

Research Article

Knowledge Management for Efficient and Effective Business Process in Pharmacy

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Abstract: This study investigates implementing a knowledge management system in a pharmacy setting, focusing on H2O Pharmacy in Tangerang, Indonesia, which faces operational challenges, including long service times, customer dissatisfaction, and waiting line management issues. The research examines how insufficient knowledge management practices, particularly the reliance on informal pharmacist training without structured documentation, impact service delivery and business performance. Through qualitative methodology incorporating interviews with stakeholders from H2O Pharmacy (owner, manager, pharmacist, and staff) and competitor managers, this study employs thematic analysis to evaluate current practices. Benchmarking against competitors Suma Farma and K-24 revealed significant operational gaps, particularly in service efficiency and effectiveness. The findings indicate that while H2O Pharmacy prioritizes counseling services, the absence of systematic knowledge documentation impedes service delivery speed and decision-making processes. Based on these insights, the study proposes a comprehensive knowledge management framework integrating people, process, and technology components through the SECI Model (Socialization, Externalization, Combination, and Internalization). The research concludes by recommending artificial intelligence and machine learning technologies to enhance operational efficiency and service effectiveness, providing a blueprint for knowledge-intensive pharmaceutical businesses seeking to optimize their operations.

Keywords: Knowledge Management, Pharmacy, Efficiency Effectiveness, SECI Model, AI Machine Learning, Health Service, Critical Knowledge.

I. INTRODUCTION

The pharmaceutical industry is one of the important industries with many business players due to the large potential of the market, especially after Covid-19. The increasing demand for accessible healthcare and the strategic efforts of the Government to improve health outcomes across the nation attract many businesses to enter this market. According to Mahendradhata et al. (2017), there are more than 2,400 major pharmaceutical suppliers, more than 5,000 drug stores, in addition to almost 22,000 pharmacies, while half of the drugs available in the market were sold through private practices, general stores, street vendors and supermarkets which around 75% of the market offering approximately 16,000 types of drugs (10% are generic drugs). The pharmacies play an important role as the first point of care for illness and give services to 270 million Indonesians through 130 thousand private pharmacies (Liverani, 2020). Moreover, according to the World Bank (2009) in Mahendradhata et al. (2017), the share of drugs dispensed through private pharmacies and pharmacies is larger than through hospitals.

The pharmaceutical industry is knowledge-oriented, especially pharmacy. The success of pharmacy is highly dependent on the specialized Knowledge in pharmacological regarding the dosage and side effects of the drug to provide appropriate counseling for customers to avoid any medication error (Tadesse et al., 2023). Knowledge about regulations is also necessary to comply with them, as this industry is strictly regulated. On the other hand, Knowledge about efficient inventory management is also important to enhance the profitability of a pharmacy by reducing the cost of procuring pharmaceutical products and other operational expenses (Hidayat and Saleh, 2020). This knowledge is useful for the pharmacy in serving customers and building trust. Thus, the need for knowledge management arises due to several factors. First, the pharmaceutical industry is continuously evolving with new drugs. Second, regulations are always changing according to market conditions and new inventions to ensure the safety of consumers; therefore, the pharmacy must adapt to any changes. Finally, every medicine has a different expiration date, storage requirement, and supply chain; therefore, properly managing those inventories is critical.

However, there are some challenges to knowledge management in the pharmacy. In particular, most community pharmacies do not have strong financial resources and expertise. They also focus on short-term, unstructured approaches to organizational learning (Edvardsson and Durst, 2013). Then, employee turnover and successor are the factors of business concern as the pharmacy practice depends on personnel with qualified education. The absence of qualified personnel will cause the owner to transfer knowledge as soon as possible. Those challenges motivated the author to analyze more deeply how knowledge management can help SMEs, especially pharmacies, be more efficient and effective, making them competitive in the industry.



H2O Pharmacy is a company operating in the pharmaceutical industry based in Tangerang. It was established in December 2020. H2O Pharmacy offers a wide range of pharmaceutical products, such as over-the-counter medications, supplements, vitamins, and generic and patent medicines. It also hires experienced pharmacists and provides training for them to provide the best service for customers. According to the financial report of H2O Pharmacy, the sales figures are not stable, as shown in the figure below, which shows the fluctuation of sales growth. The average cost to sales is about 85% - 90%, which is too high than what is expected because of the small profit margin generated by H2O Pharmacy.

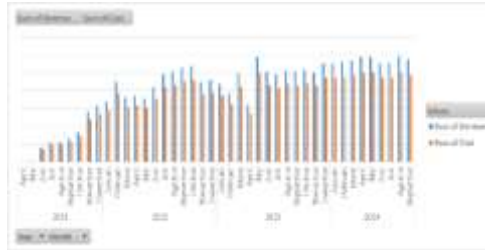


Fig. 1 Sales and Cost Figure of H2O Pharmacy

Source: Secondary Data

A pharmacy is a business that is Knowledge-centric and strictly regulated. Knowledge and experience in handling customers with different symptoms are needed. However, the experiences of every human capital at H2O Pharmacy are different. Thus, they have set the standard of service delivery for customer counseling and do training for all staff there. Managers and all staff must have the basic knowledge of basic generic medicines.

For customers with specific needs, such as those seeking toothache medicines while managing conditions like gastritis, the staff must provide informed counseling and recommend suitable medicines. However, no proper knowledge management made the tacit Knowledge easy to forget, and the explicit Knowledge, such as documents, was not organized well. These deficiencies made the process of serving customers efficient as staff often spent excessive time seeking assistance from colleagues, particularly when it was in hectic conditions. Furthermore, delays and lack of professionalism negatively impact customer satisfaction and make bringing more value to customers impossible. The absence of effective knowledge management will be one of the factors of inefficient and ineffective business processes that hinder the pharmacy from boosting its performance.

II. LITERATURE REVIEW

A) Theoretical Foundation

a. Efficiency and Effectiveness of Business Process

1. Business Process

A business process is any part of an organization that transforms inputs into outputs that are hoped to create a greater value for the organization than the original inputs (Jacobs and Chase, 2018). Ackerman (1994) and Olan et al. (2016) stated that a business process is a set of logically related activities used to achieve the best outcome. Thus, constantly updating the philosophy behind the technical aspects of the whole business process is necessary. The business process has two views: operation and behavior. The operation view is about how a business process is implemented (number of tasks in a job, relative size of tasks, nature of tasks). The behavior view is about how the business process is executed (sequencing of tasks, job scheduling).

