JURNAL EMACS
e-ISSN: 2686-2573
[Engineering, MAthematics and Computer Science] Vol.5 No.3 September 2023: 161-167 DOI: 10.21512/emacsjournal.v5i3.10699

Analysis and Design of Ticketing Application System (Case Study: Bebek Kaleyo)

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Abstract — *Bebek Kaleyo is a restaurant chain with several outlets in the food business. Information technology (IT) equipment is used extensively in Bebek Kaleyo's operating processes, and any problems with the IT hardware are escalated to the IT department for solutions. However, each restaurant branch's reporting of interruptions is still done by hand. Based on these issues and the analysis, it is necessary to speed up the complaint procedure to guarantee quick repairs of IT equipment and successful execution of tasks. The research was conducted by examining the company's daily activities, and the results were used to develop a ticketing system for monitoring process improvements and reporting interruptions. A ticketing system that facilitates effective reporting of IT issues and monitors process improvements was designed and developed as part of this research using the prototype methodology. The installed ticketing system helps users at each branch report problems, keep track of repairs, and improves the efficiency and quality of service provided by the IT department in support of the supply and use of system and technology-related facilities. By using this ticketing system, Bebek Kaleyo hopes to improve overall process efficiency while streamlining the process of reporting IT concerns. This solution gives branch users the ability to discuss IT issues with the IT department in an efficient manner, which improves the organization's operational performance.*

Keywords: *Ticketing System; Prototype; Process Improvements*

I. INTRODUCTION

The rise of information technology (IT) has made practically all operational tasks performed within an organization or business dependent on IT. Device malfunctions and interruptions do happen occasionally, and the IT department is in charge of fixing them (Adam et al, 2020). Report issues with IT hardware at Bebek Kaleyo, especially in the IT department, is still manual and there is no good planning system. It is said to be manual because when there is a disturbance related to IT equipment in each branch, the user must report it by telephone to IT support. Accordingly, the need for information and the use of computer programs support the development of an application that may be used to address operational issues in the company (Adam et al, 2020). Service departments that deal with issues relating to the use of IT facilities or devices use the ticketing system (Kurnaedi et al, 2022). This system enables users to submit trouble reports, keep track of submitted reports, and receive responses and handling from the IT department. The goal of this system is to assist staff members who report technical issues to the IT department so that issues can be communicated and fixed (Kurnaedi et al, 2022).

Analysis is the process of looking for patterns or a mode of thinking that entails systematic justification of a claim pertaining to the identification of constituent pieces, the relationship between constituent parts, and the relationship as a whole (Hakim et al, 2021). Prototyping is software development approach in which the stakeholder characterizes a set of general targets for the project but does not classify thoroughly the requirements for the details (Liyunjira & Dody, 2022). The prototyping method that

the researcher uses is the prototyping model which has stages starting from Communication, Quick plan, modeling quick design, construction of prototyping, and deployment & feedback (Liyunjira & Dody, 2022). The system is a set of procedures that are interrelated and interconnected to carry out a task together. The system is a collection of interconnected components, which clearly define boundaries, cooperation to achieve goals by receiving input and producing output (Marakas & O'Brien, 2018). Output of an organized transformation process. The system has 3 basic functions, input, process, and output. An information system is an organized combination of people ,hardware, software, a communications network and data resource that collects, transforms, and disseminates information within an organization. Information systems that use computers are commonly referred to as computer-based information systems (Hakim et al, 2021). In practice, information systems are more often used without the use of computer-based. An integrated system that is able to provide useful information for its use or an integrated system or called a human-machine system, to provide information to support operations, management in an organization (Hakim et al, 2021). The Ticketing System is help-line of contact for all those query-requestors who need help for their problem. The ticketing tool has request module which functions as the Help-line manager where all the requests are fetched from the users having query related to their specific problem and then necessary solutions are provided to all those query-requestors by giving them the pre-defined solutions. If there is no solution predefined by the admin then the request for that query is passed on to the technician to resolve the issue (Gohil & Kumar, 2019).

