Business model development for hospital pharmacy services case study: Edelweiss Hospital

Ahmad Meiyanto Wahyu Utomo[1], Astri Ghina[2]
Telkom University, Indonesia[1&2]
ahmadmeiyanto31@gmail.com[1]

Abstract
Purpose: Innovation in healthcare is a key strategy for enhancing the competitiveness of Indonesian healthcare facilities. As one of the most complex and valuable hospital services, pharmacy services are the focus of this study, which aims to identify gaps between user profiles and provided services, determine value propositions, and develop a suitable business model

Method: This study used a qualitative research methodology with a case study strategy and an abductive development approach. Data were collected through in-depth interviews with 6 (six) patients with outpatient insurance coverage and 6 (six) pharmacy staff members.

Results: The study identified two main gaps in pharmacy services—long waits and lack of queue information—after testing the business model canvas with five patients and five pharmacists. Four value propositions emerged: faster service, transparent notifications, stock certainty, and improved patient experiences.

Conclusion: The proposed business model canvas addresses the identified service gaps by offering targeted value propositions aimed at enhancing operational efficiency, improving service transparency, and elevating patient satisfaction with pharmacy services.

Limitation: The study was limited to one healthcare facility with a small sample size, which may restrict the generalizability of the findings to other healthcare settings or regions.

Contribution: This study contributes to healthcare service management by providing an empirically tested business model framework for pharmacy services that integrates patient and staff perspectives, offering actionable strategies to improve service delivery and competitiveness.

Keywords: *Business Model Canvas, Value Proposition Canvas, Business Process Innovation, Hospital Pharmacy Services*

How to Cite: Utomo, A. M. W & Ghina, A. (2025). Business Model Development for Hospital Pharmacy Services: A Case Study of Edelweiss Hospital. *Journal of Digital Business and Marketing*, 1(1), 65-82.

1. Introduction

Currently, a new paradigm is developing in which co-innovation combines internal and external ideas and approaches to produce new values that become competitive advantages (Lee, Olson, & Trimi, 2012). Therefore, health services must be encouraged to implement various innovations and breakthroughs. Co-creation increases the value proposition in meeting customer value preferences that continue to increase for hospitality industry players, including hospitals, in a turbulent, dynamic, complex, and competitive business environment (Kleber & Volkova, 2018).

Public awareness and demand for health services cause public values to change towards higher-quality health services. Previous studies at Citra Medika Hospital Depok showed that hospital brand image is positively correlated with patient loyalty through better service and satisfaction. In this context, brand

image is an important component of hospital excellence in facing competition and meeting patient or customer needs (Yunita, 2017).

Health services in hospitals cannot be separated from pharmaceutical services, which are one of the services that have important value in overall hospital services (Nasution 2013). The Pharmacy Installation has a unit authorized to regulate and manage all matters related to medicines in hospitals. The demands of patients and the community for the quality of pharmaceutical services require a change in service from the old paradigm (drug-oriented) to the new paradigm (patient-oriented) with the philosophy of Pharmaceutical Care (pharmaceutical services), and an evaluation is needed in the pharmaceutical service process (Larasanty, Cahyadi, Sudarni, & Wirasuta, 2019).

The use of lean management in the pharmacy unit of the Ahmad Yani Islamic Hospital in Surabaya is carried out to improve the standard of pharmaceutical services and the efficiency of service time(Iswanto, 2021; Sallam, 2024; Yuliati & Andriani, 2021). This begins with the planning stage, which includes training in planning supplies for pharmacists, categorizing supplies (Pareto), determining the value of stock supplies (MMSL), testing new supply programs and formats for one month, and synchronizing with the Hospital Information Management System program(Adriansyah et al., 2022; Puruhito & Falani, 2021). Furthermore, procurement and purchasing planning by creating official purchasing documents at the beginning of inventory, as well as creating official purchasing documents at the beginning of inventory, has provided more efficient results, including reducing purchases of regular and cito drugs, reducing incidents of inaccurate drug delivery with purchase orders, reducing overflowing stocks and incidents of unlabeled drug stocks, reducing waiting times for finished drugs, and (reducing drug returns from the room) (Setianto, Adriansyah, & Asih, 2020).

Public expectations of pharmaceutical services in advanced health facilities, such as hospitals, are very high. This shows that patients have higher expectations of the pharmaceutical services provided than the actual experience of the health services they receive overall. High levels of patient expectations are an opportunity for hospitals to develop ideal and innovative pharmaceutical care services(Anjalee, Rutter, & Samaranayake, 2022). Efforts to improve drug information services, patient counseling, and reduce patient waiting times can be a good method to increase patient satisfaction in pharmaceutical care services (Larasanty et al., 2019).

The formulation of the problem expressed earlier is related to how pharmaceutical services are provided, which includes the service flow, from the process of receiving a prescription to the delivery of drugs to patients, providing a value proposition that fits the hopes and expectations of customers, in this context, patients(Almeman, 2024; Utomo & Ghina, 2025). Waiting time for service, opinions regarding the competence of Pharmaceutical HR, and friendliness of officers could be part of the value expectations of patients.

Measuring the value proposition of the Edelweiss Hospital Pharmacy Installation service is important. In addition to the Pharmacy Installation being one of the largest sources of hospital income, patients in the Pharmacy Installation are considered more representative of the measurement of a hospital's services (Larasanty et al., 2019). The existence of a value proposition in pharmacy services can be developed into an innovative business model that has never been done before at Edelweiss Hospital, Bandung. Therefore, researchers are interested in conducting research that develops a business model for pharmacy services by taking a case study at Edelweiss Hospital Bandung.

2. Literature review
2.1 Strategic Management
In his book written by Rowe and Nevmerzhytskyi (2025), Strategic Management and Competitive Advantage, Barney defines corporate strategy as a theory about how a company can gain a competitive advantage in its industry. For example, Disney believes that it can gain a competitive advantage by leveraging characters from its film business. Rovio believes that it can gain a competitive advantage by creating new content (Barney & Hesterly, 2015).

It is rare to know for sure whether a company has chosen the right strategy because predicting how competition in an industry will develop is difficult. However, one of the best ways for a company to reduce the chances of making mistakes is to choose its strategy carefully and follow the strategic management process carefully. According to Barney and Hesterly, the strategic management process is a collection of decisions and analyses that help a company choose the right strategy, which will lead the company to a competitive advantage.

Once the environmental analysis is complete, strategy formulation begins. Companies use two types of strategies: business-level and corporate-level strategies. Business-level strategies are actions taken by companies to gain competitive advantages in particular markets or industries. Corporate-level strategies are actions taken by a company to gain a competitive advantage by operating in multiple markets or industries simultaneously. Implementing the previously designed strategy, which includes implementing management control policies, organizational structures, and compensation plans that support the company's strategy, is the final stage of the strategic management process (Barney and Hesterly, 2015).

