



## Root Cause Analysis and Strategies to Improve Outpatient Pharmacy Services

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### Keywords

*Root cause analysis (RCA); pharmaceutical services; improvement strategy; Quality Evaluation Framework (QEF); business process evaluation*

### Abstract

XYZ is a hospital that provides health services and also provides pharmaceutical services. According to Permenkes No.129 of 2008 concerning Minimum Service Standards for Hospitals, the waiting time for ready-made medicine is  $\leq 30$  minutes and the waiting time for concoction medicine is  $\leq 60$  minutes. However, in 2019 and 2020 XYZ Hospital has not been able to achieve it, so a preliminary study was carried out by evaluating the outpatient pharmaceutical service business processes using the Quality Evaluation Framework (QEF) approach with the results showing a mismatch in target achievement in the prescription review process which included prescription review failures. (Q5), the process of checking drug availability which includes failure to check drug availability (Q7), the drug billing process which includes drug billing time efficiency (Q14), the administrative process which includes administrative time efficiency (Q18) and the process of providing information/counseling which includes authority provision of information/counseling (Q24). After knowing the quality factors that are not achieved, it is necessary to analyze the root causes and strategies for improving outpatient pharmacy services. This study aims to analyze the gaps in the business process of outpatient pharmacy services and determine the improvement strategy at XYZ Hospital. Collecting data in this study by conducting Focus Group Discussion (FGD) and documentation studies. Analysis of the data used using qualitative methods by doing data reduction, data display and conclusion/verification. From the results of the study, it was found that the gap in outpatient pharmacy services using Root Cause Analysis (RCA) was in the categories of procedures, people, policies, and plant/technology so the strategy for improving outpatient pharmacy services was by implementing e-prescriptions, eliminating hanging billing procedures, adding human resources and infrastructure, strengthening the integrated hospital information system. Thus it can be concluded that an analysis of the root causes of the business processes of outpatient pharmacy services needs to be carried out so that service improvement strategies can be determined.



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## 1. Introduction

Health is a very important thing in everyday life because with good health conditions it is hoped that a person's quality of life will increase. To meet the need for good health services, it is necessary to provide good health services. The provision of this health service can be carried out individually, which among others is carried out by independent practicing doctors or health services carried out by hospitals for their patients. The hospital is a subsystem in health services that not only provides health services but also organizes administrative services. On the one hand, hospitals are required to provide excellent service and on the other hand, hospital management must also provide financial benefits (Purwadi et al., 2022).

The hospital is an organization engaged in the field of services (intangible product). Like other companies, hospitals must also be able to compete and provide an advantage over the competition to provide the best quality service for patients. A series of activities are carried out by the hospital to fulfill these services. A good strategy must be carried out to fulfill these services so that they are of high quality so that consumers can respond in the form of satisfaction with the services provided. It is necessary to know the factors both internal and external that support and hinder the organization in achieving its goals. Sharpness in analyzing the situation to find out what is happening at the moment is very important (Ayuningtyas, 2020). The success of a company is not only how well each part performs its work functions but also how well a company coordinates the activities of its parts in carrying out business processes (Magretta, 2014).

A hospital is a health service institution that provides comprehensive individual health services that provide inpatient, outpatient and emergency services. The task of the hospital is to provide complete individual health services. The functions of the hospital include providing medical treatment and health recovery services in accordance with hospital service standards (RI Law No. 44, 2009). The health services provided by the hospital include medical and medical support services, nursing and midwifery services, pharmaceutical services and supporting services (PP RI No. 47, 2021). Here we see that hospital pharmacy services are one of the activities in a hospital that really supports hospital services, so this pharmaceutical service must also be of high quality to increase patient satisfaction and one of the forms of therapy provided by the Doctor in Charge of Service (DPJP) is therapy in the form of pharmacotherapy.