User Experience is the process of increasing user satisfaction in improving the usability of applications and the interactions provided between user with product. UX aims to create something website or the application becomes easier to use and less confusing when used by the user (Allen & Chudley, 2018).

Mobile Application in the world of technology today is very necessary, even now its use is already in various fields in human daily life (Heripracoyo & Sulistyo, 2018). According to Mobile Marketing Association, Mobile Application is the software that runs on the device mobile among them smartphone, Tablet, or PC. A mobile application, or generally referred to as apps, created to operate on mobile gadgets, often serving to deliver services that can be accessed through personal computer systems (Adducul & Adducul, 2020). Mobile Application is a software unit that was created to serve the needs of several activities such as commerce systems, games, community services, advertising, and all processes that are almost carried out by humans on an ongoing basis (Liyunjira & Dody, 2022). The prototyping model method is a method that requires software developers to create a design visualization in the form of an application model that is very suitable for conditions where the user cannot clearly present information about the needs according to his wishes (Yurindra, 2018). Prototype is defined as a tool that gives ideas to potential makers and users about how the system functions in its full form, and the process of producing a prototype called prototyping (Susanto & Meiryani, 2019). Unified Modelling Language (UML) is used to help design and analyze information systems that will be created by the development team or developer. Use Case diagrams serve to describe an interaction between one or more actors with the information system to be built, and can describe what functions exist in an information system (Nistrina & Sahidah, 2022). In modelling software on analysis and design process, UML is still popular for specifying, visualising, constructing, and documenting software and has been proven has a good performance. Using modelling with UML diagrams are not arbitrary, one diagram to other diagrams have a rule and linkage. So, traceability of UML diagrams, especially use case, class, and sequence diagram, is an important steps to know whether the result of analysis and design software has been met the requirements or not yet (Maylawati et al, 2018). Figma is a design tool that is usually used to create mobile, desktop, website and other applications. Figma can be used on Windows, Linux operating systems by connecting to the internet. Figma has been a tool to design UI with excellent features interms of Design, Prototype, Collaboration, Design System Plug-in (Fauzan et al, 2019). Figma is a design tool that is usually used to create mobile, desktop, website and other applications. Figma can be used on Windows, Linux operating systems by connecting to the internet. Figma has the advantage that the same work can be done by more than one person even though in different places. This can be called group work and because of the ability of the figma application that makes this application the choice of many UI/UX designers to create website or application prototypes quickly and effectively (Al-Faruq et al, 2022).

Computers have a broad and different meaning to different people. The word computer comes from the Latin compute which means counting. Computer is an electronic device that can perform several tasks as follows: Receiving, processing input earlier in accordance with the program, storing the commands and the results of processing, providing output in the form of information (Mustaridi, 2020). CCTV (Closed Circuit Television) is a digital video camera device that is used to send a signal to a monitor screen in a certain room or place. CCTV is used to be able to monitor the situation and conditions of a particular place. In general, CCTV is often used to monitor public areas. Initially, images from CCTV cameras were only sent via cable to a certain monitor room and direct supervision was required by the operator/security officer with a less clear image resolution. The current digital CCTV camera system can be operated or controlled via personal computer o rtelephone handheld, and can be monitored from anywhere and at any time as long as there is communication with the internet or GPRS (General Packet Radio Service) access (Triandhika et al, 2020). Printer is a hardware device that is connected to a computer that can function to produce prints in the form of writing or images from a computer on paper media (Haryanto & Agustina, 2018).

Based on this, the study's objective is to develop a ticketing system that will enable customers to report issues, track repairs, and help the IT department provide better productivity and service.

II. METHODS

The prototype system development method was used in this study. This prototype method was chosen because of its fast design process and can continue to build user interaction. The stages in this study were designed to follow the cycle in the prototype method. Illustration of prototyping approach can be seen in Figure 1.