2.2 Hospital Service Management
According to Law Number 44 of 2009 concerning Hospitals, good hospital governance is the implementation of hospital management functions based on the principles of transparency, accountability, independence, responsibility, equality, and fairness. Hospital management can be defined as a series of processes of applying science and art to create and compile plans along with strategies and implementation and coordination of plans to achieve service goals. Service is an effort to serve the needs of others, approaching their expectations and hopes(Wijayanti & Setyorini, 2023).

Service quality is an effort to fulfill the needs and desires of patients as customers and the accuracy of the delivery method to meet patient expectations. Quality of service is in the form of a level of excellence and control over the level of excellence to meet customer expectations, desires, and hopes. The instrument for measuring the quality of health services based on the expectations of JKN participant patients in hospitals consists of dimensions of facilities and infrastructure, employees, medical services, administrative services, security in services, trust in hospitals, access, transparency of information, equality, cost contributions, and including quality between sections. This instrument is valid and reliable and can be used to measure the quality of health services based on patient expectations (Hadiyati, Sekarwana, Sunjaya, & Setiawati, 2017).

2.3 Hospital Pharmacy Installation
According to Decree of the Minister of Health of the Republic of Indonesia Number 1197/MENKES/SK/X/2004 concerning Standards of Pharmacy Services in Hospitals, hospital pharmacy services are activities in hospitals that support quality health services. This is clarified in the Decree of the Minister of Health Number 1333/Menkes/SK/XII/1999 concerning Standards of Hospital Services, which states that hospital pharmacy services are an inseparable part of the hospital health service system that is oriented towards patient services and the provision of quality drugs, including clinical pharmacy services, which are affordable for all levels of society. Meanwhile, the quality of hospital pharmacy services is a pharmacy service that refers to the level of service perfection in creating patient satisfaction in accordance with the average level of satisfaction of the community, and its implementation in accordance with the established professional service standards and in accordance with the code of ethics of the pharmacy profession.

Based on the Decree of the Minister of Health of the Republic of Indonesia Number 1197/MENKES/SK/X/2004 concerning Standards of Pharmacy Services in Hospitals, pharmacy services are organized and regulated for the sake of efficient and quality pharmacy service. This was determined based on existing facilities and universal professional service standards.

Forming, providing, and capturing market dimensions and increasing demand through value innovation are some of the benefits of the Business Model Canvas. Canvas visualization is used to make the Business Model Canvas easier to understand for readers. The form of the Business Model Canvas can be adjusted by the company's stakeholders according to their business. In their book entitled "Business Model Generation," Osterwalder and Pigneur created a Business Model framework in the form of a canvas consisting of nine interconnected boxes. The box contains important elements that describe how an organization creates and obtains benefits for and from its customers (Osterwalder, Pigneur, Bernarda, & Smith, 2015).

2.4 Value Proposition Design
A value proposition is defined as a collection of products and services that provide value to a specific customer segment. The value proposition is the main reason customers stick with a product or switch to another product. A value Proposition can solve customer problems or satisfy customer needs. Each value proposition contains a combination of specific products and/or services that serve the needs of a specific customer segment. Some value propositions are innovative and have new offerings or even change existing offerings (Osterwalder et al., 2015).

Value Propositions describe how a company provides the best value to its customers according to the company's existing bargaining value. By creating superior customer value, companies create satisfied and loyal customers who are willing to buy again (Kotler, Wong, & Saunders, 2008). The Value Proposition Canvas is a tool that can make value propositions visible, real, and easier to discuss and implement (Osterwalder et al., 2015). It describes customer problems, solutions to those problems, and value from the customer's perspective. The value proposition canvas is a part of the business model canvas, which describes how a company can create value for its customers.

2.5 Empathy Map
In the book by Osterwalder et al. (2015), the Empathy Map is a method that helps design business models according to the customer's perspective. The purpose of the empathy map is to create a level of empathy for a particular person or group. An empathy map consists of six areas: 1) See - what the user sees in his environment, 2) Say and Do - what the user says and how he behaves in public, 3) Think and Feel - what happens in the user's mind, 4) Hear - how the environment affects the user, 5) Pain - frustrations, pitfalls, and risks experienced by the user, and 6) Gains - what the user actually wants and what can be done to achieve his goals (Osterwalder et al., 2015).

The use of the empathy map template is simplified into five areas: "think" (the user's thoughts and ideas), "feel" (understanding the user's feelings), "do" (representing what the user does and behaves), "pain" (risks of the user's experience), and "gains" (what the user wants). This simplification of the empathy map template has been verified for feasibility in other studies (Ferreira et al., 2015).

2.6 Business Process Innovation
A business process can be defined as "a set of activities that take one or more types of inputs and create an output that has value for the customer" or "a specific sequence of activities over time and place, with a beginning and an end with clearly defined inputs and outputs." A process contains a set of attributes and a principle flow of steps to accomplish a given task. In general, processes help organize an organization's operations so that it can produce valuable outputs. Business processes in the context of an organization can be divided into (a) operational processes, activities that involve the value chain of the company, and (b) management processes, which consist of information processing, control, coordination, and communication that regulate the overall operation of the system (Anand, Fosso Wamba, & Gnanzou, 2013).

In the modern market, where technology, globalization, awareness, and continuous improvisation determine the overall performance of an organization, it must be understood that the environment has also become more dynamic, complex, and unpredictable for organizations. Organizations are looking for new ways to do business, such as financial stability, customer satisfaction, and gaining competitive

advantage in the market by responding quickly to provide services and products for greater returns (organizational teaching). In the last decade, innovation has become the key to achieving the above. Studies on innovation show that organizations tend to achieve better resource management, improved quality, creativity, performance, strategic planning, cost and time reduction, and administrative control, resulting in longer organizational survival (Anand et al., 2013).

2.7 New Service Development

Many service industries view new service development (NSD) management as a critical competitive factor. However, NSD remains one of the least studied and understood topics in service management literature. Consequently, the current understanding of the critical resources and activities required to develop new services is inadequate. This is because NSD plays a critical role as a driver of service competitiveness (Menor, Tatikonda, & Sampson, 2002).

New Service Development (NSD) is essential for companies seeking to gain a competitive advantage in service-driven markets. While research on NSD has grown rapidly over the past decade, much of it has been highly fragmented and concentrated on different innovation issues. Few studies have focused on the NSD stages, activities, and techniques. efore mapping techniques to the NSD framework, it is important to examine the activities that must occur in the development process. Establishing the "right" process for NSD is critical for companies seeking to avoid redundant functions and enable the reuse of existing expertise. (Lin & Hsieh, 2011).

