



## Outpatient Service Business Development in an Effort to Reduce Service Time

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### Abstract

Hospital service quality should be developed based on customer needs and satisfaction. Long service time at Bhayangkara Kediri Hospital Outpatient Unit ( $267,62 \pm 136,41$  min) becomes a problem for management. The process is an asset for an organization, especially the core process should be well managed. Business process management has been viewed as an effective concept to improve processes continuously. It is an operational research combining document review, stakeholder interview, focused group discussion, quantitative and qualitative process analyze, prioritization, and root cause analysis to give process redesign recommendations. There are five core processes in the outpatient unit, and we focus our research on the dispensing process in pharmacy. Then we made a process model based on evidence and interview-based discovery. The cycle time efficiency of the prescription analysis process was the worst with a value of 0.31. With non-value activities reach to 40% of all activities with the waste are over processing, waiting, and transportation. The selected problem was the disposition of prescriptions to the dispensing unit as waste. Based on the root cause analysis, we suggest two recommendations. For the short-term redesign, we support the use of a basket to transport the prescription embedded in the operational procedures. And for the long-term redesign, we suggest the implementation of electronic prescribing. These redesigns are assumed to reduce waiting time by 2.5 – 16.2 % of service time.

### Introduction

In recent years, with the development of society and continuous medical advances, the concept of health has become more meaningful to people. Health services are services different from goods. When the goods are an object, object, or tool, a service is an act and performance. One of the main ways to differentiate health services, including outpatient services, is to provide higher quality consistently than competitors. Patient satisfaction is a primary aspect of health care. Outpatient service is a type of health service in a hospital that has a vital role in providing health services because it is the gateway for inpatient and other health services. Outpatient services are the first concern of hospitals due to the tendency of people to seek uncomplicated treatment once they come and, on the same

day, receive complete services (one-day care). (Ahmad et al., 2022; Fu et al., 2021).

The hospital, as a health service facility, consists of various units. One that directly provides services to customers is the Outpatient Installation. Most customers who come to the Outpatient Installation do not suffer from acute illness or, in other words, are in fairly healthy condition. Thus, the quality of services provided to customers in outpatient installations must be oriented toward customer satisfaction. One dimension that becomes a parameter of service quality is time. The preferred time here is the time needed by customers to receive outpatient services (Depkes RI., 2009). Periodically evaluating processes and outputs is one of the efforts to improve service and customer satisfaction (Indarwati & Phuoc, 2018).

Health, the waiting time for outpatient

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care. Namely the time from the patient arriving at the polyclinic to receiving a doctor's service, is the longest 60 minutes. Whereas the Decree of the Minister of Health of the Republic of Indonesia Number 129/Menkes/SK/II/2008 concerning Minimum Service Standards for Hospitals, the longest waiting time for drug services is 60 minutes. Based on it, the longest standard of outpatient service time is 120 minutes. Preliminary studies show the high service time required for outpatients, namely 267.62 minutes (SD 136.41) compared to the standard 120 minutes at the Outpatient Installation at Bhayangkara Hospital, Kediri. From these data, the service time in the Outpatient Installation is still not up to standard.

In mid-2019, Bhayangkara Kediri Hospital is developing a hospital information system. Considering it, the BPM (Business Process Management) was chosen to develop business processes for outpatients. BPM integrates various management disciplines directly with the operation of processes (De Ramón Fernández et al., 2020). Processes that dominate market tools are necessary for business development at national and international levels. To meet market demands and intense global competition, a hospital must possess the highest level of imagination, creativity, and technical tools. The customer receives what he wants and needs at the right time. To achieve an ideal balance in marketing related to support from advertising and increasing business competitiveness, strategic thinking is also needed (Al-Rakhami & Al-Mashari, 2020). In the manufacturing and non-health industries, the concept of BPM has been widely used. This concept has the advantage of viewing the process as a whole and then prioritizes one of the processes to be developed. Many methods can be used for development, but basically, the BPM concept emphasizes a continuous cycle for an organization to make improvements. BPM is considered suitable for application because of the gradual improvements with a clear flow outline. So it can be analyzed.