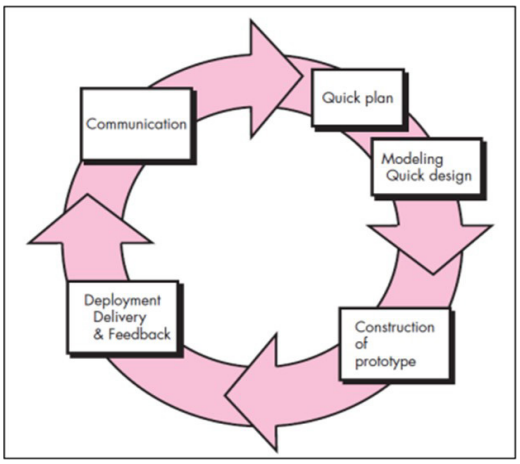

Figure 1. Prototype Methode

2.1 Current System Analisys

Bebek Kaleyo, which operates in the culinary field, has several IT devices that are used to support the company's business processes. The IT equipment used certainly requires maintenance. Process Maintenance currently underway, namely the IT team routinely checks the condition of devices in each branch and also makes repairs based on complaints or reports from user or company branch employees. The IT team will repair damage or disruption to IT devices when there are complaints from users. User will contact the IT team to inform them that there is an IT device in the branch office that is experiencing problems, then the IT team will discuss the problem and then send a team to make repairs at the branch location. User will wait until the IT team arrives at the location and then make repairs to completion.

2.2 Company Problem Analysis

Bebek Kaleyo is a company engaged in the culinary field that has several IT devices used to simplify the company's business processes in order to improve the services provided so that they are faster and more efficient. The IT equipment used by the company certainly requires regular maintenance or maintenance to maintain the company's IT equipment. On this problem, Bebek Kaleyo does not yet have a process for employees to report when an IT equipment problem occurs at a branch that cannot be fixed by employees at a particular branch and requires contacting the IT teams upport to help repair broken IT devices.

2.3 System Planning

The problems that exist at Bebek Kaleyo is the absence of a system that makes it easier for employees or user in reporting when there is a problem of damage or interference with IT devices in one of its branches. The current operations are still running manually and are not recorded regularly digital. User reporting via telephone calls to the IT team support. User don't know the information progress from the IT team regarding the repair process, user have to wait a long time and to find out progress tim IT, user had to make a phone call back. The IT team's work is not monitor well. From the problems encountered user and the IT team, the writing team provides solutions by developing existing attendance applications/systems.

The solution given is to add a Ticketing Menu and the results will be made in the form of a design Prototype. Menu Ticketing is digital based so that all reporting tickets are monitored and recorded well. There are several additional features such as "Create Ticket", "Dashboard" on these features. Feature "Create Ticket" can be used to make it easier to create trouble or damage report tickets so you don't have to make phone calls anymore. Feature "Dashboard" which can display the status of tickets being handled by the IT team. With features "Dashboard Existing data, users can easily monitor or monitor the progress of improvements made by the IT team. The IT team can also update information on the status of his work on this feature.

III. RESULTS AND DISCUSSION

3.1 Design Using the Prototyping Method

The process of the analysis and design stages of application development by adding a Ticketing Menu which is done by the Prototyping method:

- Communication
- Quick Plan dan Modelling Quick Design
- Construction of Prototype
- Deployment Delivery & Feedback

3.2 System Requirements Analysis

System requirements are divided into two types, namely functional requirements and non-functional requirements. Following are some of the functional and non-functional requirements in the development of a ticketing application system for reporting problems related to IT at each Bebek Kaleyo branch location:

3.2.1 Functional Requirements:

- Login: Each user must have an account registered in the system and must be logged in to access the application features.
- Trouble Ticket Creation: The system should allow users to create new trouble tickets by completing a form containing information such as branch location and problem description.
- Trouble Ticket Search: The system must have a search feature that allows the user to search for trouble tickets based on certain criteria such as ticket number.
- Ticket Status Update: The system should allow IT team to update the ticket status registered in the system to provide updates to users.
- Response and Notifications: The system should allow users to comment on created trouble tickets as well as provide notifications to users when there is a ticket status update.
- Performance Monitoring: The system must have a performance monitoring feature that allows the Bebek Kaleyo branch management to monitor the performance of the IT team in handling trouble tickets.