2.8 Research Framework

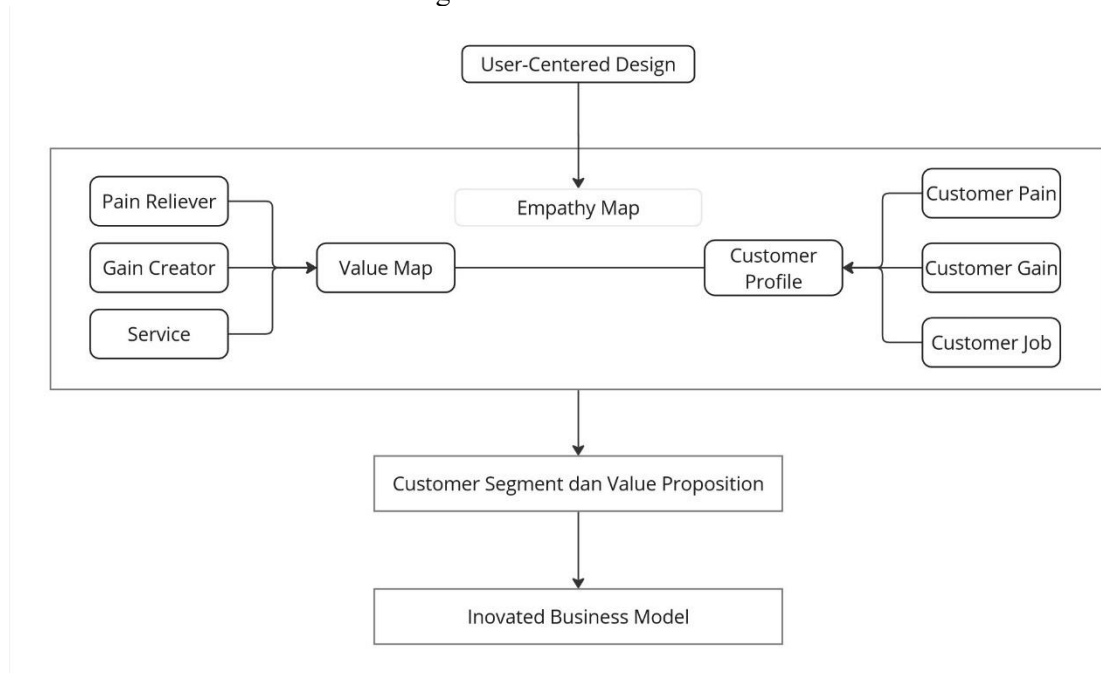The research framework is shown in Figure 1.

Figure 1. Framework of Thought
Source: Researcher Processing

3. Research methodology

3.1 Research Characteristics

The purpose of this study is exploratory, which, by definition, is used to see what phenomena occur and gain in-depth insight into the topic being studied (Saunders, Lewis, & Thornhill, 2015). The phenomena and issues that occur related to pharmacy services in hospitals need to be understood more deeply to determine the roots of expectations and problems that exist specifically, both from customers and pharmacy service providers from hospitals so that the quality of the information provider will determine the direction of the research investigation (Saunders et al., 2015). Therefore, this study cannot be based

on descriptive objectives, which generally aim to obtain data related to the research topic (Uma Sekaran & Bougie, 2016).

The research methodology was qualitative. Qualitative research studies the meaning of research subjects and examines the relationships between them to develop conceptual frameworks and theoretical contributions (Saunders et al., 2015). This study identifies problems with a non-numerical framework using an inductive approach that is more suitable for qualitative methodology and can develop along with the ongoing research and exploration process.

The unit of analysis in this study was individuals. The informants were selected individually, and purposive sampling was used by the researcher, who decided to select informants limited to a certain number of people who could provide the expected information and represent the established criteria (U Sekaran, 2016). This study uses an individual unit of analysis because the problems and experiences of the informants to be investigated are expected to be different for each individual, so that researchers get a much deeper view of the problem in the exploration process.

3.2 Operationalization of Variables
In this study, operational variables regarding the development of the Hospital Pharmacy service business model were explained in an integrated manner in the list of research interview questions. The list of interview questions regarding the development of the Hospital Pharmacy service business model was previously developed by considering variables related to customer perceptions of a service adapted from the New Service Development model and stages in the study related to "New service development: areas for exploitation and exploration" (Menor et al., 2002). The variables are as follows: 1) Technology, 2) People, 3) System, and 4) Service concept.

The measuring instrument was modified based on the operational variables mentioned. Interview questions will be directed to pharmacy staff and patients during the process of forming an empathy map.

3.3 Data Analysis
The data analysis technique used in this study was the Creswell model (2018). The following are the stages of reducing research data.
Step 1: Organize and prepare the data for analysis. The interview transcripts were sorted and organized into different types depending on the source of information.
Step 2: Identify the main ideas expressed by the interviewees.
Step 3: All data are coded. Codes are tags or labels that assign important information. The codes and words or sentences that represent the categories are as follows: Then group sentences or paragraphs.
Step 4: Use coding to generate descriptions of the categories or themes for analysis. Descriptions involve detailed information about people, places, and events in a setting. Researchers can generate codes from these descriptions. Analysis is useful for designing detailed descriptions.
Step 5: Descriptions and themes are represented in qualitative narratives. Many qualitative researchers also use visuals, images, or tables as an addition to the discussion.
Step 6: The final step in data analysis involves interpreting the qualitative research findings or results. Capturing the essence of the ideas that can be learned. This lesson can be the researcher's personal interpretation or the meaning gained from comparing the findings with information obtained from the literature or theory.

The interpretation section suggests the limitations of the study and advances future research directions. Limitations are inherent in the study method, and researchers acknowledge weaknesses in the study to be represented in future research (Creswell et al., 2018:264).

4. Result and discussion
4.1. Research Results
The first research stage is the stage of observing the actual conditions as problems or opportunities that encourage the search for solutions to gain inspiration and tell how things are experienced by many

people (Brown, 2009). The first stage is the inspiration stage, which is an important part of the research process. This stage describes how researchers approach and apply the context of the problem, collect meaningful data, and then interpret the data collected through the inspiration process, which produces empathy maps from patients or pharmacists.

4.1.1 Data Reduction

This stage was preceded by a reduction process based on the results of interviews conducted with all informants. The collected data are then grouped into mapping based on "think" (user thoughts and ideas), "feel" (understanding of user feelings), "do" (representing what users do and behave), "pain" (risk of user experience), and "gain" (what users want) (Ferreira et al., 2015). The results of the study were taken from informants who were also patients at Edelweiss Hospital, totaling six (6) people, by conducting interviews. The data were then reduced and grouped in user journey mapping.