According to RI Law no. 72 of 2016 concerning Pharmaceutical Service Standards in Hospitals, pharmaceutical installations are functional implementers who carry out all pharmaceutical activities in hospitals. Pharmacy service is one of the activities in the hospital that supports quality service. Important factors that influence the success of a hospital are known as Critical Success Factors (CSF), including management and pharmacy. Hospital management is placed as the first key to success because management determines the direction of the hospital strategically and plays an important role in ensuring that the hospital's operations run well. Pharmacy is the main source of income in hospitals, so pharmacy is also one of the keys to hospital success (Purwadi et al., 2022). Pharmaceutical installations are included in activities that can become revenue centers for hospitals. It includes sales of drugs and medical devices needed for the treatment of its patients.

Permenkes No.129 of 2008 describes the Hospital Minimum Service Standards (RSS). Hospitals are health service providers who must pay attention to the quality of service to patients so that patients feel satisfied with the services provided. Based on the Minister of Health, for pharmaceutical service standards, it is stated that the waiting time for finished drug services is  $\leq 30$  minutes and the waiting time for concocted drugs is  $\leq 60$  minutes. Preliminary research conducted by the author at XYZ Hospital, identified waiting time for services as a problem encountered in health service practice. This is one component that has the potential to cause dissatisfaction. In relation to quality management, the aspect of the patient's waiting time in obtaining health services is one of the important things and greatly determines the quality of health services while at the same time reflecting how the hospital manages service components that are adjusted to the patient's situation and expectations.

Based on data from the 2019 XYZ Hospital SPM report, it was found that the waiting time for finished medicine was 59 minutes and the waiting time for concoction was 63.2 minutes. Meanwhile, based on data from the 2020 XYZ Hospital SPM report, it was found that the waiting time for finished medicine was 54 minutes and the waiting time for concoction was 65 minutes. Meanwhile, according to Hospital Minimum Standards, the waiting time for ready-to-use drugs is  $\leq 30$  minutes and the waiting time for concoctions is  $\leq 60$  minutes. This indicates that the target of the Minimum Hospital Service Standards in terms of drug waiting time has not been achieved. Based on complaints that came through XYZ Hospital Public Relations from January 2019 to December 2019 there were 152 complaints with 32 complaints or 21.05% related to the length of time waiting for outpatient drugs at the XYZ Hospital Pharmacy Installation. In addition, based on complaints received through XYZ Hospital public relations during January 2020 to December 2020 there were 86 complaints with 18 complaints or 20.93% related to the length of time waiting

for drugs at the XYZ Hospital Pharmacy Installation. This means that complaints about the long waiting time for drugs at XYZ Hospital are one of the things that contribute to causing patient complaints.

Based on the data above, we can see that there is a gap between the waiting time for drugs achieved by XYZ Hospital and the waiting time for drugs based on the Minimum Service Standards and the length of time waiting for these drugs causes patient complaints as customers. Therefore, in order to provide optimal performance, an evaluation of business processes is carried out in outpatient pharmacy services at XYZ Hospital. Evaluation has been done before using the Quality Evaluation Framework (QEF) method. With the QEF method, evaluation is carried out by measuring the quality of existing business processes using measurements of predetermined quality factors so that what quality factors are met or not fulfilled (Heidari & Loucopoulos, 2014). From the results of the quality factors that are still not in accordance with the target of the hospital, a Root Cause Analysis will be carried out that occurs in outpatient pharmacy services using the Fishbone Diagram so that a strategy to improve outpatient pharmacy services at XYZ Hospital can be carried out.

Previous studies using QEF at XYZ Hospital have shown that there is a discrepancy in target achievement in the prescription review process which includes prescription review failure (Q5), drug availability check process which includes drug availability check failure (Q7), drug billing process which includes time efficiency drug billing (Q14), administrative processes which include administrative time efficiency (Q18) and the process of providing information/counseling which includes the authority to provide information/counseling (Q24) (Aulia et al, 2022). After knowing the quality factors that are not achieved, it is necessary to analyze the root causes and strategies for improving outpatient pharmacy services. Based on the explanations above, the authors see how important it is to carry out root cause analysis in outpatient pharmacy services in order to determine strategies for improving outpatient pharmacy services at XYZ Hospital.