According to Gartner (2006) and Brajer-Marczak (2016), business process is considered a valuable corporate asset, and continuous improvement has become an imperative for many business organizations. Amarvadi and Lee (2005) in Brajer-Marczak (2016) stated that knowledge management is recognized as an integral part of business process improvement while disregarding Knowledge of the needs of improvement owned by employees performing processes is considered the cause of failures in numerous improvements. Thus, business processes and knowledge resources should be subordinated to the organisation's objectives. The integration of both should enable the delivery of useful knowledge in a timely manner and collecting the knowledge in such a manner makes access to knowledge easier and encourages undertaking improvement initiatives (Brajer-Marczak, 2016).

2. Efficiency

According to Jacobs and Chase (2018), efficiency is doing something at the lowest possible cost. The goal of an efficient business process is to produce a good or provide a service by using the smallest input of resources. Kulal et al. (2024) stated that the efficient process requires timely and accurate delivery of services to meet the diverse needs of customers while optimizing resource utilization and minimizing bureaucratic hurdles.

According to Kulal et al. (2024), the measurement of a process's efficiency is structured through a comprehensive framework encompassing various corresponding items. Based on Brown and Coulter (2018) and Kulal et al. (2024), the efficiency measures include timely service delivery. According to Bouckaert et al. (2018) and Kulal et al. (2024), the timeliness of the service delivery ensures the service is consistently delivered within stipulated timeframes. The other finding by Vainieri et al. (2020) highlights that resource allocation efficiency is associated with the amount of waiting time customers spend. This research uses the time of service delivery and waiting time to measure the efficiency of business processes in H2O Pharmacy.

3. Effectiveness

Effectiveness is doing the right things to create the most value for the company (Jacobs and Chase, 2018). Effectiveness can be defined as the quality of a product or service delivered to a customer that is attractive in its features and durable. Effectiveness is reflected directly in the costs associated with doing business. Strategies associated with the effectiveness of business processes are quality assurance and control initiatives, process redesign, planning and control systems, and technology investments.

Bartuševičienė and Šakalytė (2013) stated that effectiveness is a broader perspective that takes into account the quality, creation of value-added, employee satisfaction, customer satisfaction, output interaction with the social and economic environment. Customer satisfaction in pharmacy is influenced by several factors, including the standard of clinical care delivered, the availability of medicines, the cost of services, emotional support, and consideration of the customer's preferences (Tadesse et al., 2023). McDavid et al. (2019) and Kulal et al. (2024) stated that feedback mechanisms measure the effectiveness of gathering customer insights for continual improvement, acknowledging the importance of customer engagement. Effectiveness and efficiency are exclusive performance measures, and they influence each other. In order to achieve excellence in competition, a company should strive to increase the efficiency and effectiveness indicators evenly (Kulal et al., 2024). This research uses employee and customer satisfaction to measure the effectiveness of H2O Pharmacy's business process.

4. Business Process Redesign

Business process redesign concerns articulating a process in interdependent tasks and resources (Mansar and Reijers, 2005). The business process redesign aims to enhance performance by reducing costs, improving quality, delivering better customer service, and using resources more efficiently. The business process redesign (BPR) framework, according to Mansar and Reijers (2005), contains six elements:

- a) Internal or external customers of business process
- b) Product/services generated by business process
- c) Business process with two views:
 - a. Operation: how the business process is implemented (number of tasks, nature of tasks)
 - b. Behavior: when the business process is executed (sequence of tasks, scheduling jobs)
- d) Participants in the business process considering the organization structure and organization population
- e) The information which is used or created by the business process
- f) The external environment other than customers.

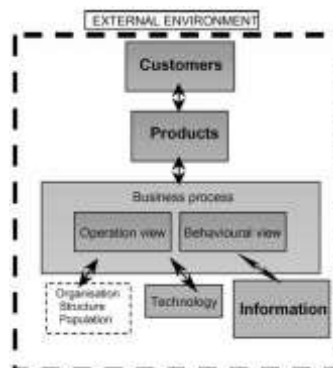


Fig. 2 Framework for BPR Implementation

Source: Mansar and Reijers, 2005

Some strategies must be considered to ensure the success of a business process redesign. Here are key strategies to redesign business processes based on best practices (Mansar and Reijers, 2005):

1. **Task Composition:** Combine smaller tasks into larger, manageable ones to boost efficiency. Alternatively, break down

large tasks into focused steps to improve flexibility.

2. **Task Elimination:** Remove unnecessary tasks to simplify workflows, save time, and lower costs. This approach significantly reduces operational expenses.

3. **Parallelism:** Perform tasks simultaneously when possible to shorten process times. While this may increase costs, it effectively speeds up crucial operations.

4. **Integration:** Streamline workflows by connecting processes across departments, customers, or suppliers, reducing redundancies and ensuring smoother operations. Integrated business processes should render a more efficient execution from a time and cost perspective.

5. **Empowerment:** Give employees more decision-making authority to increase flexibility and performance. Empowered employees are more motivated and can effectively handle a broader range of responsibilities. Increased staff motivation gives more flexibility to mix the work types and makes the process less dependent on particular staff for particular work.

6. **Technology Implementation:** Use automation or other technologies to remove manual practice, speed up tasks, and improve efficiency.

7. **Order Assignment:** Have employees handle multiple steps within a process to enhance ownership and reduce delays from passing tasks between departments.

b. How to Manage Knowledge

1. Knowledge

Knowledge determines the capacity or capability of a person/an organization/a country to act, and it differs the person/organization/country one another, especially in the capacity or capability for more effective action (Tjakraatmadja and Kristinawati, 2017). However, due to the demographic change, companies will face competitive disadvantages because of the leave of experienced colleagues and knowledge drain. Therefore, the organization of the handover to a successor can save expensive training time and keep the general Knowledge within the organization (Paschek et al., 2018). Guretzky (2000) and Paschek et al. (2018) stated that along with digitalization, information and communication technology, advance provides the global technical infrastructure in which a fundamental new value-added system based on the exchange of information and Knowledge is created that can increase the productivity of knowledge production. Therefore, it can improve the business process in the best way to know and satisfy customer requirements to be competitive.