The data collected were the results of interviews converted into text (verbatim transcripts). The informants were six (6) patients receiving outpatient services at Edelweiss Hospital. Verbatim transcript data were reduced by sorting out data that were considered important and related to the research and marked. Other data that were not considered important and related to the objectives of the study were eliminated. The study results were also obtained from six pharmacy officers through interviews and observations. The data were reduced and grouped into a user journey map. The following are the results of data reduction from pharmacy officers and the results of the user journey map.

The data collected were the results of interviews converted into text (verbatim transcripts). The resource persons were six (6) people who were officers at the Edelweiss Hospital Pharmacy Installation, consisting of two pharmacists and four pharmacy technicians who met the criteria for resource persons from the pharmacy. Verbatim transcript data were reduced by sorting data that were considered important and related to the research and marked. Other data that were not considered important and related to the research objectives were eliminated.

4.2. Discussion

4.2.1. Stages of the Resource Person's Journey

The reduced data describe the insights of each interviewee. The following is a description of the stages of the process experienced by the participants when receiving outpatient services at the hospital, as shown in Table 1.

Table 1. Overview of the Stages of the Resource Person's Journey

No	Stages
1	Arrival and Registration Arrival 1) Most patients use online registration before coming to the hospital. Patients who have registered online usually go directly to security or the queue printing machine to print the queue number. 2) The process of coming directly to the hospital without registering online must go through manual registration at the cashier or registration desk Queue Number Taking Process 1) Patients are directed to the queue machine by the officer, and there are no reported difficulties in the general and insurance queues, which currently may only have different codes without physical separation of officers 2) Some patients feel the need for improvement in communication of queue information, especially when the polyclinic is busy or full Registration Experience 1) The registration process is generally fast and efficient except on busy days (eg Saturdays), where waiting times can be longer. Online registration via Whatsapp is often slow to respond, especially regarding questions about doctor schedules

No	Stages
	2) Patients who use insurance are usually asked to show their ID cards and insurance cards. Confirmation of insurance eligibility can take time, especially if waiting for approval from the insurance company.
2	Nurse Examination Process
	a. Initial Examination
	1) Patients are directed to nurses for initial examinations such as blood pressure and weighing. However, some nurses are less communicative in explaining this process, and patients often have to take the initiative to ask questions
	2) There are several experiences, where some patients feel that nurses in the executive polyclinic do not provide clear education and information
	b. Nurses' Attitudes
	1) In general, the attitudes of nurses are considered friendly and professional. Although there are reports of some nurses who are less communicative, patients still feel well served, especially when the hospital is busy.
3	Doctor's Examination
	a. Interaction with Doctor
	1) Patient experiences vary depending on the treating doctor. Most patients feel that the doctor is communicative and explains the condition and treatment plan well
	2) Some doctors in the pediatric clinic or other crowded clinics sometimes rush in giving explanations, but most doctors are considered to provide quite detailed information
	b. Doctor's Explanation
	1) Patients receive a clear explanation regarding the drug prescription, dosage, and use of the drug, especially when the patient is referred for ongoing treatment or vaccination.
4	Towards the Pharmacy
	a. Directions to the Pharmacy
	1) After the examination by the doctor is complete, the patient is directed to the pharmacy. However, some patients reported that they felt confused about the location of the pharmacy, especially for those who were not familiar with the hospital
	b. Waiting Process at the Pharmacy
	1) Wait times at the pharmacy vary, with some patients reporting long wait times, especially for prescription drugs. If there are drugs that must be confirmed by the insurance company, the wait time can be even longer. Patients usually do not get clear information about their queue status at the pharmacy.
5	Drug Collection at the Pharmacy
	a. Drug Collection Process
	1) Patients are called by name and queue number. Pharmacists explain the dosage and how to use the drug, although there are reports of unclear communication from some pharmacists.
	2) Compounded drugs usually take longer, sometimes up to 2 hours. Some patients choose to leave the pharmacy first and come back later
	b. Pharmacist's Explanation
	1) Patients felt that the pharmacist's explanation of the drug was clear enough, but some suggested that the pharmacist be more informative, especially regarding contraindications and side effects of the drug, which they felt were important but rarely explained.
6	Payment Process
	a. Payment and Insurance Confirmation
	1) After receiving the medicine, the patient goes to the cashier to confirm the payment. For those who use insurance, it often takes longer because they are waiting for approval from the insurance company. Patients report that this process can be long, especially for insurance that requires manual confirmation.
7	Patient Journey Conclusion
	a. Key Issues

No	Stages
	1) Waiting times at several stages (such as pharmacy and insurance confirmation) are often a problem for patients, especially when the hospital is busy. Patients expect these waiting times to be shortened with system and technology improvements b. Positive Experiences 1) Overall, most patients are satisfied with the services provided, especially with the friendly and professional attitude of nurses and doctors. They appreciate the efforts to provide good healthcare, although there is room for improvement, especially in clearer communication and information at each stage.

Source: Researcher's processing

After assessing the overview of the resource person's journey at each stage of the service process, the researcher carried out mapping using the user journey mapping approach.

4.2.2. Patient Problem Analysis Based on User Journey Mapping

Based on the results of the user journey mapping, the problems that emerged were obtained from the pain points described in the results. There are at least 10 (ten) pain points that are considered meaningful insights. The following is an explanation related to the analysis of patient problems taken from the previously described pain points and linked to their relevance to the value of the hospital and the risks that can arise if not resolved.

1. Long waiting times at the Pharmacy
    a. Meaningful value if resolved: Reducing waiting times in the pharmacy will improve overall patient satisfaction, especially since the pharmacy is the final stage before the patient goes home. A good pharmacy experience can increase patient retention and positive internal branding.
    b. Risk if pain points are not resolved: Patients will feel frustrated because of the long wait, especially during the drug preparation process. This can lead to ongoing complaints, reduced patient loyalty, and a decrease in the hospital's reputation and overall patient satisfaction.
2. Lack of information regarding queue status at the Pharmacy
    a. Meaningful value if completed: Providing real-time information on the status of drug preparations and estimated waiting times will reduce patient anxiety and increase service transparency. This can create a positive perception of time efficiency in hospitals.
    b. Risk if not completed: Patients will feel uninformed and confused while waiting, and feel unprioritized, leading to dissatisfaction and high potential for complaints, especially when the hospital is busy and waiting times at the pharmacy are long.
3. Slow response during online registration via WhatsApp
    a. Significance value if completed: A faster response to the online registration process will make it easier for patients to enter the hospital, reduce waiting times, and make patients feel valued. Improvements in this area can provide a competitive advantage for the hospital and create loyalty among patients.
    b. Risk if not completed: Patients may be frustrated with inefficient online services and may reduce their trust in the reliability of the hospital's technology.
4. Long waiting time for insurance confirmation
    a. Meaningful value if completed: Accelerating the insurance confirmation process will streamline the service flow from registration to payment. This can speed up the overall service time and reduce the waiting time in queues at the cashier and pharmacy.
    b. Risk if not completed: This process will extend the patient's time in the hospital, increase dissatisfaction, and potentially reduce the trust of patients using insurance in the hospital.
5. Lack of information regarding side effects and contraindications of drugs
    a. Meaningful value if completed: Complete information regarding drug side effects and contraindications will improve patient safety and positive perceptions of the hospital's attention to patient medications.
    b. Risk if not completed: Potential medical risks increase because patients do not understand the side effects of drugs, which can lead to serious drug-related events.
6. Pharmacy location information is unclear

a. Meaningful value if completed: A clear presence of pharmacy location can speed up patient navigation in the hospital and reduce confusion.