BPM is, in essence, a management idea. Organizations perform better when they pay explicit attention to their business processes from start to finish than when they do not

(Reijers, 2021). Business process management has, so far, been a driving force for operational optimization and efficiency for companies, but the digitalization era that we are experiencing demands that businesses must also be agile and responsive (Kir & Erdogan, 2021). The strategy used to manage processes to reduce service time is to carry out good business process management. Business process management is the science and art of seeing how work is carried out in an organization to ensure consistency of results and to take advantage of development opportunities (Dumas et al., 2018). In the theory of Business Process Management, there is a continuous cycle in managing business processes consisting of several stages, namely process identification, process elaboration, process modeling, process analysis, process redesign, information systems, implementation, and monitoring. The initial step of this research is to identify the processes involved in outpatient services, especially the core processes, to be further selected to determine which is a priority. After that, process elaboration and modeling, process analysis, problem synthesis, root cause analysis, and process redesign recommendations are carried out (Zelt et al., 2019).

## Method

The method used in this research is operational research. This research was conducted in units involved in outpatient care at Bhayangkara Kediri Hospital for 6 (six) months from January 2, 2020, to July 1, 2020. The study population is all processes in outpatient services at the Hospital Outpatient Installation Bhayangkara Kediri. The research sample is the process observed in the selected analysis unit through selection.

The research begins with the selection of the process to be redesigned. Then proceed with process analysis to find problems. Then prioritize the root causes of the identified problems. Based on these results, a process redesign plan was prepared to be implemented. At each BPM stage that requires data analysis, the required data is inventoried according to the needs at that stage. The data collected and the data sources are documented for each research stage. The unit of analysis of this study is the

unit related to outpatient care at the Outpatient Installation starting from the time the patient arrives until after receiving the service, which consists of the Outpatient Installation, Medical Record Unit, Outpatient Admission Unit, Radiology Installation, Laboratory Installation, and Pharmacy Installation.

Sources of information used in this study include primary information sources in the form of interviews with staff involved in services, discussions with staff regarding the required topics, and research questionnaires. Secondary information sources include unit service and unit organizing manuals, monthly reports, unit quality indicator analysis reports, outpatient medical record documents, notebooks, and other documents used in outpatient care. Process redesign is an activity to develop a better process by looking at the existing initial process. The steps taken for process redesign are: (1) Process identification. This stage is the selection of one of the core processes to be redesigned. (2) Process description. At this stage the process to be redesigned is described in detail about the activities that occurred. (3) Process modeling. At this stage, the existing activities are described using BPMN provisions. (4) Process analysis. At this stage, an analysis of the current process is carried out to find the problems experienced. (5) Process redesign. At this stage, a solution to the existing problem is sought, and a new process redesign is carried out.

## Results and Discussions

Organizations are becoming increasingly aware of the importance of their integrated management processes. It is due to intense competition in the global market, where only the best leading companies in various industries can survive in the long term (Lizano-Mora et al., 2021). The process structure for outpatient services consists of core, management, and support processes. The core process, in this case, is the provision of services to patients who perform outpatient treatment at the Outpatient Installation. Identifying the process structure is done by describing the process and the profile of each process. Each process identification is done by reviewing documents related to the Hospital's Strategic Plan and

Guidelines in the Units related to outpatient services. The core processes of outpatient care are patient registration, medical services, supporting examinations, drug services, and administration. Outpatient registration is divided into two methods. They are online and offline registration. Medical services are when consumers meet with doctors or dentists for assessment and follow-up. Based on their needs, patients can get those from one doctor (single doctor) or several doctors (multiple doctors) if consultation or joint care is needed. Supportive examinations are carried out by the patient if, by the doctor's assessment, the patient needs to do laboratory and radiological. The following core process is drug service. This process consists of three stages. They are drug receipt, drug preparation, and drug delivery. The last process carried out by patients in the outpatient service process is administration. Following the payment status, an administrative process is carried out to fulfill the patient's obligations for the services he receives. Next, for each core process, a document review is carried out to determine the process profile.