2.2.2 Non-Functional Requirements:

- Security: The system must have sufficient security to protect the data stored in the system and ensure that only authorized persons can access the data.
- Availability: The system must be available continuously so that users can access it anytime and anywhere.
- Scalability: The system must be scalable according to the needs and growth of the company.
- Performance: The system must be able to handle large workloads and ensure fast response times for users.
- User Experience: The system must be easy to use and attractive to users so that users can use the system easily and maximize system use.
- Integration: The system must be able to be integrated with other systems that are already used in Bebek Kaleyo such as an attendance management system.

2.3 Unified Modelling Language (UML) Diagram

The following is an overview of the use case diagram which consists of 3 actors who interact with the system:

2.3.1 Use Case Diagram User

Users can enter into the system, generate new tickets by choosing a branch location connected to IT device issues, update or cancel tickets, and more, as shown in Figure 2. The status of every open ticket is also visible to users.

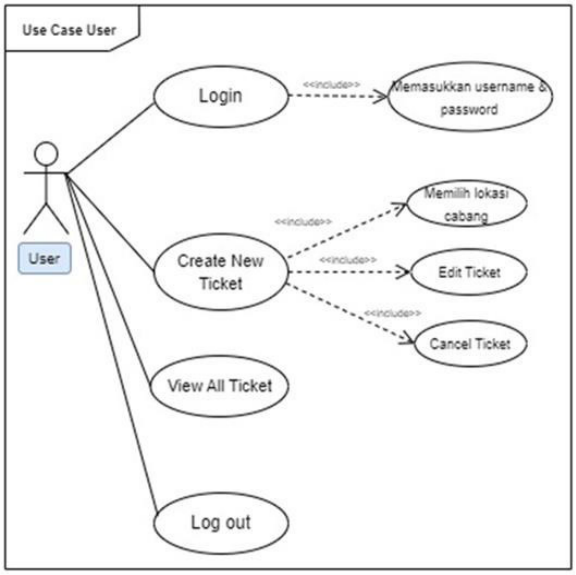

Figure 2. Use Case User

2.3.2 Use Case Diagram Staff-IT

Figure 3 below shows the actor Staff-IT's use case, users can log in, check their notifications for tickets made by other users, and use the "My Ticket" option to view, edit, and close tickets. In addition, Staff-IT gets access to the user actor's equivalent "View All Ticket" and "Log Out" functions. Additionally, Figure 4 depicts the Manager-IT actor's use scenario.

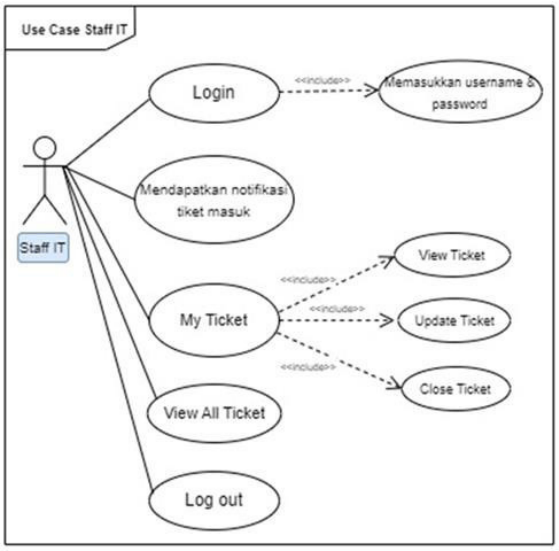

Figure 3. Use Case Staff-IT

2.3.3 Use Case Diagram Manager-IT

Shown in Figure 4 the actor Manager IT use case, The Manager-IT use case has an additional feature named "Assignment" in addition to similar activities to the Staff-IT use case. Using this function, Manager-IT is able to allocate tasks to their personnel depending on the tickets that users have generated. As a result, the Manager-IT designates a PIC or accountable person for each ticket that enters the IT division.Figure 4 above shows the actor Manager IT use case, The Manager-IT use case has an additional feature named "Assignment" in addition to similar activities to the Staff-IT use case. Using this function, Manager-IT is able to allocate tasks to their personnel depending on the tickets that users have generated. As a result, the Manager-IT designates a PIC or accountable person for each ticket that enters the IT division.