b. Risk if not completed: Patients may experience confusion, especially new patients.

7. Lack of information about queues at Registration

a. Significant value if resolved: Provides real-time queue information at registration and improves service efficiency.

b. Risk if not resolved: Patients may feel confused and may potentially choose to go to another hospital.

8. Lack of information from nurses during initial examination

a. Significant value if resolved: Nurses should be encouraged to be more proactive in providing information related to services to increase patient trust and comfort.

b. Risk if not resolved: Patients may feel ignored and have to keep asking, which can reduce the perception of the quality of medical services in the hospital.

9. Unclear queues for insurance patients

a. Significant value if resolved: A clear separation of queues between insurance and general patients will improve service efficiency and reduce confusion for patients.

b. Risk if not resolved: Confusion about queues can cause frustration among patients and make them feel unprioritized.

10. Unfriendly attitude from Pharmacists

a. Significant value if resolved: Friendlier and more informative pharmacy staff will improve the patient experience.

b. Risks if not resolved: An unfriendly attitude can reduce overall patient satisfaction.

4.2.3. Analysis of Pharmaceutical Problems Based on User Journey Mapping

Based on the results of the user journey mapping, the problems that emerged were obtained from the pain points described in the results. There are at least 7 (seven) pain points that are considered meaningful insights. The following is an explanation related to the analysis of problems from pharmacy officers, taken from the pain points described previously and linked to their relevance to the value for the hospital and the risks that can arise if not resolved.

1. Unclear queue system for drug packaging and delivery.

a. Meaningful value if resolved: The implementation of a clear digital queue system will improve operational efficiency and reduce patient waiting time. Patients will feel more comfortable because they are aware of their queue status.

b. Risk if not resolved: Patients will continue to be confused about when their drugs are ready, which can affect their confidence in the reliability of the hospital system.

2. Long drug compounding process time is required.

a. Meaningful value if resolved: More regular equipment repair and maintenance will speed up the drug-compounding process and reduce patient waiting time.

b. Risk if not resolved: Drug preparation time will continue to be hampered, causing delays in the drug distribution process, which can worsen patient experience.

3. Inconsistency of physical stock with the inventory system.

a. Meaningful value if resolved: Improving the drug inventory system to synchronize physical stock data will improve the accuracy of stock management and reduce the risk of drug shortages.

b. Risk if not resolved: Drug shortages or drug distribution errors will continue to occur, triggering patient complaints and increasing the risk of patient care barriers.

4. Delays in payment confirmation by insurance companies.

a. Meaningful value if completed: Can reduce patient waiting time and accelerate the drug delivery process. This will improve the efficiency of pharmacy operations in the future.

b. Risk if not completed: Continuous delays in payment confirmation can lead to patient disappointment, especially in those with insurance.

5. Unclear communication when explaining drug use to patients.

a. Meaningful value if completed: Good communication by pharmacists can improve patient understanding of drug use and improve drug safety for patients.

b. Risk if not completed: The potential risk of errors in drug use by patients will increase, potentially leading to patient safety incidents.

6. Obstacles to receiving and reading manual prescriptions.
a. Meaningful value if completed: Reducing the use of manual prescriptions and switching completely to electronic prescriptions will eliminate prescription readability issues.
b. Risk if not completed: Delays in reading and confirming manual prescriptions will continue to cause longer waiting times and increase the potential for errors in prescription inputs.

7. Long waiting times due to the drug distribution process between depots.
a. Meaningful value if completed: Simplifying the distribution process between depots will speed up the procurement of drugs needed by patients and reduce patient waiting time.
b. Risks if not resolved: Delays in drug distribution result in longer patient waiting times and may reduce the quality of the patient experience.

4.3 Discussion of Problem Findings

Findings of problems in pharmacy services that occur between patients and pharmacy staff are obtained from mapping the journey of patients and pharmacy staff through user journey mapping. The problems were taken from the stages experienced by patients and carried out by pharmacy staff, both pharmacists and pharmacy technical staff. These problems were identified from pain points obtained from informants, as patients with the following summary.

1. Long waiting time at the Pharmacy
2. Lack of information about the queue status at the Pharmacy
3. Slow response to online registration on WhatsApp
4. Long waiting time for insurance confirmation
5. Lack of information about side effects and contraindications of drugs
6. Unclear information about the location of the pharmacy
7. Lack of information about the queue at registration
8. Lack of information from nurses during examinations
9. Unclear queues for insurance and general patients
10. Unfriendly attitude from Pharmacy staff

To determine the most priority problems to be followed up, researchers used a 2×2 matrix approach by looking at 2 (two) aspects, namely, impact and risk. Impact refers to the extent to which this problem influences patient satisfaction or the patient's decision to undergo repeated treatment. Risk is defined as the likelihood of this problem occurring and its potential to damage or reduce the quality of hospital pharmacy services. The assessment was carried out with the following value provisions.

Impact scale: Low (1), Medium (2), High (3)
Risk scale: Low (1), Medium (2), High (3)

The assessment was conducted internally by pharmacy officers who were used as sources in the previous interview process. The assessment was also conducted by considering the meaningful value if the pain point was resolved and the risk obtained if the pain point was not. The following are the results of the group assessment, which was agreed upon internally and carried out by 6 (six) pharmacy officers in sequence.

