed.

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An inquiry database system [1] helps the business organization manage information, inquiries, and product information. A tailoring management system is proposed [4], which helps the business organization automate its manually maintained processes. This system improves services, the keeping of records, data integrity, data security, and a paperless environment. The proposed clothing management system with smart hangers embedded with RFID [3] improves the efficiency of sorting a large amount of laundry as well as customer convenience. A clothing management platform system [2] helps the business organization cut down on the time spent on information transmission and feedback. It also helps in managing important information and promoting the business's competitive ability.

Moreover, an Inventory and Sales Information System Design for a Clothing Store [8] was proposed in order to help and improve the business organization in managing inventory, sales, and information. A web-based Based Garment Management System for Premiere Clothing was developed [11] to assist the management in monitoring and managing the business processes. In order to help the business organization [7], a study was conducted to improve the capacity calculation for clothing line companies. In order to improve product development [9], the use of empirical evidence in marketing information systems was applied. This helps the business organization decide whether companies should further intensify their programs of marketing intelligence or information collection from the outside to be aware of competitors' superiority.

Furthermore, they used information technology [12] to develop a suitable management system to collect live production data and display the data on screens for analysis and interpretation. The study [10] proposes dataspaces and their support systems as a new agenda for data management that encompasses work in data management. A clothing style information management system was developed [5] that includes an early form of a clothing style information expert database and system operation rules. A web 3D customization prototype system [13] for personalized clothing was developed to show realistic clothing and fabric effects and offer an effective visual and customization experience to users.

Several articles and studies have proven that information management systems help improve business organizational processes. This study would help determine how an information management system helps an organization improve its business processes.

III. Methodology

In this section, the researchers provided a detailed interpretation of how to collect the information needed in the paper. The methodology used in this paper will assist the researchers in answering the specific problem as well as aiming for the objectives. Case studies, online surveys, direct personal interviews, and case study-based group discussions are the research methods used to collect valuable information from different respondents, particularly the target company.

The researchers study the different related articles to identify and understand the technique of turning the As-Is Process Model into a To-Be Process Model, as well as the analysis of the To-Be Model. An online survey and direct personal interviews are the techniques used to collect information from different respondents, including the company owner, who will be benefiting from the proposed system. Lastly, in order to analyze the data collected and to build a specific solution to innovate the existing process of Bicol Garment, case study-based group discussions are used. Each proponent suggested the appropriate process and features for the development of the system.

For the development of the system, the proponents also used the Rapid Application Development (RAD) methodology, which will assist the entire team in the development of the system for Bicol Garment. The RAD methodology is an agile project management strategy for software and development methodologies that emphasizes rapid prototyping and feedback over lengthy development and testing cycles. Fig. 1 shows the flow or process of the RAD methodology that will update the existing system at Bicol Garment.

The first phase of RAD is to define the scope, goals, and expectations of the project development. Defining the problems and the requirements for the project are also covered in the first phase to determine the solutions. After collecting the data, it is the right time to build an appropriate design for the users through various prototype iterations to make sure that the requirements are met. Rapid Constrictions are the next phase through software development and system testing. The last phase of RAD is the cutover. It is now the implementation of all the phases that the developed system is going to launch. Data conversion, testing, and switchover to the new system, as well as user training, are all included. While the developers and clients continue to look for flaws in the system, all final improvements are made.

IV. Findings and Discussion

The initial step in improving the manual process at Bicol Garments is to identify the current business process. To accomplish this, the management of various job orders as well as the listing of information from various customers were examined. These documents are hard copies of the customer's information and order. Analyzing these documents would give the researchers a better understanding of the current process. After analyzing the current process provided by Bicol Garments, the formulation of the As-Is BPM is done.

A. As-Is BPM

The existing process of the Bicol Garment is represented in Fig. 2. When the customer places an order, all the recordings and listing of information are done manually, which may lead to many problems.

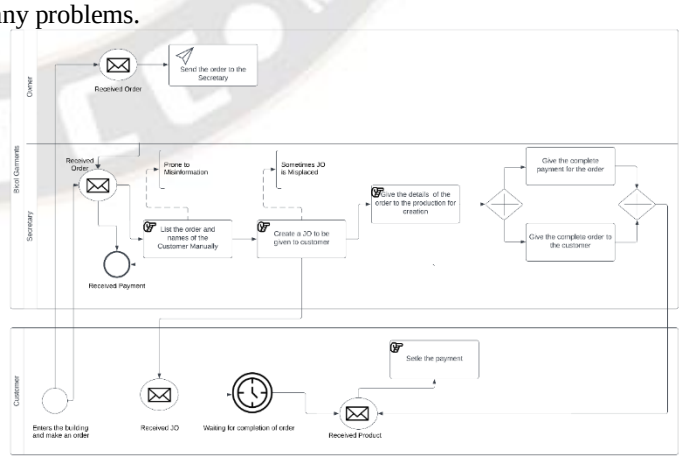

Figure 1. As-Is Process Model.

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The existing process for Bicol Garments involves the secretary and the owner. In the current process of Bicol Garments, for a customer to place an order, he/she is required to physically go into the building. The customer can place an order with the secretary or the owner. After the order has been placed, the secretary will do all the listing of information manually.