Knowledge is important in a pharmacy as people usually visit community pharmacies for daily health care needs. Thus, pharmacies are the first point of contact in the healthcare system due to their accessibility (Hanafi et al., 2013). Pharmaceutical care is the practice in which patients are the primary beneficiaries of the pharmacist's actions (Jagarlamudi et al., 2018). Pharmaceutical care involves education, pharmaceutical guidance, dispensing, and pharmaceutical care follow-up (Ivana, 2002 in Caixeta, 2024). This practice requires Knowledge, commitment and responsibility as the result of professional experience gained daily (Oliveira, 2002 in Caixeta, 2024).

Knowledge based on Nonaka (1994) in Tjakraatmadja and Kristinawati (2017) divided Knowledge into two categories as follows:

a) Tacit Knowledge

Tacit Knowledge is a theoretical or conceptual knowledge. It is the Knowledge that has not been documented or codified. Every organization will have unique tacit Knowledge realized through value, belief, and learning patterns.

b) Explicit Knowledge

Explicit Knowledge is the knowledge that has been applied or written into guidance and documented in the form of writing or audio or codified into the database. Trainor et al. (2008) in Tjakraatmadja and Kristinawati (2017) stated that explicit knowledge comes from easily stored information. Another company can replicate explicit knowledge of a company.

According to Tjakraatmadja and Kristinawati, 2017, there is Knowledge that is prioritized to be discovered and developed for the organization to survive in the future called core knowledge. The main Knowledge determines an organisation's future since it can generate the greatest value for a product or service, which makes an organization. There might be some critical knowledge inside the core knowledge. Critical knowledge is the most needed core knowledge at present. **Critical knowledge is the most important knowledge to an organization because it will determine the organisation's future, whether the current knowledge is outdated or the knowledge has not been discovered or owned by the organization.** According to Zhu (2015) and Paschek et al. (2018), a company without a combination of knowledge and business processes will not be able to survive and be competitive.

2. Critical Knowledge

There are several critical Knowledge for a pharmacy, such as follows:

a) Medical Knowledge.

Nowadays, pharmacies are moving from medical-centric to patient-centred or customer-centred (Hanafi et al., 2013). All pharmacies must ensure their service is of appropriate quality based on Good Pharmacy Practice (Jagarlamudi et al., 2018). Pharmacies play an important role in improving access to health care even in the increasingly complex and diverse nature of pharmacies, which demands continuous maintenance of pharmacists' competence as healthcare professionals with up-to-date skills and expertise. By sharing and documenting experiences, pharmacists can contribute to the optimization of patient care. Pharmacists must be able to increase the accessibility of medicines-related Knowledge to other people (Jagarlamudi et al., 2018).

b) Communication Knowledge

To deliver qualified care, pharmacists should also keep their knowledge refreshed along with the invention and development of the pharmaceutical industry. They should possess excellent communication skills to work with other healthcare providers and patients (Jagarlamudi et al., 2018). Along with the advancements in the pharmacist profession, the role has changed from medicine dispensing to providing information about medicine and patient care (Hanafi et al., 2013). According to the Scottish Government (2017), besides the communication skills and knowledge of medicines for advanced clinical assessment, training will be needed to support the capacity increase in clinical skills to meet service needs.

c) Inventory Management

Another factor affecting customer satisfaction is inventory management. Ineffective inventory management will cause the product to be unavailable, and the pharmacy may lose a customer (Hidayat and Saleh, 2020). According to West (2009) and Hidayat and Saleh (2020), inventory management is a process of planning, organizing, and controlling inventory to minimize the investment in inventory.

d) Technology Adoption

Manual tasks have also characterized the pharmacy practice. The advancement in technology brings many changes. It is a game changer that significantly advances patient safety; leveraging digital technology can enable the pharmacy to execute clinical services with relevant information such as diagnosis codes, lab information, and clinical notes that reduce manual tasks for pharmacists (King, 2024).

e) Selling Knowledge

Pharmacies are developing services to help patients get better for their health. To build a beneficial relationship with patients, selling Knowledge is needed to effectively promote the pharmacies' services (McDonough and Doucette, 2003). Applying the selling knowledge to everyday patient service can help pharmacies to attract and retain patients. The things pharmacies must know in selling, according to McDonough and Doucette (2003), are as follows:

- Assessing information. The staff needs to be attentive to the patient and use active listening skills to help the patient explicitly recognize his/her health needs.
- Asking questions to uncover the needs of patients.
- Presenting the service/product's features and benefits that need medical knowledge.
- Addressing patient concerns. When the staff hears objections from the patient, it indicates that the patient is listening. If the patient states the service is too expensive, staff may not force him/her. Perhaps the staff does not give a clear explanation.

c. Knowledge Management

According to Swan et al. (2002) and Ansari et al. (2009), knowledge management is related to unlocking and leveraging the Knowledge of individuals so that the collective Knowledge can become the organizational resource. Knowledge management is any process or practice of creating, acquiring, capturing, sharing, and using Knowledge wherever it resides to enhance learning and performance in the organization. Tjakraatmadja and Kristinawati (2017) stated that the purpose of knowledge management is to create value through three steps such as follows:

1. Discover new knowledge that can be capitalised to enhance Knowledge-based innovation.
2. Knowledge enables knowledge management to improve the business process to be more effective and increase an organisation's capacity.
3. Better business processes and capacity enable an organization to own the capability to do innovation with greater market or social value.

The knowledge management involves five processes such as following:

1. Knowledge identification. The organization needs to do activities to identify Knowledge:

- a. Finding the organisation's knowledge by doing a survey or observation with an interview to track and capture the Knowledge within an organization.
- b. Evaluate the organisation's knowledge relevant to improving the current business process.
- c. Knowledge mapping by defining the relationship between information and Knowledge. It can give information about the

amount of Knowledge owned by an organization and analyze outdated Knowledge to increase the capability of target realization.

2. **Knowledge searching and storing.** An organization needs technology to search for relevant Knowledge using skill directory methods or knowledge bases supported by web/data warehouse. However, there are several principles to be noticed in the process: it must be easy to access and find and safe from theft.

3. **Knowledge transfer.** Several abilities are needed to support the effectiveness of transferring knowledge, such as being able to collaborate, write and publish Knowledge; managing contact to update the personal profile, knowledge exchange; and relationship building.