Table 2. Results of Problem Priority Assessment

No	Pain Point	Impact	Risk	Priority Category
1	Long waiting time at Pharmacy	3	3	Priority 1
2	Lack of information about queue status at Pharmacy	3	3	Priority 1
3	Slow response to online registration on WhatsApp	2	3	Priority 2
4	Long waiting time for insurance confirmation	2	3	Priority 2

No	Pain Point	Impact	Risk	Priority Category
5	Lack of information about side effects and contraindications of drugs	3	2	Priority 2
6	Unclear information about pharmacy location	2	2	Priority 3
7	Lack of information about queues at registration	2	2	Priority 3
8	Lack of information from nurses during examination	2	1	Priority 3
9	Unclear queues for insurance and general patients	2	1	Priority 3
10	Unfriendly attitude from Pharmacy staff	2	1	Priority 3

Source: Researcher's processing

Based on the results of the problem mapping carried out based on priorities in terms of impact and risk internally, there are 2 (two) problems were identified as priority problems. "Long waiting time at the Pharmacy" and "lack of information about the queue status at the Pharmacy" were the problems chosen by the researcher as the focus of pain points that are considered necessary to be resolved. Long waiting time at the Pharmacy has a value that is considered to have a major impact on the satisfaction and trust of patients undergoing treatment at the hospital. The existence of problems related to queue information at the pharmacy also causes difficulties and confusion for patients while waiting at the pharmacy, which can have an impact on dissatisfaction and potentially loss of patient retention for repeat visits.

4.4 Define Stage
2 (two) previously identified problems, namely "long waiting time at the Pharmacy" and "lack of information about queue status at the Pharmacy" were further analyzed to identify the main problems. Analysis of patient insight and the need for problem solving by pharmacy staff is the initial step to find the form and concept of the problem from the previously complex problem. This is done to obtain a part of the problem that can be understood. The following insights were obtained from the problem, which are sourced from excerpts of information from pharmacy staff who have been interviewed previously, as depicted in Table 3.

Table 3. Relevant Insights from Pharmacy Staff regarding Pharmaceutical Problems

No	Relevant Insights	Reference
1	Unclear things in the queue system cause patients to be confused and often confirm the availability of patient drugs, thus increasing the psychosocial burden of officers	From the interview excerpt with P3, it was explained that "there is no clear queue system for patients, both for compounded and non-compounded drugs"
2	Patients feel the need to frequently confirm the status of their drugs because there is no clear and up-to-date information regarding the position of the patient's drug queue	From the interview excerpt with P4, it was stated that "without clear queue information, patients will constantly ask when their drugs are ready"
3	Drug compounding equipment is often damaged in pharmacies, which can slow down the process of preparing compounded drugs, especially when the drug queue is long	From the interview excerpt with P1, the officer complained that "the compounding equipment is often broken so it hinders compounding time, and also increases patient waiting time"
4	Delays in drug distribution between Pharmacy depots in hospitals extend waiting times at the pharmacy, especially if the physical stock of drugs is different from the system	From the interview excerpt with P2, the officer explained that "drug distribution between depots often causes delays, because they have to wait for drugs from other depots before being delivered"

No	Relevant Insights	Reference
5	The long drug approval process by insurance increases patient waiting times	From the interview excerpt with P4, the officer stated that "patients often wait a long time for insurance approval before drugs can be delivered"
6	Manual prescriptions that are difficult for pharmacists and Pharmacy staff to translate lengthen confirmation and data input times into the system and impact patient waiting times	From the interview excerpt with P2, the officer stated that "manual prescriptions often require reconfirmation with the doctor, thus slowing down the process of inputting and preparing drugs"

Source: Researcher's processing

The two problems that have been analyzed from the search for relevant insights from the perspective of pharmacy officers show that the problems that have been formulated are in accordance with the excerpts of the interviews conducted previously. These problems need to be traced to the relevant views of the patients, and further analysis is carried out. The following insights were obtained from these problems, which are sourced from excerpts of information from patients who have been interviewed previously and are depicted in Table 4.

Table 4. Relevant Insights from Patients Regarding Pharmaceutical Problems

No	Insight from Patient Perception	The problem	Reference
1	Patients feel that waiting times at the pharmacy are too long, especially for prescription drugs	Long waiting time	From the interview excerpt N4, it was mentioned that "the waiting time for compounded drugs is often long, even up to 2 hours"
2	Long waiting times for drugs occur especially when the queue is busy so that many patients have to wait a long time	Long waiting time	From the interview excerpt N3, it was mentioned that "the waiting time is longer during registration and drug collection on busy days, such as Saturdays"
3	Patients understand that the confirmation process with the insurance company takes a longer waiting time	Long waiting time	From the interview excerpt N6, it was mentioned that "the insurance process takes a long time before being able to get the drug"
4	Patients feel confused that they do not get clear information about when their drugs will be available	Lack of information about queue status	From the interview excerpt N5, it was mentioned that "the lack of information about the queue status makes it confusing whether to wait or come back later"
5	Patients often do not know when their drugs will be ready and there is no information or notification about it	Lack of information about queue status	From the interview excerpt N2, it was mentioned that patients also highlighted that they "did not get clear information when the drug was ready, especially after the examination"
6	Pharmacy staff do not always provide information regarding waiting times and make patients feel they are not a priority	Lack of information about queue status	From the interview excerpt N1, it was mentioned that "Pharmacy staff often did not provide sufficient information about the waiting time for drugs or the procedures that had to be carried out"

Source: Researcher's processing

Based on the analysis mapping from the perspective of patients as sources and pharmacy officers related to the previously focused problems, the main problems were formulated to describe both relevant

perspectives. The main problems are described from the perspectives of the points of view and how might we that are formulated. The following is a description of the points of view and how might we that are displayed in Table 5:

Table 5. Point of View

Insight	Need	Point of View	The "How Might We" Question
Insurance patients have major problems related to the service process that occurs in the Pharmacy. Efficient waiting time is an important thing that is needed by patients, apart from the confirmation process to the insurance which takes quite a long time. Patients also need clarity in the queuing process at the Pharmacy which often causes confusion for patients.	Patients, especially those with insurance coverage, require a faster drug delivery process and do not take a long time for waiting time at the Pharmacy. In addition, the confirmation process to the insurance party can also take a long time so that the waiting time can be extended. Clarity and transparency of the queuing process at the Pharmacy are also needed by patients so that patients do not feel confused and do not feel the need to ask or confirm with the Pharmacy staff.	Patients undergoing pharmaceutical services in hospitals (users) require a faster drug delivery process and clarity in the queuing process (needs) due to long waiting times and lack of information regarding the status of drug completion which causes patients to feel unprioritized, confused, and need to frequently confirm with pharmacists to find out when the patient's medication is available (insight).	How can we create a faster and more transparent drug delivery system in hospitals, so that patients can clearly see their queue status and feel prioritized without having to frequently confirm with pharmacists?

4.5 Ideation Stage

The ideation process is carried out based on the point of view and the how might we questions that were formulated earlier. The ideation process begins with a brainstorming activity, which is the initial stage in solving the problems that have been formulated. The brainstorming activity is carried out using the 6-3-5 (six-three-five) brainwriting approach. The number 6-3-5 (six-three-five) describes the basic format of the technique, with the provisions set to consist of 6 (six) participants, 3 (three) ideas per participant, and 5 (five) rounds. This technique is a fast and efficient method for generating ideas and involving all participants without anyone dominating the discussion.