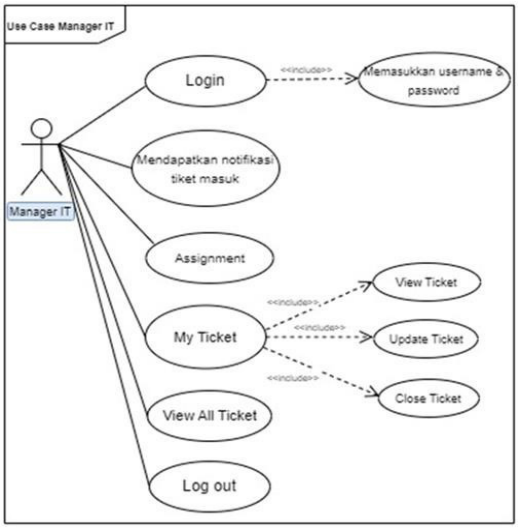

Figure 4. Use Case Manager IT

3.4 Design Prototype

Design prototype of the Ticketing feature on the Main menu. The ticketing feature is on the main menu line. When a user logs in they will go straight to the main menu, so that the ticketing feature will also be easier to reach, show in Figure 5. The "Create New Ticket" feature in this prototype makes it easier for users to submit the IT

problems they are familiar with as shown in Figure 6. When a user enters this feature, they will see a form that needs to be filled out with information pertaining to the ticket that will be created.

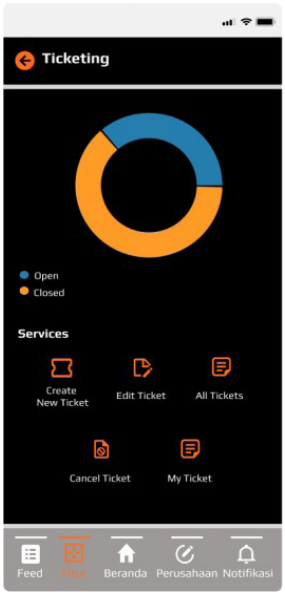

Figure 5. User Main Menu

Figure 6. Feature Create Ticket

Figure 7 depicts the IT manager's main menu prototype display. A feature to examine all tickets allocated to the IT team may be found in this menu, along with the "Assignment" function depicted in Figure 8. At this prototype's "Assignment" feature enables Manager-IT to assign tasks or tasks to IT personnel in charge of managing tickets created by users. A list of tickets that have not been attended to by IT workers will be shown to Manager-IT when they use this feature.

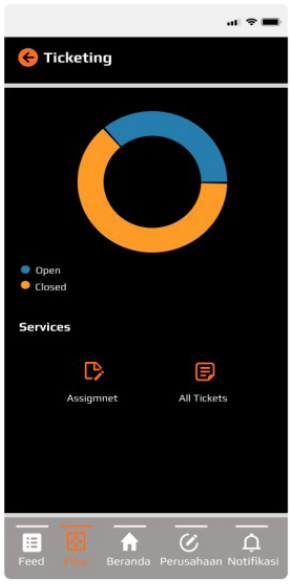

Figure 7. Manager-IT Menu

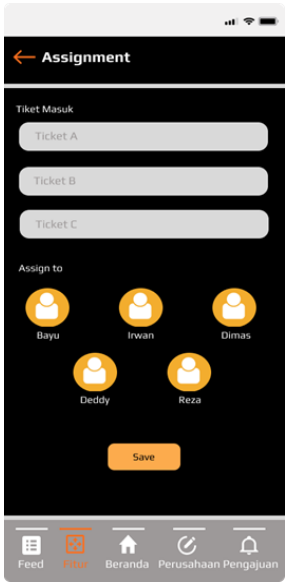

Figure 8. FeatureMain Assignment

Figure 9 below depicts the IT staff main menu prototype display. IT staff members can update tickets that the Manager-IT has assigned using the "Update Ticket" feature on this prototype, show in Figure 10. The IT personnel can view a list of the tickets that the Manager-IT has given them on the "My Ticket". IT staff members will be led to the "Update Ticket" page where they can add details or actions to the issue, show in figure 10. Show in figure 10 The IT staff can choose the appropriate ticket status from the list of options after making updates, such as "In Progress" if the ticket is still being processed or "Closed" if it has been resolved. The ticket will be marked as completed and cannot be modified again if the status is changed to "Closed".