4. **Applying Knowledge.** Organizations should take into account the factors that can affect the effectiveness of knowledge flow in the organization, such as:

a. Psychological, the working environment felt by employees: working motivation, willingness to innovate and create change, and

b. Physical (the system is not user-friendly, Knowledge generated is unnecessary, and there is no special service for those with difficulty operating the system).

5. **Knowledge creation.** The last process is to create new knowledge by collecting and integrating it with existing Knowledge. A common model of knowledge creation by Nonaka (1994) is SECI (Socialization, Externalization, Combination and Internalization), which shows that knowledge creation is obtained by increasing the effectiveness of the process to transform tacit into explicit Knowledge and vice versa.

Knowledge management and business processes are interdependent and have to be brought together because knowledge has to be taken within an organization through the business process. Knowledge management plays an essential role as background for the best management, adjustment and implementation of processes. Without knowledge management, an optimization of processes would not be possible (Paschek et al., 2018).

d. People, Process, Technology

According to Tjakraatmadja and Kristinawati (2017), an effective knowledge management system must include three components such as following:

1. **People.** An organization might have people from different cultures, backgrounds, knowledge, and skills. To implement knowledge management effectively, an organization must provide its human capital with the ability to problem-solve, learn from experience and past, benchmark with the best practices, and transfer knowledge quickly and efficiently to implement a continuous learning process.

2. **Process.** Knowledge management must make the process of obtaining knowledge easier. The process plays a role in leading the behavior of members of the organization to make the knowledge management process can be done well. The output of the process can be in the form of policies and business processes (Larasati, 2020).

3. **Technology.** It plays a role in facilitating the collaboration, storing, searching, and distribution process of Knowledge.



Fig. 3 Three Pillars of Knowledge Management

Source: Sushandoyo et al. (2024)

According to Tjakraatmadja and Kristinawati (2017), the understanding of people, processes, and technology in the process of knowledge creation, storing, and distribution in an organization will help us to determine when and how many people, processes, and technology needed to build an efficient and effective knowledge management system. Many organizations want to have advanced technology but forget the role of people and fail to improve the existing process; thus, there will be bottleneck necking, which causes knowledge management to not perform well.

e. SECI Model

SECI model based on Nonaka (1994) consists of four knowledge creation processes, as follows:

1. **Socialization.** Transforming Knowledge from person (tacit) to person (tacit). This process can provide new tacit Knowledge when people work and collaborate, allowing them to exchange ideas, values, and different points of view to produce optimal work. This process generally relates to training, mentorship, job rotation, and knowledge café (Sushandoyo et al., 2024).

2. **Externalization.** Transforming Knowledge from person (tacit) to system (explicit). This codification process allows tacit Knowledge to be transformed into an audio-visual or written procedure so it can be shared widely. The externalization method that is generally used is a knowledge-based exit interview to anticipate the loss of Knowledge due to the resignation of employees; the employees can transfer Knowledge related to their jobs (Sushandoyo et al., 2024).

3. **Combination.** Transforming Knowledge from system (explicit) to system (explicit). All explicit Knowledge will be combined and formalized to produce a comprehensive knowledge system throughout the organization. This process is simplified by the presence of technology for the company to store the Knowledge in a website, repository, and internal server (Sushandoyo et al., 2024).

4. **Internalization.** Transforming Knowledge from system (explicit) to person (tacit). Internalization is the process of utilizing explicit Knowledge in daily work. The SECI model shows an infinite process that moves in a spiral movement and involves many simultaneous conversions. For instance, employees can utilize explicit knowledge archived on company websites, or several companies can develop e-learning systems for the employee (Sushandoyo et al., 2024).

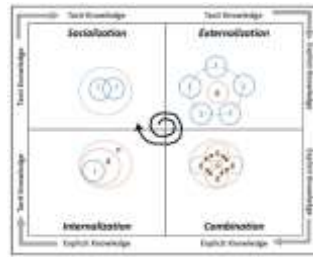


Fig. 4 SECI Model

Source: Nonaka (1994) in Paschek et al. (2018)

f. Knowledge Management Map

After the initiatives of knowledge management are decided as the work program for achieving goals of knowledge management, the selected initiatives or plans of knowledge management will be placed on a map that explains the work plans list of knowledge management, including the schedule. The knowledge management map is divided into three criteria such as follows (Cahyaningsih et al., 2017):

1. The first criteria is “people”, which need motivation to learn; people must be flexible and able to lead.
2. The second criteria is “process”, that the people development must be aligned with organizational needs to ensure the competency of human capital can support the achievement of the goals.
3. The third criteria is “technology”, the tools used to support knowledge management and the budget for technology development.

B) Conceptual Framework

This research is aimed to create a knowledge management map to make the business process of H2O Pharmacy efficient and effective. It is to build proper knowledge management to store the tacit and explicit knowledge to optimize the business process.

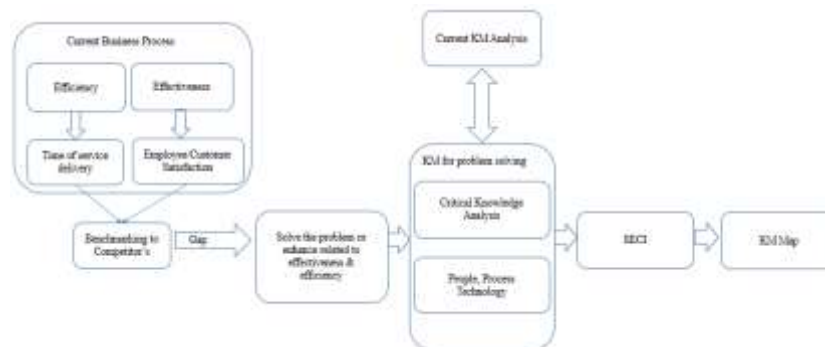


Fig. 5 Conceptual Framework

Source: Author

The conceptual framework to address the challenges faced by H2O Pharmacy involves six stages. First, the current business processes are analyzed to assess efficiency and effectiveness. Next, benchmarking with competitors is conducted to identify performance gaps. The third stage examines the existing Knowledge Management (KM) system to identify areas for improvement. Critical Knowledge, competency gaps, process redesign, and technology are analyzed in the fourth stage. Based

on these findings, the SECI Model is developed to enhance knowledge creation using suitable media within budget constraints. Finally, all elements—people, process, technology, and media—are integrated into a comprehensive KM map for implementation.