The 6-3-5 (six-three-five) brainwriting method involves 6 (six) people in one session. This number was determined to ensure that the collaboration could run well and efficiently. Before the activity began, each participant was presented with the how might we question that had been formulated previously: "How can we create a faster and more transparent drug delivery system in hospitals, so that patients can clearly know the queue status and feel prioritized without having to frequently confirm with the pharmacist?" Each participant was asked to write 3 (three) ideas on a piece of paper within 5 (five) minutes. The ideas were not limited to these. The process was repeated for 5 (five) rounds. The time spent on the process was approximately 30 (thirty) minutes.

The results of the brainstorming process produced 108 (one hundred and eight) proposed ideas. Furthermore, these ideas were grouped based on their similarity, producing 11 (eleven) groups of ideas. To determine the priority ideas chosen as the solution to the problem, a 2×2 matrix method approach was used. This method was determined by assessing the value and effort of each group of ideas. The assessment was carried out with the following value provisions.

Value scale: Low, High

Effort scale: Low, High

Ideas were grouped based on value and effort categories. Ideas that have high value and low effort are the first priority. Ideas with low value and high effort are given the lowest priority (elimination). Based on the idea evaluation process carried out from the previous brainstorming process, there are 4 (four) ideas that are in the high value and low effort categories as follows.

1. Separation between compounded drug pharmacies and non-compounded drug pharmacies so that the results of Non-Compounded Drugs can be obtained quickly.
2. Clarity of prescriptions so that the drug input process is faster with the e-prescription mechanism.
3. Pharmacy officers receive notifications of drugs that must be prepared according to the order. The stock of patient drugs and non-compounded and compounded stock must be available so that it can take place quickly.
4. Each patient's compounding process is made transparent, which is displayed on a TV screen so that patients know the flow of the compounding process.

The idea evaluation process continues with the selection process and the selection of ideas that are considered the best and can be executed, so that the selection is carried out using the dot voting method. This process was carried out on all participants in the brainstorming that had been done previously. The results of the dot voting process showed that all ideas included in the high-value and low-effort categories were selected.

5. Conclusion
5.1 Conclusion
Based on the results and discussions conducted, the following is an analysis of the conclusions that can be drawn based on the research questions in CHAPTER I previously.

1. The gap between pharmaceutical services and non-JKN patient profiles was determined based on an analysis related to the assessment of patient problem mapping compared to the problems identified in pharmacy staff. There are at least 2 (two) things that are priority problems (gaps) formulated based on the problem mapping analysis. This gap includes long waiting times in pharmacy services and a lack of information about queue status in pharmacy services. Long waiting times are considered to have a major impact on the satisfaction and trust of patients undergoing treatment at the hospital, and problems related to transparency and queue information in pharmacies cause difficulties and confusion for patients while waiting. These two gaps are the focus of the formulation of the main problem and solutions based on the development of ideas in the form of a business model canvas.
2. Using the Value Proposition Canvas approach, this study identified the value propositions formulated based on the gaps found previously. at least 4 (four) pharmaceutical service value propositions were developed. Increasing the aspect of service speed becomes a value proposition that is developed by carrying out the process of separating compounded drugs and non-compounded drugs so that technically it can speed up service time. In addition, the transparency of service information can be developed with a notification system or dashboard that can be monitored by patients regarding their drug status. Stock certainty can also be developed with a notification system for pharmacists to ensure that drugs are available. A better patient experience with a fast and clear service approach provides a sense of priority to patients who receive outpatient pharmacy services.
3. The proposed business model development idea was developed using a business model canvas. The Customer Segments developed are outpatients who want speed and transparency in taking medication, as well as doctors who prescribe medication and require a pharmaceutical process that supports medical services in an efficient manner. The value propositions developed include increasing the speed of service, increasing the transparency of information in the pharmacy, ensuring drug stock availability, and improving the patient experience. Aspects of the channel components that will be developed include a TV screen or dashboard that displays the transparency of the drug compounding process, drug applications or notifications to patients, and a direct pharmacy counter for patients in pharmacy services. In the customer relationship component, proactive transparency that prevents patients from asking questions repeatedly, real-time service communication, and responsive patient services are developed. In the revenue stream component, regular pharmacy

services for non-JKN insurance are developed as the main income from pharmacy services. Fast service also has the potential to be developed into a premium service, and reducing queues can increase the number of patients served. In the key resources component, the resource aspects that can be developed are pharmacists trained in the new system, as well as IT technicians who support the implementation and maintenance of the developed system.

5.2 Suggestion

5.2.1 Theoretical Aspects

The development of a business model canvas in hospital services can be further developed by involving the co-creation process. Patients need to be further involved in the formulation of problems, even by looking at online feedback provided by patients. and not limited to pharmaceutical services (Loo, Greaves, & Lewis, 2021). Research can be developed with this model approach in other fields or types of studies, such as inpatient areas and emergency services in hospitals, which are high-risk services.

The limitations of this study also lie in the results of the ideation that have not been developed in the form of a prototype or a prototype that can be either low fidelity or high fidelity. This limits patients or pharmacists from conducting direct tests or testing and requires effort to imagine how the dashboard model is visualized. Therefore, research with prototype development can be carried out technically with digital technology, such as figma, Proto. io, or Fluid UI. The figma application provides various features and tools that allow designers to draw, edit, and collaborate in real time. The proto.io application is designed to create interactive and detailed visual prototypes and provides various design elements that can be used to build realistic displays. In addition, with the design thinking approach, research can be further developed into general hospital services, and prototypes can be tested directly and repeatedly.

5.2.2 Practical Aspects

Practically, this research can be used to formulate solutions for pharmaceutical services in hospitals and other healthcare facilities. Here are some practical solutions that can be applied to address these issues.

1. The implementation of a digital-based system that can provide clear information for patients and staff in the form of a dashboard can be applied in a pharmaceutical service management system, especially for outpatients. The dashboard can provide real-time drug status information and reduce patient anxiety. In addition, clarity of the process can reduce the frequency of patients asking repeated questions to pharmacists and reduce the workload of officers in answering patient questions repeatedly.
2. Separation of the drug compounding process and non-compounded drugs can be easily implemented, especially in the pharmacy counter area. This can increase the speed of service and reduce queues so that pharmacists can complete drug dispensing faster. In addition, patients with prescriptions for non-compounded drugs can wait faster and do not need to queue for compounded drugs.
3. The availability of drug stock and the accuracy of the drug inventory system in pharmacies are factors that can be encouraged to improve the pharmaceutical system, especially for outpatients. The addition of compounded drug facilities and an effective and efficient drug procurement system can reduce the length of the drug-preparation process. The lack of drugs in pharmacies prolongs the drug preparation process and becomes a burden for pharmacists.
4. Pharmacists trained in technical matters and supported by a qualified IT system can encourage the performance of pharmaceutical services to be more optimal overall. This can improve the patient experience and the work efficiency of pharmacists. In addition, the occurrence of errors in drug compounding can be avoided, which can have a positive impact on patient experience.