Figure 9. IT Staff Main Menu

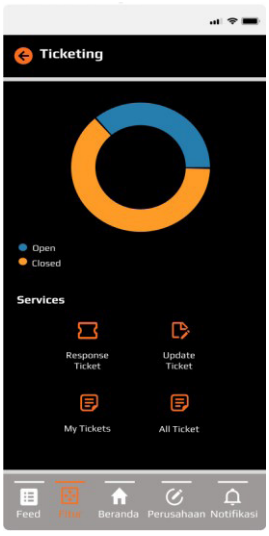

Figure 10. Feature Update Ticket

From the development results of the ticketing system that has been created in the form of a prototype, we conducted a questionnaire survey to 20 users from representatives of several divisions to gather feedback. The demographic information for the respondents is as follows:

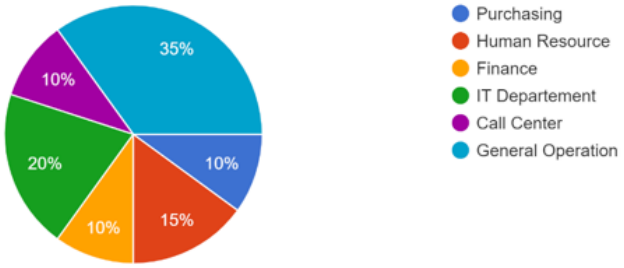

Figure 11. Percentage of Respondents Based on Divisions

In Figure 11, it can be seen that there are 6 divisions that filled out the questionnaire, and the General Operation division has the highest number of respondents, accounting for 35% of the total.

In Figure 12, it is shown that the percentage of 20 respondents, both male and female, is equal, which is 50%.

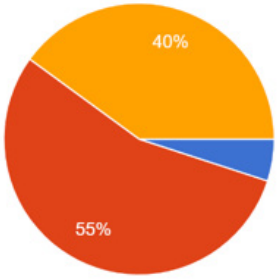

Figure 12. Percentage of Respondents Based on Feature Completeness

In Figure 14, the percentage based on feature completeness shows results for the category Incomplete (blue) at 5%, Complete (Yellow) at 40%, and the highest percentage is in the category Sufficiently Complete (Orange) at 55%.

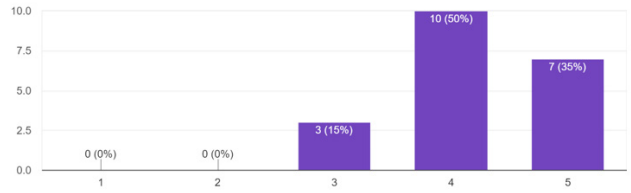

Figure 13. Percentage of Respondents Based on Satisfaction Level

In Figure 15, it shows the percentage of respondents based on satisfaction level obtained its highest rating value of 4 out of 5 with a percentage value of 50%.

Based on the research results involving 20 respondents, the majority of them expressed satisfaction with the developed ticketing system, especially regarding its feature completeness. However, there are still some areas that can be improved or enhanced to better meet the needs and expectations of users.

IV. CONCLUSION

The designed Ticketing System has the potential to significantly improve service to users by enabling real-time tracking of ticket resolutions and efficient communication between users and IT department. The user experience is improved, and the IT support procedure is made simpler by this technology. Additionally, the IT manager's assignment of tickets to technicians guarantees a balanced job allocation and can enhance technician performance.

The results of this study have demonstrated the advantages of using ticketing systems in enhancing IT service management. The effects of the Ticketing System's deployment may result in increased workplace effectiveness and productivity. Employee productivity can increase by shortening the time needed to report and fix IT equipment, resulting in fewer work interruptions.

The proposed prototype design may be improved upon to make it more user-friendly and simpler for people to utilize. a comprehensive user manual to make it simpler for users to utilize this information system and to report issues.

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