III. METHODOLOGY

This research uses primary and secondary data. Data collection methods have differed for both primary and secondary data. Semi-structured interviews will be conducted to gather data about business processes, how H2O manages its existing knowledge, knowledge storage process, time to deliver service, customer and employee satisfaction, critical knowledge, and competitors' performance. Observation is needed to collect data about the efficiency of H2O and competitors in terms of service delivery, inventory display, and knowledge storage processes. Secondary data needed are financial reports to gather the revenue and cost figures of H2O, SOP to have a deep understanding of the H2O business process and literature of critical Knowledge for pharmacy to be used in redesigning the business process. This research uses the thematic analysis technique to analyze qualitative data.

IV. RESULTS AND DISCUSSION

A) Existing People and Competency of H2O

Based on the interview results, the people involved in the business process of H2O Pharmacy are as follows:

1. **Owner** is the key person who determines the strategy of H2O Pharmacy. He must be equipped with more knowledge, such as knowledge about medicines, suppliers, and regulations, than the other staff to ensure the ongoing concern of H2O Pharmacy.
2. **The manager** has basic Knowledge of pharmaceutical products. He is in charge of monitoring the H2O performance, managing and leading the team, and reviewing the team's performance.
3. **Pharmacists** are the key people in the ongoing concern of H2O Pharmacy and have more pharmaceutical knowledge. Without a pharmacist, the pharmacy cannot obtain a license, cannot provide counseling for customers, and cannot train the other staff to gain medical Knowledge. Thus, the pharmacist is required to fulfill several qualifications during recruitment.
4. **Assistant pharmacist**, as the person who assists the pharmacist to do counseling, and to assist the operations of H2O Pharmacy. Several qualifications must be fulfilled during recruitment, the same as a pharmacist. However, the experience of an assistant pharmacist is not as specific as that of a pharmacist, which is inadequate for consulting all kinds of patients.
5. **Staff**, the people who support the operations of H2O Pharmacy. They have a minimum requirement for staff: they must graduate from senior high school. The staff's job will be rolled, especially if the pharmacy is in hectic condition.

The existing Knowledge owned by H2O Pharmacy is presented in the following table,

Table 1: Knowledge Owned by H2O

Tacit	1. Medicines knowledge 2. Knowledge of disease 3. Counseling experience
Explicit	1. SOP 2. Customer invoice 3. Distributor contractual agreements 4. Regulations

Source: Author

The competency in medicines knowledge and counseling skills, including the skill of staff to write and read a medical recipe. However, according to the interview with the owner, the compatibility of current competency with the current business process is around 70%. The remaining 30% is allocated to improving service delivery. The staffs mostly lack communication skills, give suggestions for customers, and how to handle complaints effectively.

B) Existing Business Process of H2O

Based on the observation and interview done with the owner, manager, pharmacist, and staff of H2O, the business process of H2O is explained step by step as follows:

1. **Procurement**: there are two distributors they cooperate with. The first is their main distributor, from whom they usually buy generic medicines. They must purchase many medicines from the main distributor to get a cashback of about 20% every month. If they want to buy non-generic medicines (medicines for certain diseases) which are less than the generic ones, they will buy from the sub-distributor
2. **Inventory Management**: the medicines that arrive will be placed in the warehouse. Inventory data will be recorded in the software. Every six months, they also do stock opname for the inventory, but the staffs take the initiative to do stock opname every month.

If the medicines are near expiration, they will separate and display them. H2O Pharmacy indirectly implements the First Expired First Out (FEFO) method in managing their medicines to reduce expiry risk to < 1%.

3. Service Delivery: H2O Pharmacy innovates its service by selling medicines to customers and providing counseling first to improve medication safety. The reason is there will be people who want to buy some medicines that will cause a side effect; if they have specific allergies and other complicated diseases, it will cause serious problems for their health. It is a good innovation by H2O Pharmacy; however, they do not have proper documentation of the customers' cases, which makes the staff take longer to serve customers and often complain about the long waiting time. If the pharmacy is hectic, all staff there, including the pharmacist, will lend a hand to serve the customers.

According to the interview results with the staff, most customers purchase the same medicines as they did the previous time. However, due to improper documentation, they often forget about the disease of recurring customers or the medicines they often buy. Thus, they usually re-ask the customers.

4. Complaints Management: H2O Pharmacy has faced several customer complaints, especially for the long waiting time. Most of the customers complained about the speed of service. Hence, it can be concluded that they have not implemented a strategy to manage customer complaints.

5. Knowledge Sharing: The pharmacist said she conducts staff training. She will explain the basic knowledge about all medicines in H2O Pharmacy, including their dosage and function. After that, she will let the staff remember through direct practice. If the staff forgets or does not understand some medicines, they can ask the pharmacist directly. Hence, it can be concluded that they depend on the pharmacist so much that there is no proper documentation of the tacit Knowledge shared by the pharmacist.

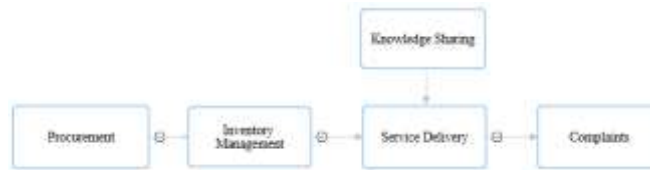


Fig. 6 Existing Business Process of H2O

Source: Author

C) Existing Technology of H2O

H2O Pharmacy utilizes less technology in its business process. They use a Point of Sales (POS) system for inventory management to keep the risk of expiry medicines below 1% and prevent the risk of being out of stock. Besides that, they use the system for the cashier to record customers' transactions.

From the observation, they utilize Google Workspace, such as Google Docs, to record and store SOP in Google Drive. The owner uses Microsoft Excel to make financial reports. The communication channel used mostly by the H2O team is WhatsApp.