References

Adriansyah, A. A., Setianto, B., Asih, A. Y. P., Firdaus, I., Sa'adah, N., & Abdillah, M. Z. (2022). Lean management implementation training at the pharmaceutical unit of the Islamic hospital in Surabaya. *To Maega: Jurnal Pengabdian Masyarakat, 5*(3), 533-543. doi:https://doi.org/10.35914/tomaega.v5i3.1227

Almeman, A. (2024). The digital transformation in pharmacy: embracing online platforms and the cosmeceutical paradigm shift. *Journal of Health, Population and Nutrition, 43*(1), 60. doi:https://doi.org/10.1186/s41043-024-00550-2

Anand, A., Fosso Wamba, S., & Gnanzou, D. (2013). *A literature review on business process management, business process reengineering, and business process innovation.* Paper presented at the Enterprise and Organizational Modeling and Simulation: 9th International Workshop, EOMAS 2013, Held at CAiSE 2013, Valencia, Spain, June 17, 2013, Selected Papers 9.

Anjalee, J. A. L., Rutter, V., & Samaranayake, N. R. (2022). Gaps in expectations and current practices of pharmacy services among doctors and patients – an exploratory study in a Sri Lankan tertiary care hospital providing free healthcare. *BMC Health Services Research, 22*(1), 1149. doi:https://doi.org/10.1186/s12913-022-08534-w

Brown, T. (2009). *Change by Design*.

Hadiyati, I., Sekarwana, N., Sunjaya, D. K., & Setiawati, E. P. (2017). Pengembangan instrumen pengukur kualitas pelayanan kesehatan berdasar atas harapan peserta Jaminan Kesehatan Nasional di rumah sakit. *Global Medical & Health Communication, 5*(2), 108-116.

Iswanto, A. H. (2021). Impact of lean six sigma at pharmacy unit on hospital profitability before and during Covid-19 pandemic. *International Journal of Lean Six Sigma, 12*(4), 718-743. doi:https://doi.org/10.1108/IJLSS-10-2020-0182

Kleber, D. M. S., & Volkova, T. (2018). Key Success Factors to Increase Value Proposition in the Hospitality Industry. *PROZIMA (Productivity, Optimization and Manufacturing System Engineering), 2*(1), 34-38.

Kotler, P., Wong, V., & Saunders, J. (2008). *Principles of Marketing*.

Larasanty, L. P. F., Cahyadi, M. F., Sudarni, N. M. R., & Wirasuta, I. M. A. G. (2019). Patient satisfaction with pharmaceutical care services provided at primary-level and secondary-level health facilities in Indonesia's health coverage system. *Journal of Health Research, 33*(1), 80-88.

Lee, S. M., Olson, D. L., & Trimi, S. (2012). Co-innovation: convergenomics, collaboration, and co-creation for organizational values. *Management decision, 50*(5), 817-831.

Lin, F.-R., & Hsieh, P.-S. (2011). A SAT view on new service development. *Service Science, 3*(2), 141-157.

Loo, J., Greaves, G., & Lewis, P. J. (2021). Exploring patients' pharmacy stories: an analysis of online feedback. *International journal of clinical pharmacy, 43*(6), 1584-1593.

Menor, L. J., Tatikonda, M. V., & Sampson, S. E. (2002). New service development: areas for exploitation and exploration. *Journal of Operations Management, 20*(2), 135-157.

Nasution, J. (2013). *Quality service analysis and improvement of pharmacy unit of XYZ hospital using value stream analysis methodology.* Paper presented at the IOP Conference Series: Materials Science and Engineering.

Osterwalder, A., Pigneur, Y., Bernarda, G., & Smith, A. (2015). *Value proposition design: How to create products and services customers want*: John Wiley & Sons.

Puruhito, A. M. A., & Falani, A. Z. (2021). Decision Support System For Developing Application For Pharmaceutical Supplies Using The MMSL And Pareto Law Methods. *JEEIT nternational ournal of lectrical ngineering and nformation echnology, 4*(1), 12-22.

Rowe, W. G., & Nevmerzhytskyi, S. (2025). Demonstrating the importance of the strategy implementation process to an entire organization. *Organizational dynamics*, 101153. doi:https://doi.org/10.1016/j.orgdyn.2025.101153

Sallam, M. (2024). Enhancing hospital pharmacy operations through Lean and Six Sigma strategies: A systematic review. *Cureus, 16*(3). doi:https://doi.org/10.7759/cureus.57176

Saunders, M. N. K., Lewis, P., & Thornhill, A. (2015). *Research Methods for Business Students PDF eBook*.

Sekaran, U. (2016). Research methods for business: A skill building approach: John Wiley & Sons.

Sekaran, U., & Bougie, R. (2016). *Research Methods For Business: A Skill Building Approach*.

Setianto, B., Adriansyah, A. A., & Asih, A. Y. P. (2020). Implementasi manajemen lean di unit Farmasi Rumah Sakit islam surabaya A. yani. *Jurnal Manajemen Kesehatan Indonesia, 8*(2), 81-87.

Wijayanti, D., & Setyorini, C. (2023). Implementation of Good Corporate Governance in Public Hospitals in Indonesia: Systematic Literature Review Approach. *Buletin Poltanesa, 24*. doi:http://dx.doi.org/10.51967/tanesa.v24i1.2567

Yuliati, V., & Andriani, H. (2021). Implementation of Lean Kaizen to Reduce Waiting Time for the Indonesian Health Social Security Agency Prescription Services in Hospital Pharmacy InstallationImplementation of Lean Kaizen to Reduce Waiting Time for the Indonesian Health Social Security Agency Prescription Services in Hospital Pharmacy Installation. *Open Access Macedonian Journal of Medical Sciences, 9*(E), 1495-1503. doi:https://doi.org/10.3889/oamjms.2021.7610

Yunita, I. C. M. (2017). Pengaruh Citra Merek Rumah Sakit Citra Medika Depok Terhadap Kualitas Pelayanan, Kepuasan Pasien Dan Loyalitas Pasien. *Jurnal Manajemen dan Administrasi Rumah Sakit Indonesia (MARSI), 1*(1), 82-97.