## 2. Materials and Methods

The method used in this study is a qualitative method. According to (Creswell & Creswell, 2017), the characteristics of this qualitative research include a *natural setting*, the researcher as a key instrument, collecting data from various sources, analysis of inductive and deductive data, learning the meaning conveyed by participants about research problems or issues, the research process always develops dynamically, reflexivity, overall view in an effort to create a picture of a problem or the issues studied.

In this study, the object of research was the XYZ Hospital Pharmacy Installation (IFRS). The subjects of this study were people who had authority in determining policies at the XYZ Hospital Pharmacy Installation. The time of research was conducted in October 2022. The research data is sourced from primary data. The primary data source is obtained from the results focus *Group Discussion* (FGD) which was attended by 9 informants namely the Director, Deputy Director, Head of Medical Support, Head of General Affairs and Administration, Head of Finance, Head of Pharmacy Installation, Head of IT Affairs, Head of Cashier Affairs, Head of Outpatient Rooms. Determination of this informant through purposive *sample* with consideration as a party that has authority in determining outpatient pharmacy service policies at XYZ Hospital (Hardani, 2020).

Data collection techniques in this study were carried out by doing *Focus Group Discussion* (FGD). *Focus Group Discussion* (FGD) is a focus group discussion which is a data collection technique by exploring problems that a group of people wants to investigate through discussion (Masturoh & Anggita, 2018). In addition, a documentation study was also carried out. *Focus Group Discussion* (FGD) is used to find the root of the problem from the gap results obtained previously. The next step for this FGD was also carried out to design a strategy for improving outpatient pharmacy services.

One of the ways to analyze the root of the problem is to use the Ishikawa Diagram (Cause and Effect Diagram/*Fish Bone Diagram*) which is used to look for causes that cause an effect or effect (Barsalou, 2014). The purpose of this diagram is to identify possible causes and effects. The effects learned can be experiences that are expected not to occur again in the future (Andersen, 2007). As stated by (McLaughlin, 2008) the main category components in the service process that can cause an effect are the 4 P's, namely policies, *procedures*, *people*, *plant/technology*.

In this qualitative study, data analysis while in the field using the Miles-Huberman Model by carrying out activities data *reduction*, *data display* and conclusion *drawing/verification* (Siregar et al., 2015). Data analysis was obtained using the Miles Huberman method:

- a) Through *Focus Group Discussion* (FGD), for each quality factor whose achievements do not match the predetermined targets, a gap analysis of outpatient pharmacy services at XYZ Hospital will be carried out using the method *Root Cause Analysis* (RCA) and using *Fishbone Diagram*.
- b) Determine strategies for improving outpatient pharmacy services at XYZ Hospital. This is done through *Focus Group Discussion*

### 3. Results and Discussions

From the results of previous studies, it is known that there are achievement quality factors that are not in accordance with the target. The incompatibility of these quality factors can be seen in the following table.

**Table 1.** Quality Factor Discrepancy

No.	Process	Code	Quality Factor
1	Recipe Review	Q5	<i>Failure frequency</i> (Number of officers failing to review prescriptions)
2	Medication Availability Check	Q7	<i>Failure frequency</i> (Number of officers failing to check drug availability)
3	<i>Billing drug</i>	Q14	<i>Time efficiency</i> (Efficiency of time used to carry out the process of billing drug)
4	Administration	Q18	<i>Time efficiency</i> (Time efficiency used in the administrative settlement process)
5	Provision of Information/Counseling	Q24	<i>Authority</i> (Officers authorized to provide information/counseling)

From the table above it is known that the achievement of quality factors is not appropriate in the outpatient pharmaceutical business process. This achievement discrepancy is found in the prescription review business process which includes Q5 (*Failure frequency*/ the number of failures by officers in reviewing prescriptions), the process of checking drug availability which includes Q7 (*Failure frequency*/ the number of failures of officers in checking the availability of drugs), process billing drugs that include Q14 (*Time efficiency*/ time efficiency used to carry out the drug billing process), administrative processes which include Q18 (*Time efficiency time*/time efficiency used in the process of completing administration and the process of providing information/counseling which includes Q24 (*Authority*/ authorized officer in providing information/counseling).