Table 2: Existing People, Process, and Technology of H2O

People	Owner
	Pharmacist
	Assistant pharmacist
	Staffs
	Manager
Process	Staff training
	Medical counseling
	Job rolling
Technology	Google Workspace (Google Drive, Google Docs)
	Microsoft Excel
	WhatsApp
	POS system

Source: Author

D) Competitor Benchmarking

This research chooses two pharmacies for benchmarking: the first is a small private pharmacy (Suma Farma), and the second is a national chain pharmacy (K-24). Based on the interview and observation results, the researcher compares the performance of H2O with its direct competitors to evaluate the efficiency of H2O. The criteria used to evaluate the efficiency

are time of service delivery, which is in accordance with the statement of Brown and Coulter (2018) in Kulal et al. (2024), and waiting time, which is in accordance with the statement of Vainieri et al. (2020). According to the interview with the staff in H2O, the maximum time they spent delivering the service was approximately 5 minutes. The time to deliver H2O service takes longer than the time spent by its competitors. Since they are not just “selling medicines”, they need to understand the symptoms of customers who buy the medicines and provide counseling to them to deliver the appropriate medicines for their sickness makes H2O need a longer time to serve customers. All three pharmacies are facing waiting lines during peak times. However, Suma Farma and H2O faced quite a long waiting line; thus, from the overall benchmark result, it can be concluded that H2O is less efficient than Suma Farma and K-24.

Table 3: Efficiency Benchmark Result

Source: Author

Criteria	H2O	Suma Farma	K-24
Time to deliver service	≤ 5 minutes	1-3 minutes	< 5 minutes
Waiting Line			

According to Bartuševičienė and Šakalytė (2013), the measurement of effectiveness includes employee satisfaction and customer satisfaction. Thus, this research uses employee and customer satisfaction as the most relevant measurement of the effectiveness of pharmacy business processes. The benchmarking result is as follows:

Table 4: Effectiveness Benchmarking

Measurement	H2O	Suma Farma	K-24
Employee satisfaction (complaint, if any)	Satisfied (handle impatient customer)	Overall no complaint	Overall satisfied (handle bad-tempered customer)
Customer satisfaction (complaint)	Often, 1-2 people always complain (waiting time and price)	Often (price)	Often (different packaging)

Source: Author

The result shows that employee satisfaction with H2O and competitors is almost the same. H2O often gets customer complaints about long waiting times and prices. The staff said that there are usually one to two people complaining. According to the interview results, the customers who usually complain the most are the elderly. They are not patient when they have to queue for a long time; they want to be served quickly. The complaints are linked to the efficiency of the business process, in which H2O takes the longest time of five minutes to serve the customer due to counseling service. This makes the customers wait longer than the other pharmacies, even if they are facing customers who usually want to buy medicine but only provide information about the packaging’s color. H2O solves this problem by giving them all related medicines with the same color, which takes a longer time. If the customer forgets, then they will ask the customer to go home first. Thus, it can be concluded that the business process of H2O is ineffective due to the long waiting time.

E) Critical Knowledge for H2O

a. Medicine Knowledge

To increase customer satisfaction, H2O must improve the service. According to the interview with H2O’s pharmacist, she said that to improve the service, they need to give a more detailed explanation about the medicine, including what the function is and which medicine needs to be taken regularly. This knowledge is also needed so the staff can read and write the

recipe. However, the current service delivery is not optimal and is far from what the SOP expects. Not only is it useful to improve the service, but also to understand the medicines to be ordered to the distributor and check the delivered medicines to prevent the risk of stock discrepancy that can cause additional costs of return and lead time. Although it has been stated in the SOP, some staff members may ignore or not be familiar with the procedure. The researcher concluded that the first critical Knowledge needed by H2O is Knowledge about medicines. To understand the level of medicines Knowledge owned by H2O, the researcher does the analysis presented in the following diagram.



Fig. 7 Medicine Knowledge

Source: Author

Currently, H2O has the Knowledge about medicines. Compared to the competitor, Suma Farma, H2O is better because Suma Farma has no training; they learn everything directly from practice and only sell medicine without further explaining its function or dosage. However, compared to the competitor – K-24, K-24 is still better. K-24 offers more variants of drugs and owns more branches than H2O. Thus, training is needed to ensure the quality of service staff delivers. The purpose of training in K-24 is not just to explain the drug but to train all the staff to be familiar with all the drugs in the pharmacy, including the function and dosage, and they are required to remember all. According to what the pharmacist of H2O said, she just explains the medicine and does not demand the staff to remember quickly. She believes that all the staff will remember if they directly do practice.

b. Communication Technique

Knowledge about communication techniques is important to provide better counselling, especially if the staff are facing the elderly. Besides counseling, the communication technique can be used to handle complaints and conflicts. According to the interview with the owner of H2O, he said the things that need to be improved currently are how the staff handles customers and how they can handle complaints, especially the customers who are not patient and have long waiting times. Currently, the staffs only stay silent or tells the customer to be patient.



Fig. 8 Communication Technique

Source: Author

H2O owns the Knowledge of how to communicate well with customers. However, compared to Suma Farma, H2O is still better since, based on the interview result, when the staff are facing a customer who complains about packaging color or price, they usually give further inquiry or just let the customers complain. Whilst compared to K-24, H2O still needs many improvements. Based on the observation, K-24 staff members have good communication skills and attitudes when facing customers. Even bad-tempered customers can be patient and communicate politely and calmly. According to the K-24 website, they often conduct training for Customer Service Excellent in every branch to increase the service quality.

c. Inventory Management

Inventory management is to prevent financial loss due to expired products and shortage of medicine. Medicines are special products that need special attention to the expiry date. If the pharmacy gives expired medicine to customers, it can lead to customer dissatisfaction or medication error, which can cause a legal suit. Thus, it is important to manage the medicines in the warehouse and regularly monitor the expiry date and available stock.



Fig. 9 Inventory Management

Source: Author

According to the interview result with Suma Farma, they do not have any policy for inventory management; they only use what medicine is available in the warehouse. They have stock names conducted by other staff, except for the manager and administration staff. If the medicines are almost expiring, they will display and sell them immediately. While H2O and K-24 use policy to display medicines based on the expiration date, which one has a shorter life, the medicine is to be displayed first, or it is called the First Expired First Out method and the First In First Out method. Both H2O and K-24 have policies to store their medicines, from generic to high-alert medicines such as narcotic and psychotropic, which is in accordance with the Regulation of The Minister of Health Republic of Indonesia No. 73 Year 2016 about Standards of Pharmacy Services. The difference is that there is no specific temperature requirement stated in the SOP of H2O, while K-24's manager stated that they have a requirement for temperature in the warehouse.