To determine which process will be a priority for redesign, an FGD is carried out involving relevant stakeholders. The FGD was held on March 4, 2020, to select one business process through an assessment of the selection criteria to be prioritized for redesign at the next stage. The FGD begins with an explanation from the researcher regarding the background and research objectives, followed by an explanation regarding the description of the outpatient service process and the profile of each core process, the presentation of the selection criteria and the score, then all participants give a value for each business process according to the criteria. The collected assessments were then recapitulated by the researcher. The business process with the highest final score is selected for a further redesign. The results were presented to the FGD participants for agreement. The criteria used consist of three criteria. They are strategic importance, current conditions, and feasibility. The current condition criteria are further divided into three dimensions, namely the time dimension, the cost dimension, and the quality dimension. Each is assessed on a scale of 1 to 4. Later for each process, the

value of each criterion will be multiplied to get a score. Then the scores of all participants will be added up to get the total score. Based on the assessment of the selected participants using the selection criteria and guidelines, the following conclusions are obtained.

Table 1. The results of the selection process for outpatient services

Process	Total score	Rank
Patient registration	3.661	3
Medical services	3.516	4
Supporting examination	3.662	2
<b>Medicine service</b>	<b>5.859</b>	<b>1</b>
Administration	2.183	5

Source: Primary Data, 2020

Based on the above data and the results of discussions with the FGD participants, we agreed that the process selected to proceed to the next stage would be the medicine service with the highest total score. Outpatient medicine services at Bhayangkara Kediri Hospital are generally divided into two major sections, namely the General Depot and the BPJS Depot. The BPJS depot serves patients with BPJS Health, Jamkesda, and In Health payment status. While the General Depo serves patients with general payment status and partners who work with hospitals. Based on the data obtained from November 2019 to February 2020, the number of prescriptions at the BPJS Depot is more than the General Depo with an average ratio of 4.6 times, and the total income at the BPJS Depo is more than the General Depo with an average of 3 times. It shows that most prescriptions are managed by the BPJS Depo, accompanied by the dominant amount of income for outpatient prescription services. Thus, as a location for further research, it is focused on the BPJS Depot. In general the medicine service process at the Bhayangkara Hospital BPJS Depot in Kediri can be divided into four. They are prescription receipt and review, then medicine preparation and delivery. The explanation of each process is as follows.

#### 1. Acceptance of prescription

The first process of outpatient drug service at the BPJS Depot is prescription acceptance. It begins with receiving prescriptions, followed by three sub-processes, namely administrative review,

input to the BPJS application (for chronic patients), and provision of queue numbers. This process involves three materials. Recipes, BPJS SEP (Participant Eligibility Letter), and queue numbers. The officer who carries out this process is the TTK Administration section

#### 2. Prescription Review

The next process is recipe review which consists of three sub-processes. They are recipe review, recipe entry to SIM RS, and label printing and billing. The materials involved in this process are recipes, SEP, billing, and labels. The officer involved in reviewing prescriptions is the pharmacist, while for prescription entry and printing is the TTK.

#### 3. Drug preparation

After that, the prescription is taken to the preparation section where there are two sub-processes, namely drug preparation and drug double check. The materials involved in this process are prescriptions, labels, and medicines. Medicine preparation is carried out by pharmacists who are assisted by TTK.

#### 4. Drug delivery

The last process of drug service is medicine delivery. This process is in the form of KIE and delivery of drugs to patients. The materials involved are medicine and etiquette. This process is carried out by the pharmacist.

The analysis of the medicine service process for outpatients was carried out quantitatively and qualitatively. Quantitative is through flow analysis, while qualitative is by identifying non-value added, waste, and issue registers. In addition to analyzing the process qualitatively from the researcher's point of view, interviews were conducted with the process implementers to find out the problems from the implementer's point of view. Questionnaires were distributed on May 18, 2020, to 19 BPJS Outpatient Depot staff consisting of one Head of Pharmacy Installation, one Head of BPJS Depot, five Pharmacists, and 12 TTKs. Of the 19 samples obtained, one was declared invalid because the answers did not match the statements given. All valid samples were then

categorized based on the process, as shown in Table 2 below.