#### A. Gap Analysis of Outpatient Pharmacy Services at XYZ Hospital Using *Root Cause Analysis* (RCA)

The steps taken to analyze the gap in outpatient pharmacy services at XYZ Hospital are to use RCA through *Focus Group Discussion* (FGD). RCA method used is to use a fishbone *diagram* to find the root of the problem by dividing the causes into several major groups. The main category components are *policies, procedures, people, and plant/technology*. This method is used to analyze the root cause of the Q5 quality factor (*failure frequency*) in the prescription review process, Q7 (*failure frequency*) in the process of checking drug availability, Q14 (*time efficiency*) in the process of billing drugs, Q18 (*time efficiency*) on administrative processes and quality factors Q24 (*authority*) in the process of providing information/counseling.

##### A.1 RCA on Quality Factors Q5

From the results of the FGD, information was obtained that the officer's failure to review prescriptions was caused by causal factors with categories *procedures, people*

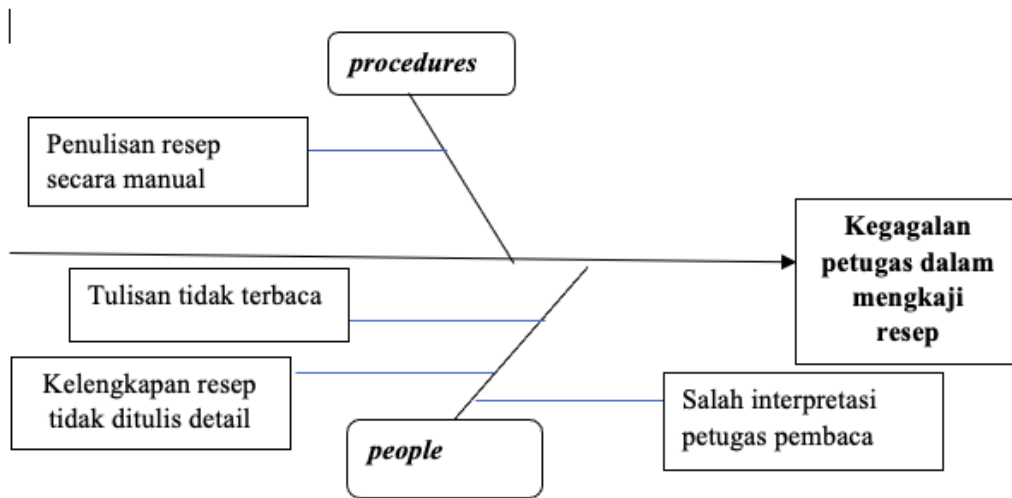


Figure 1. Fishbone Diagram Quality Factor Q5

Currently at XYZ Hospital, the procedure for writing prescriptions carried out by doctors is done manually using a pen, so this allows for unclear prescriptions to be written because it depends on the doctor's procedure for writing prescriptions. In reviewing prescriptions, there are things that are examined, including the clarity of writing, the accuracy of the drug, the accuracy of the dose, the accuracy of the route, the timeliness, duplication of drugs, drug interactions, body weight and whether there are drug contraindications. In addition, the prescription review also examines the name of the prescribing doctor, the date of writing the prescription, the patient's name, the patient's date of birth, the patient's weight, the medical record number, the patient's address, and the patient's payment status. If the completeness of this recipe is not written in detail, it will cause failure to review the recipe. Another causal factor is due to the misinterpretation of the prescription reading staff on the recipe they read.