H2O and K-24 have their system to monitor the availability of stock. H2O uses the POS system, while K-24 uses OK-SOFT to help them remember when to reorder the medicines. In an interview with H2O's manager, he stated that the system will provide the percentage of safety stock threshold. Once it has reached the threshold, the system will automatically remind them to reorder that medicine. It is usually used for generic medicines, which are often sold out quickly (fast-moving). The problem is they sometimes forget to reorder the patent medicines (slow-moving) as they are not sold out quickly. Thus, it can be concluded that the inventory management of K-24 is slightly better than H2O.

d. Technology Adoption

According to King (2024), the future of pharmacy will utilize more technology to assist service delivery and to optimize the business process. According to the observation and interview results, H2O utilizes technology to manage the inventory through the POS system only. They do not utilize any technology to store customers' data, such as diagnoses and clinical notes, while the health conditions and diseases suffered by every customer are different.



Fig. 10 Technology Adoption

Source: Author

Compared with Suma Farma, which still adopts manual work, H2O is better than the competitor. However, compared with K-24, which owns many chains, K-24 is more advanced in technology adoption since they must utilize a database and centralized system for pharmacy operations, standardize the service, and monitor financial performance for a better strategy initiation. According to the interview with the manager of K-24, they usually store customer data in the system, which is all maintained by pharmacists. Although sometimes there will be any bug or error, in K-24, the error will be solved by central IT, which is very responsive in 24 hours. The pharmacist of H2O said that it would help improve their service delivery process if they could utilize the technology.

e. Selling Knowledge

According to McDonough and Doucette (2003), selling Knowledge can help the pharmacy attract and retain customers. Selling Knowledge combines medical knowledge, active listening, and empathy. In the interview with the owner of H2O, he said that currently, the staff lacks selling knowledge to direct the customers to better medicine and respond to complaints about price.

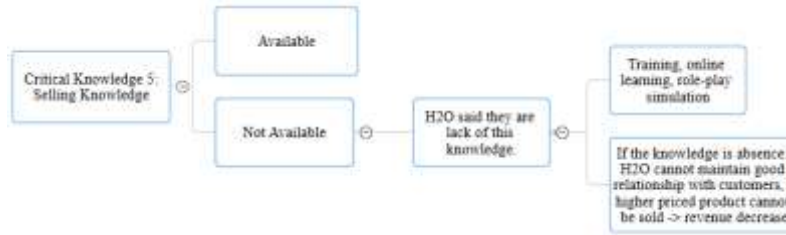


Fig. 11 Selling Knowledge

Source: Author

Based on what the owner of H2O said, if selling Knowledge is absent, H2O cannot maintain a good relationship with customers. Besides this, H2O cannot gain profitability due to its inability to handle customers' complaints about price. Selling knowledge is not only about selling the product; the staff needs to listen actively to customers' needs and then communicate the product. The ways to provide the selling knowledge are through training, online learning, and even role-play simulation for practicing active listening and empathy.

F) Business Solution

a. People, Process, Technology

The business process of H2O will be redesigned to improve efficiency and effectiveness. The first step is to determine the people who support redesigning the process to include knowledge management and, finally, identify the technology needed to support it.

Table 5: People, Process, Technology (Proposed)

Critical Knowledge	Objective	People	Process	Technology
Medicine Knowledge	To deepen the understanding of medicine for improving the service quality	1.Pharmacist 2.Manager 3.Assistant Pharmacist and Staffs	1.Training 2.Community of Practice 3.Medicines data archiving	1.Google Spreadsheet 2.Google Drive 3.WhatsApp
Communication Technique	To improve the attitude and communication skills of staff in serving customers and handling complaints, which can increase customer satisfaction	1.Pharmacist 2.Manager 3.Assistant Pharmacist and Staffs	1.Customer Data Archiving (allergy history, sickness) 2.Online learning 3.Morning Catch Up	1.Youtube 2.WhatsApp 3.Customer Database (Google Drive)
Inventory Management	To reduce the lead time for slow-moving medicines procurement due to ignorance	1.Manager 2.Staffs	1.Document threshold 2.Weekly reporting	1.POS system 2.WhatsApp
Technology Adoption	To monitor the performance, improve service delivery, and improve financial performance	1.Manager 2.Staffs	1.Sales and expenditure documentation 2.Customer data archiving 3.After Action Review	1.Google Spreadsheet 2.POS system 3. Machine Learning (Decision Tree) Software
Selling Knowledge	To attract and retain customers, increase sales	1.Owner 2.Manager 3.Pharmacist 4.Assistant Pharmacist and Staffs	1.Online learning 2.Simulation 3.Training	1.WhatsApp 2.Youtube

Source: Author

b. People

The best practice of business process redesign based on Mansar and Reijers (2005), which is relevant for H2O, is more empowerment of people to give them authority for decisions and motivate them to be responsible. To start the initiative, the key people who will redesign the process are the pharmacist and manager. The pharmacist will act as the knowledge management leader for the management of Knowledge about medicines and communication to do counseling since she has the Knowledge and experience in medical counseling that will be effective in managing Knowledge about medicine and

communication. The manager of H2O will act as a knowledge management leader in inventory management technology implementation to assist in raising staff awareness about how technology can help them execute their work. Finally, the owner of H2O will act as the knowledge management leader in selling knowledge as he knows the strategy of H2O well and what selling knowledge will be relevant to use to align with the goals.

c. Process

The process will be redesigned to improve the efficiency and effectiveness gap from the current business process by identifying the elements of the BPR framework by Mansar and Reijers (2005), shown in the following figure.

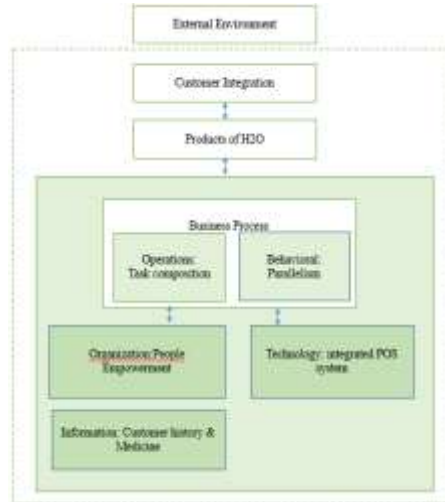


Fig. 12 BPR Framework of H2O

Source: Author

Based on the framework, the business process will be redesigned with the flow in the diagram below.