Table 2. Issue Analysis of the Medicine Service Process for Outpatients at the BPJS Depot

Process	Issue
<b>Receipt of prescription</b>	The recipes came at the same time so they piled up Patients who control prematurely (chronic cases) cause difficulty while working on the Online Pharmacy application
<b>Prescription review</b>	Mismatch of patient identity with BPJS card There is unavailable drug in the application that must be mutated so that SIM work is hampered Technical problems with the hospital SIM hinder data entry The input process in the SIM for pricing is taking too long
<b>Medicine preparation</b>	There is an empty stock that hinders the medicine preparation process The preparation of the concoction medicine is still taking too long
<b>Drug delivery</b>	Prescriptions that come together so that they pile up The length of the queue number so that the delivery of medicine to patients becomes long The absence of pharmacists hindered the medicine delivery process The patient cannot state the identity correctly when taking the drug

Source: Primary Data, 2020

Table 3. Recapitulation of CARL Assessment Priority Problem Prescription Review Process for Outpatient Drug Services at the BPJS Depot

Problems	Score
The accumulation of prescriptions waiting for pharmaceutical and clinical pharmacy review is waste waiting	664
The time to enter recipes is considered too long and often encounters problems both in terms of stock and the hospital SIM network	592
The activity of collecting SEP copies and printing labels is waste overprocessing	588
Bringing prescriptions to the preparation section is waste transportation	784

Source: Primary Data, 2020

From the data in Table 3 above, the highest score using CARL is the fourth problem, namely waste transportation in the activity to bring prescriptions to the preparation section, with a total score of 784. The carrying prescriptions activity in question is moving recipes from the prescription reception room to the preparation room, where the preparation room is separated by a distance of about 5 meters which is quite dense.

After knowing the priority of the problem was the activity of bringing prescriptions to the preparation section, the FGD continued to find the cause of the problem with root cause analysis. The root cause of the problem consists of 6M (machine, method, material, man, measurement, and milieu/environment).

1. Machine: There is no use of sophisticated tools or technology for this activity. The process is still carried out entirely manually.

2. Method: Some prescriptions don't go through the queue but are immediately submitted to the preparation section, which causes the queue process to be longer. When brought to the preparation section, sometimes the prescriptions are not in order, and some left behind, which have not been brought to the preparation section.
3. Material: There is more than one prescription in a tray, and it falls when the clerk takes the tray
4. Man: Officers are less skilled in taking prescriptions (individually). Officers wait until the new ones are piled up to submit to the preparation section, and Officers who bring prescriptions and also take medicine to be prepared
5. Measurement: No measurement method has been applied for this activity
6. Milieu (Environment): The prescription



is placed in a narrow place, making it prone to falling when it is brought to the preparation section, and the BPJS Depot

Room is incapacious, compared to the number of officers, so space is limited

Table 4. Results of CARL Assessment Recapitulation Root Causes of Waste Transportation Problems Medicine Services for Outpatients at the BPJS Depot, Bhayangkara Hospital, Kediri

Root Causes of Problems	Score
There is no use of sophisticated tools or technology for this activity. The process is still carried out entirely manually.	689
Some prescriptions don't go through the queue but are immediately submitted to the preparation department, which causes the queue process to be longer.	270
When brought to the preparation section, sometimes the prescriptions are not in order	918
The prescription is left behind, not yet brought to the preparation section	900
There is more than one prescription in a tray	662
The prescription falls when the clerk takes the tray	644
Officers are less skilled in taking prescriptions (individually)	678
Officers wait until the prescriptions are piled up to submit to the preparation section	660
Officers who bring prescriptions and also take medicine to be prepared	340
No measurement method has been applied for this activity	134
The prescription is placed in a narrow place, making it prone to falling when it is brought to the preparation section	112
the BPJS Depot Room is incapacious, compared to the number of officers, so space is limited	99

Source: Primary Data, 2020

Of the twelve root causes identified, priority was given to the CARL assessment by FGD participants. From Table 4, the root cause of the problem with the highest value was when taking it to the preparation section, the recipe arrangement was not in the order, with a total score of 918. Second, there were recipes left that had not been brought to the preparation section, with a total score of 900. And there was no use of sophisticated tools or technology, with a total score of 689. The three root causes of these problems will be redesigned for the development to better business processes.