A.2 RCA on Quality Factors Q7

From the results of the FGD, information was obtained that the failure of officers in the process of checking the availability of drugs was caused by: *policies, procedures, people, technology.*

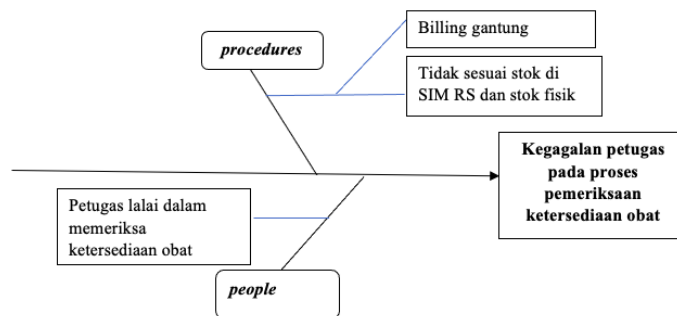
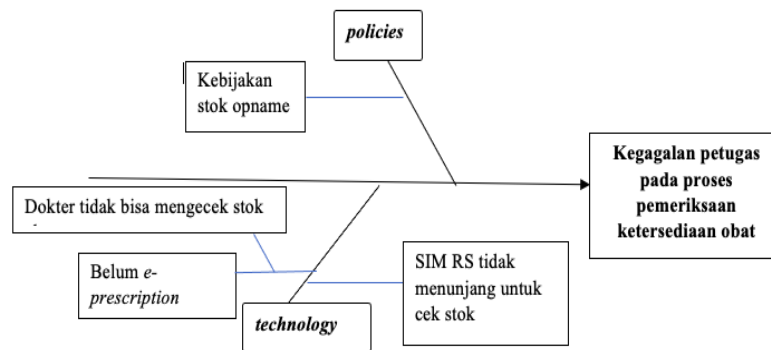


Figure 2. Fishbone Diagram Q7 Quality Factor (Part 1)



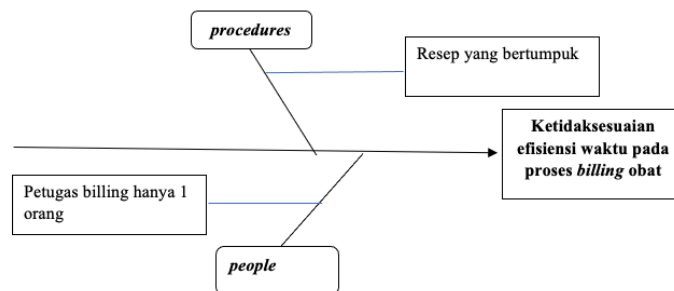
**Figure 3.** Fishbone Diagram Q7 Quality Factor (Part 2)

In the process of checking drug availability, doctors cannot check drug availability because prescription writing is still manual and they do not use it-prescription, so from the start, the doctor did not know whether the drug prescribed was available or not. Another factor that causes the officer's failure to check the availability of drugs is the negligence factor of the pharmacist in the drug inspection process when the officer checks the hospital's driver's license and there is no drug supply, the officer should re-check the physical availability of the drug, and vice versa. before the officer stated that the drug was not available. So the officer does not immediately state that the medicine is not available without checking again between the hospital SIM and the physical supply of drugs.

The procedure that affects the failure of officers in the drug inspection process is the stock-taking policy which is held only once a year so that discrepancies are not detected in advance between supplies recorded on the hospital SIM and physical drug supplies. Discrepancies in drug supplies can also occur due to implementation billing hanging, where a patient receives a prescription for a certain drug but in reality, the drug is empty, the applicable system is to lend the drug so that it is as if the drug has been given to the patient, but the actual condition is that the drug is still owed to the patient and will only be given if the drug is available. Hospital SIM that does not support checking drug supplies, as well as in explaining procedures billing hanging in the form of a hospital driver's license is also the root cause of the failure of officials to check drug availability.