B. Analysis of the As-Is Model

The process of creating the JO and listing of information can be easily understood, as shown in Fig. 3. Although the process is simple, it is done manually by the secretary. As a result, some JO's and customer information are misspelled or missing.

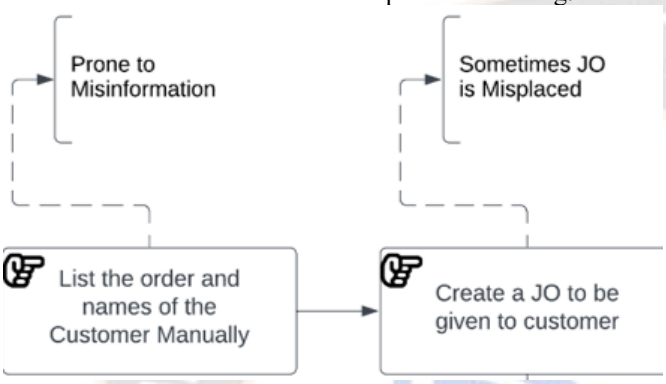

Figure 2. Creating JO's and listing of Customers Information.

After the creation of JO and the listing of customer information, the details will be forwarded to production for the creation of the product. Then the customer will have to wait 14 or more working days (this may vary) depending on the number of orders placed by the customer. Also, there are customers located in some areas where phone signals are weak, and it is difficult to get updates about the status of their order.

C. To-Be BPM

There are several problems with the current process of Bicol Garments. One of which is that missing JO's and information about the customer due to unorganized files and documents, the problem with communication between the customer and the business organization.

The solution to this is to create a system that manages information about the customers' listings, orders, and job orders as well as online inquiries. In addition to that, the researchers added a chat system to easily communicate with the business organization. Fig. 4 shows the To-Be process for the proposed system.

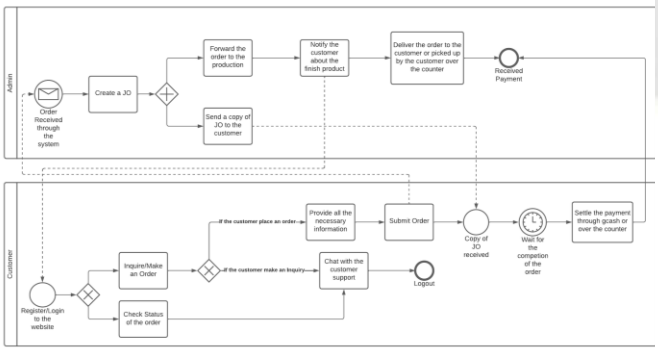

Figure 3. To-Be Process Model.

By providing this solution, Bicol Garments' current process would be significantly improved. The system will improve the management of the files, documents, and customer information as well as communication between the customer and the business organization.

D. Analysis of the To-Be Model

The To-Be BPM process model removes all the manual processes and all the listing of customer information as well as the creation of JO's. All these processes are done through the system. Through the proposed system, the customer can view the status of their order and communicate with the business organization for inquiries and questions through the chat system.

E. Experimentation

In the experimental setting, the researchers invited one of the staff in Bicol Garments to test the system in terms of information management, creating job-orders, order status, file management, and chat system.

As shown in Table 1, the staff agreed to the use of the proposed system features to improve the current process of Bicol Garments.

TABLE I. SYSTEM TESTING

Activities	**Agreed**	
	Yes	***No***
Information Management	✓	
Creation of JO	✓	
Order Status	✓	
File Management	✓	
Order Status Update	✓	
Notification for finished product	✓	
Chat System	✓	

F. Instances

In Table 2 shows how the study compared the As-Is model and the To-Be model by simulating the different processes in Bicol Garments. (1) Inquiry, (2) Ordering, (3) Job Order Creation, (4) Job Order Distribution, (5) Production Process, and (6) Communication

As shown in Table 1, the staff agreed to the use of the proposed system features to improve the current process of Bicol Garments.

TABLE II. CYCLE TIME PROCESS

Instance	**Cycle Time**	
	As-Is Process	***To-Be Process***
1	20 mins	1 min
2	1 hour	10 mins
3	1 hour	10 mins
4	20 mins	5 mins
5	54 hours	40 hours
6	24 hours	5 hours
Average	80.40 hours	45.16 hours

The average time it takes to complete each process in the As-Is model is 80.40 hours. It takes a lot of time for the customer's order to be completely processed. The proposed system and the To-Be model significantly reduce the average time of each process. It took an average of 45.16 hours for each process to be completed.

V. CONCLUSION

The business process model and notation are excellent tools for representing the current process of Bicol Garments. The use of these tools helped in identifying the problems that occurred in the existing process. Implementation of the proposed system will greatly improve the existing process of Bicol Garments regarding file management, information management, and communication. Having a system will also prevent misinformation and data loss. All the recordings and listing of information will be done through the system, which will lessen the problems caused by manual recording. The chat system that is included in the proposed study also improves communication between the customer and the organization. The proposed system also improved the cycle time of each process in Bicol Garments.

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