Based on the three root causes above, redesigns were drawn up for the review process for outpatient service prescriptions at the BPJS Depot, Bhayangkara Hospital, Kediri. Redesigns are in the short term and long term. The short-term redesign is to be implemented soon due to the relatively small resource requirements. Meanwhile, long-term redesign is prepared as material for consideration for agencies because the need for resources is quite large and thus requires a longer preparation time. In the end, the results of these recommendations were submitted to the hospital on July 1, 2020, attended by staff from pharmacy, IT, nursing,

and the medical committee.

Of the three root causes of the problem above, problems 1 and 2, namely bringing prescriptions to the preparation section, it was not in order, and there were prescriptions left that had not been brought to the preparation section. They related to the activity management of taking it from the prescription review section to the drug preparation. Based on the observations of researchers and discussions with the Head of the BPJS Depo, the causes of these two things include:

1. There was only one person who brought the recipe to the preparation section.
2. The person who brings the prescription to the preparation section also has the duty to take the medicine from the rack (prepare the medicine).
3. The place where the prescription is taken to the preparation section is too narrow and mixed with several other documents
4. The prescriptions were brought without any container, so it is prone to fall

These four problems are based on the first in, first out (FIFO) principle so that the prescription is served in order. Nothing

is left behind. A particular container can be provided to accommodate them before being taken to the preparation department. This working mechanism is then compiled in a Standard Operating Procedure draft. In addition, a redesign was also applied to where the prescription was placed, in the prescription review room and medicine preparation room. In addition to the redesign that has been submitted, based on the identification of the causes of waste, there are other alternative redesigns, including:

1. Redesign the officer's job who brings the prescription from the receiving section to the preparation section so that the process can be more efficient.
2. Redesign of the layout for process efficiency of bringing prescriptions from the reception room so that it does not require dedicated staff. For example, by making counters closer to officers
3. Redesign the location of the prescription placement. Both in the prescription receiving room and in the preparation room so that it does not mix with other documents and avoids the risk of being lost or mixed up.

The root cause of the third identified problem is not using advanced tools and technology. Currently, Bhayangkara Kediri Hospital is developing a new management information system. It is in line with the strategic and business plan of the Bhayangkara Kediri Hospital, which has planned to procure a new information system as a work program for the hospital in 2020. However, the Pharmaceutical Installation itself is still not in the direction of electronic prescription. Bhayangkara Kediri Hospital has not implemented socialization or programs for electronic prescriptions until June 2020. It is evidenced by the distribution of questionnaires to participants, where 95% of the participants stated that they had never received socialization regarding electronic prescriptions. The use is to provide an automation process at stages that are currently manually, as well as other benefits. To make process redesign can run well, it is necessary to analyze the process

redesign implementation plan. The proposed short-term redesign can be implemented in the near future and does not require many implementation preparations. However, long-term redesign requires a mature implementation plan to be implemented properly. The electronic prescribing application in hospitals requires good preparation and planning to reduce obstacles in its implementation. Based on the above considerations, two things were carried out. The first thing is a study to find out things that need to be known by hospitals before implementing electronic prescribing so they can prepare themselves well. The second thing is the flow preparation of electronic prescription services based on studies and discussions with informants during socialization. These two things will be given to the hospital as initial capital in designing the implementation of electronic prescriptions.

Meanwhile, for long-term redesign or implementation of electronic prescriptions, if assumptions are made based on the current process, it reduces both NVA (Non-value added), BVA (business value added), and VA (value added) from the three existing processes in medicine service. The reduction in activity can be seen in Table 5 below.

From Table 5, the electronic prescribing application reduces activity in three of four drug service processes. The highest percentage of activity reduction in the prescription review process was 70% of all activities. Meanwhile, the time reduction can be calculated in reviewing prescriptions and medicine preparation. It is because the process of receiving CTE (cycle time efficiency) recipes is more than 1, so assumptions cannot be made to calculate the time reduction. In this study, after process selection, the selected process was medicine service. However, in principle, the application of Business Process Management (BPM) is a continuous process and is continuously being developed so that it is a cycle (Boersema et al., 2021). Therefore it is hoped that later after understanding the stages in this BPM, BPM can be implemented in other areas regularly so that there are always improvements, especially in other processes.