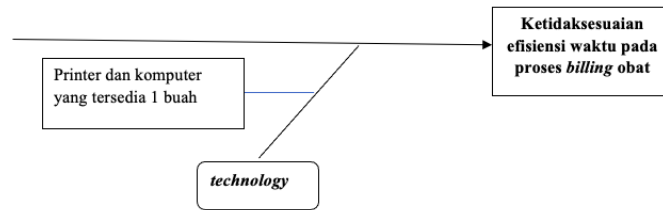
#### A.3 RCA on Quality Factor Q14

From the FGD results, information was obtained that there was a discrepancy in time efficiency in the process billing medicine caused by *procedures, people, technology*



**Figure 4.** Fishbone Diagram Q14 Quality Factor (Part 1)



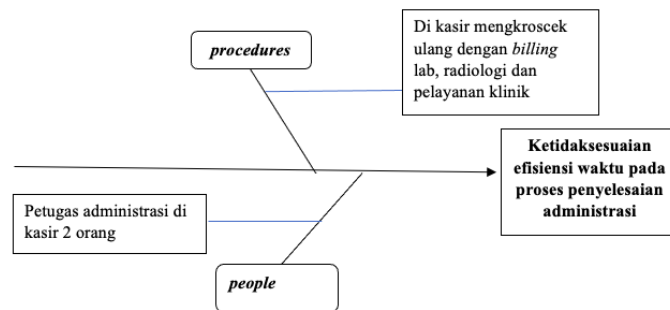


**Figure 5.** Fishbone Diagram Q14 Quality Factor (Part 2)

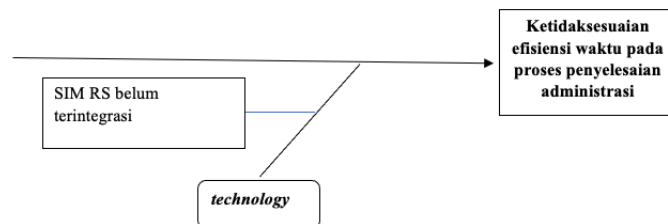
Incompatibility of time efficiency in the process of billing drugs including because there is only one officer who implements it billing drug. The factor of the procedure that becomes the root of the problem in the time efficiency discrepancy in the process of billing medicine is a prescription that piles up when it will be done billing drugs causing a queue in the process of billing drugs. From the technological factor which is the root cause of the time efficiency discrepancy in the process billing medicine is only available 1 fruit and 1 printer in the process billing medicine, making it difficult when damage occurs to computers and printers due to the absence of a backup.

A.4 RCA on Quality Factors Q18

From the results of the FGD, information was obtained that the discrepancy in time efficiency in the administrative settlement process was due to *procedures, people, and technology*.



**Figure 5.** Fishbone Diagram Q18 Quality Factor (Part 1)

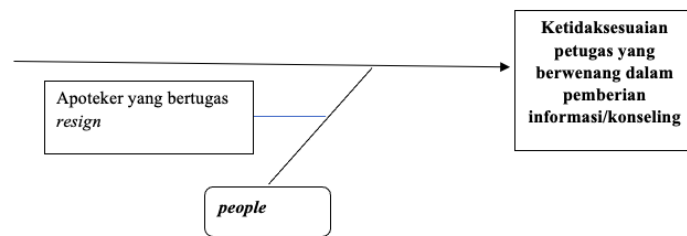


**Figure 6.** Fishbone Diagram Q18 Quality Factor (Part 2)

In the time discrepancy in the administrative settlement process, the root of the problem is the SIM RS that has not been integrated, so the cashier cannot immediately find out whether billing from outpatient clinics as well as *billing* from the laboratory has been completed. So it needs a manual confirmation process and file checking. Another root of the problem is the outpatient cashier who is on duty as many as 2 people, and these officers also serve administration from outpatient clinics, emergency rooms, radiology and laboratories.

#### A.5 RCA on Quality Factor Q24

From the results of the FGD, information was obtained that the discrepancy in the authority of the information/counseling provider was caused by several factors *people*.