Table 5. Activity Reduction With Long Term Redesign Implementation

Process	Activities	Numbers	Reduction	Reduction Percentage
Prescription Reception	VA	3	3	100%
	BVA	6	2	33%
	NVA	6	5	83%
Sub Total		15	10	67%
Prescription Review	VA	3	1	33%
	BVA	3	3	100%
	NVA	4	3	75%
Sub Total		10	7	70%
Prescription Preparation	VA	13	0	0%
	BVA	1	0	0%
	NVA	1	1	100%
Sub Total		15	1	7%
Medicine Delivery	VA	3	0	0%
	BVA	2	0	0%
	NVA	1	0	0%
Sub Total		6	0	0%
Total Activities		46	18	39%

Source: Primary Data, 2020

BPM is a defined approach to managing change through business process improvement, covering the entire process lifecycle, from analysis and design to implementation, automation, and execution of business processes. Business process management is a broader concept than business process modeling and changes because it enables the integration of business processes and information systems, the coordination of process execution, monitoring, and control (Gudelj et al., 2021). In BPM theory, there are six main core elements as the key factors for the success of BPM. The six key factors consist of alignment with organizational goals (strategic alignment), organizational structure or clarity of roles at each level, methods or techniques, and tools used for analysis and redesign, information system technology, individuals and groups as organizational resources, and culture in process-focused organizations (vom Brocke & Rosemann, 2015). When viewed from this theory, this study only focuses on the method factor, while the individual one is only shown at a glance. Other factors have not been described in detail. In addition, to support the success of BPM, it requires commitment from top management to BPM itself and supports process-focused management. This commitment is also needed to prevent resistance from middle managers and other organizational members to changes that occur

as a result of process redesign (De Ramón Fernández et al., 2020).

Process management helps channel processes into more useful ones, combining knowledge, skills, tools, and techniques to achieve the expected goals. It further includes ongoing redesign, strategic planning, and business process structuring. Continuous improvement and always adapting are vital to ensure high and persistent organizational performance (Mendling et al., 2020). Business process management itself, when applied, has several advantages, including 1. Organizations can create high-performance processes that operate at lower costs, higher speeds, are more accurate, and are more flexible 2. Organizations can reduce costs or non-value activities added 3. The organization can ensure a process operates at the expected level 4. The organization can find out which are no longer needed by the organization or consumers, so must be replaced (vom Brocke & Rosemann, 2015).

The process is an asset for the organization, especially core processes, which provide the most value to consumers. So it must be managed properly. Well-managed processes can provide consistent value to consumers and become the foundation for process development (De Ramón Fernández et al., 2020). The support process runs parallelly with business processes not directly involved in the value chain. This



process does not provide direct value or benefits to consumers. Core processes, consist of the processes required to produce or sell a product or service. The success of an organization is due to its understanding of the desire of consumers to buy and provide products or services that consumers want. Structuring these processes can provide a competitive advantage for an organization (vom Brocke & Rosemann, 2015). Therefore, this research is focused on the core processes considered to contribute the most to providing value to consumers. Process redesign must begin by taking into account the current process so that it can be identified, which parts are important and essential and which can be changed (Tsakalidis & Vergidis, 2021). According to the results of document studies and interviews with outpatient drug service process actors at Bhayangkara Hospital, especially at the BPJS Depot, in general, consists of 4 core processes with each sub-process. It is slightly different from the results of observations at Karya Bhakti Pratiwi Hospital in Bogor which stated that the prescription service process consisted of five points, namely receipt/price of the prescription, drug collection, drug dispensing, label writing, and drug delivery. This difference can be caused by differences in research objectives where previous research aimed to measure lag time so that it requires activity points as markers for measuring time. Meanwhile, in this research, we look at it from a process management point of view to describe the service process as a series of activities that form sub-processes and then become service processes.