**Figure 7.** Fishbone Diagram Quality Factor Q24

The root of the problem causing the incompatibility of officers in charge of providing information/counseling is that the pharmacist on duty has resigned by reason of moving his workplace closer to his place of residence. This causes the provision of information/counseling to be carried out by pharmaceutical technical personnel.

#### B. Strategies for Improving Outpatient Pharmacy Services at XYZ Hospital

The steps taken to determine the strategy for improving outpatient pharmacy services at XYZ Hospital in this study were to collect data through focus *Group Discussion* (FGD) which was attended by 9 informants namely the Director, Deputy Director, Head of Medical Support, Head of Finance, Head of General Affairs and Administration, Head of Pharmacy Installation, Head of IT Affairs, Head of Cashier Affairs, Head of Outpatient Rooms. This improvement strategy is based on the results of *Root Cause Analysis* (RCA) that has been done before. The results of the FGD regarding the strategy for improving outpatient pharmacy services at XYZ Hospital can be seen in the following table.

**Table 2.** Strategies to Improve Outpatient Pharmacy Services

No	Code	quality factor	main category	Strategy service repair
1	Q5	Failure frequency (Number of staff failures in reviewing prescriptions)	Procedures	<i>E-prescription</i> so the recipe can be read
			People	<ul style="list-style-type: none"> <li>Re-socialization to doctors about prescription writing and prescription completeness.</li> </ul>



				<ul style="list-style-type: none"> <li>• Making SPO so that pharmacists can ask their colleagues if they have doubts about reading a prescription</li> </ul>
2	Q7	<i>Failure frequency</i> (Number of officers failing to check drug availability)	<i>Procedures</i>	Eliminate procedure billing hanging
			<i>People</i>	<ul style="list-style-type: none"> <li>• Re-socialization to pharmacy officers regarding SOP for checking drug availability</li> <li>• There <i>ise-prescription</i> making it easier for doctors to find out the availability of drugs</li> </ul>
			<i>Technology</i>	<ul style="list-style-type: none"> <li>• Repair SIM RS so that it can support</li> </ul>

**Table 2** Outpatient Pharmacy Service Improvement Strategy (Continued)

No	Code	quality factor	main category	Strategy service repair
				Pharmacy needs
			<i>Policies</i>	Changing the hospitalization stock policy to 2x a year so that discrepancies between drug data in the hospital SIM and physical drugs can be identified more quickly.
3	Q14	<i>Time efficiency</i> (Efficiency of time used to carry out the process billing drug)	<i>Procedures and people</i>	So that the recipe does not pile up when done <i>billing</i> drugs, it is necessary to increase the number of officers <i>billing</i>
			<i>Technology</i>	Additional computers and printers
4	Q18	<i>Time efficiency</i> (Time efficiency used in the administrative settlement process)	<i>Procedures</i>	Create a system so that outpatient BPJS patients don't have to wait for the administration to be done to get the medicine
			<i>People</i>	Adding the number of cashiers on duty in 1 shift and specifically serving drug administration for outpatients
			<i>Technology</i>	Integrated RS SIM
5	Q24	<i>Authority</i> (Officers authorized to provide information/counseling)	<i>People</i>	Recruit new pharmacists as information/counseling officers

#### 4. Conclusion

Based on the results of the analysis, several conclusions were obtained, namely: The gap in outpatient pharmacy services at XYZ Hospital using RCA is found in categories procedures and *people* at Q5 (failure to review prescription), category policies, *procedures* and *people* at Q7 (failure in drug availability check), category *procedure*, *people* and *plant/technology* in Q14 (time efficiency in implementation billing drug), category *people*, *procedures* and *plant/technology* in Q18 (time efficiency in administrative implementation), category *people* in Q24 (authority in providing information/counseling). The strategy for improving outpatient pharmacy services at XYZ Hospital is to make-*prescription*, eliminate the procedure billing hanging, add human resources and infrastructure, and strengthen the integrated hospital SIM.

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