Furthermore, based on the model prepared, an analysis of the process is carried out both quantitatively and qualitatively. Quantitative analysis was by flow analysis. Qualitative analysis was carried out by identifying non-value-added activities, identifying waste, and determining issues related to the process. Regarding the analysis method, the process can be done in various ways. One of Grant's studies on business process analysis techniques found ten techniques could be used, focusing on the business process dimensions. The ten techniques include problem analysis, root cause analysis, duration analysis, activity-based costing, benchmarking, outcome

analysis, technology analysis, business process analysis, and activity elimination. The three most widely used techniques are problem analysis, business process analysis and activity elimination, and technology analysis (Grant, 2016). It is well known that in this research, we cannot use technology. The information system used is still limited. According to Grant, problem analysis is a technique for obtaining information about current business process problems by asking executors who know the advantages and disadvantages of the process (Grant, 2016). To find out the main problems, interviews were conducted with pharmacy managers, nursing managers, nursing staff, and medical staff by scoring the criteria for the drug distribution system. It is the same as the issue determination carried out in this study, where all relevant process implementers are allowed to convey existing problems according to their respective experiences.

Meanwhile, business process analysis and activity elimination are used to analyze non-value activities to develop business processes that lead to automation (Grant, 2016). It is in line with what researchers are currently doing, where they also classify non-value activities from each process, which are used as material for consideration of the next redesign focus. The actual elimination of activities has been alluded to in the research results. However, with the current conditions, it cannot be implemented. So it is given as a long-term recommendation. The next technique is duration analysis, which is an investigation to determine the completion time of a process by observing the time for all activities compared to certain criteria so that inefficiencies can be identified (Grant, 2016). This technique is also used in research by measuring flow analysis to determine cycle time efficiency.

It is widely recognized the adoption of e-prescribing offers many advantages to hospitals. Electronic prescriptions have been proven to reduce the incidence of non-intravenous medication errors and prescribing errors. There was also significantly increased pre-treatment identification of patients and increased time spent by staff in drug administration activities. Electronic prescribing improves the quality of prescribing by reducing

prescribing errors and pharmacist intervention due to inaccurate prescribing (Shemilt et al., 2013). In general, electronic prescribing can significantly reduce prescribing errors (Mills et al., 2017). Although not all medication errors lead to death, researchers say that around 12.2% - 19% of drug administration errors occur from the prescribing process to drug administration. A large number of prescriptions and the reluctance of nurses to ask for a doctor's prescription are thought to be the cause (Ahmed et al., 2016). Several systematic reviews evaluate the effect of the use of electronic prescriptions in various drug delivery processes in healthcare facilities. In the prescribing process, there is an increase in pharmacological accuracy and completeness and a reduction in prescription writing time. In the prescription transmission process, there is a reduction in the time for delivery of receipts and a reduction in waiting time for patients at the pharmacy. While in the preparation process, there are improvements in the completeness of the recipe and the ease of entering the prescription into the system (Motulsky et al., 2013). Electronic prescriptions are a symbol of changing the culture of doctors in the healthcare system. However, changing to electronic prescribing requires changing the culture or behavior of physicians in prescribing. However, its use impacts many processes other than physicians. So it is necessary to have evidence that electronic prescriptions are beneficial for patient safety so doctors want to carry them out. One study proved that with electronic prescribing, medicine administration is faster, such as administering antibiotics. It can later reduce the time spent on treatment, which in turn, affects hospital costs. The results show that the use of electronic prescribing can increase adherence to prescribing and the efficiency of administering antibiotics (Ahmed et al., 2016). Analysis of the financial benefits is still limited. Further regarding the economic impact, the use of electronic prescriptions has more impact on indirect costs than direct costs (Ahmed et al., 2016).

## Conclusion

The process structure for outpatient services at Bhayangkara Kediri Hospital consists of a core process, management process, and

support process. The analysis focuses on the core process, which consists of patient registration, medical services, supporting examinations, drug services, and administration. After elaborating on each process and setting the selection criteria, an FGD was carried out for process selection, with the final result of drug service being the priority. Then an analysis of the number of prescriptions and income was carried out so that the research was focused on the BPJS Depot. The three root causes that were prioritized were when bringing the recipes to the preparation department out of order, some recipes were left behind that had not been brought to the preparation department, and the absence of the use of sophisticated tools or technology. Business process redesign recommendations consist of short-term redesign in the form of using tools to bring new recipes and SPOs and long-term redesign in the form of implementing electronic recipes in an integrated information system. Measuring the impact of redesign on reducing service time where short-term redesign reduces service time from 90 minutes to 87.76 minutes while long-term redesign reduces service time to 75.4 minutes.

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