Fig. 13 Redesigned Business Process of H2O

Source: Author

The redesigned process is more concerned with the knowledge management process and the performance evaluation. H2O Pharmacy needs to take into account the knowledge management process such as:

1. Knowledge sharing (training) can equip staff with a comprehensive understanding of all medicines at H2O, communication techniques, and the ability to sell knowledge and knowledge to operate the technology, including machine learning software. This can enhance the staff's knowledge and enable them to quickly provide the medicines customers request. It can also help them master the knowledge to provide effective counseling, manage complaints, and utilise related technology, improving service efficiency and effectiveness.

2. Monthly catch-up to reinforce key operational standards at H2O, including effective communication, attitude, medicine data review, and inventory threshold monitoring. This initiative is aimed at minimizing errors, reducing time to refer back to SOP for routine tasks, and enhancing service delivery speed without compromising quality. Consequently, this initiative will improve both efficiency and effectiveness.

3. Data archiving stores important data related to customers' history of allergy disease. Staff can efficiently recommend appropriate medicines by referring to past customer records, avoiding the same inquiries for recurring customers. According to the interview, most recurring customers will purchase the same medicines, which makes this approach useful to reduce service time and improve customer satisfaction.

In addition, maintaining a database of medicines, including the details on packaging characteristics, will be useful to assist customers who may not recall specific medicine names. Instead of manually searching for medicines which match the vague

descriptions, staff can quickly identify the related medicines through the database and provide the right medicines. This can minimize service delays and ensure accuracy.

4. Monitoring inventory thresholds based on historical customer demand data enables staff to initiate procurement in a timely manner to minimize the risk of medicine shortage, particularly for slow-moving medicines that are often overlooked. This initiative ensures operational efficiency at H2O Pharmacy and maintains customer satisfaction.

5. Complaint management is essential to enhance the efficiency and effectiveness of business processes. Identifying recurring complaints and developing action plans to resolve the complaints will improve customer satisfaction as customers feel their feedback is acknowledged and used to enhance H2O's service. To effectively implement complaint management, H2O should implement a training program, including role-play simulation, to equip staff with skills to address recurring complaints effectively through practice.

6. After-action review is an important process to evaluate the result of redesigned business process. It incorporates customer and employee feedback to identify the success and areas for improvement. This initiative will enable H2O to learn lessons, prevent recurring mistakes, and highlight the best practices that achieve desired outcomes. Enhanced discussion during the review can further contribute to developing more impactful solutions.

d. Technology

Another relevant best practice of Mansar and Reijers (2005) to redesign business processes is technology implementation. Technology is needed to improve business processes, such as Google Spreadsheet, which records the medicines' data (dosage, function, side effects) and customer data (name, age, health condition, allergy history). Google Drive is used to store all data, and YouTube is used as a learning platform.

In addition, integrating AI at H2O Pharmacy offers a significant opportunity to enhance business process efficiency and effectiveness. The advancement of machine learning and deep learning technology has expanded the application of AI, improving operational efficiency, disease diagnosis accuracy, monitoring and overall customer outcomes (Chalasani, 2023). By leveraging AI algorithms and machine learning, H2O Pharmacy can efficiently analyze patient data, including medical records and allergy histories, to identify potential drug-drug interactions, assess the safety and efficacy of medications, and provide personalized recommendations (Chalasani, 2023). Machine learning techniques such as decision trees can accurately predict allergic reactions, recommend appropriate medicines for customers, and develop selling strategies through bundling, discounts, and other promotional offers.

e. SECI Model

The SECI Model Nonaka (1994) developed for knowledge creation in H2O will be adopted. The activities of Socialization, Externalization, Combination, and Internalization to support business redesign in H2O are shown in the following table.

Table 6: Proposed SECI Model

Socialization: - Training - Morning Catch Up - Job Rolling - Role-play simulation - Community of Practice - After Action Review	Externalization: - SOP - Best Practice Paper - Customer and Medicine Documentation - Lesson Learned Paper
Internalization: - Youtube (Online Learning) - Inventory threshold documentation	Combination: - Google Drive (Customer and medicine data archive) - Whatsapp, POS System

Source: Author

The knowledge creation processes consist of the following:

1. **Socialization.** Training is conducted more regularly to ensure the competency of staff to fulfill the expectations of pharmacists to explain the medicines in more detail (how to consume them, how long they are consumed, and what their function is). Morning catch-up reminds us of important things to be highlighted in the day, including customer data archiving, inventory monitoring, and attitude in serving customers. After the action review, the goal is to monitor the financial and staff performance, highlight the best practices and initiate the following action to improve the performance. Job rolling can improve the efficiency of the business process as the staff will not be limited to their job descriptions; they can do other tasks and help the other staff when they are hectic, which increases flexibility. Role-play simulation is used to make the staff learn quickly through practice. Community of practice, especially for pharmacists and assistant pharmacists,

can foster continuous learning and collaboration for medical-related Knowledge, which can improve the counseling method by assistant pharmacists. If the pharmacist is absent, therefore they can fulfill customer expectations.

2. **Externalization.** It consists of SOP, best practice paper, customer and medicine documentation, and lessons learned paper. SOP is the main guidance for the staff to maintain the operations of H2O, which has an important role in keeping the standard of service and telling the staff what to pay attention to. The best practice paper will highlight what practice can successfully achieve desired outcomes, which can be a learning document for the other staff. Customer and medicine data needed to be documented so that the staff did not need to ask the pharmacy every time they encountered the same case. Lessons Learned paper tells what area needs to be improved to avoid making repetitive mistakes.

3. **Combination.** It consists of the utilization of Google Drive as the database for storing all documents which are needed for analysis and decision-making, WhatsApp as a platform for communication and collaboration of teams, and the POS System, which is currently used to manage inventory to reduce the risk of expired product and inventory shortage. Machine learning for quick decision-making to provide the right medicines based on the health condition of customers.

4. **Internalization.** It consists of online learning and document threshold. Online learning from Youtube about the selling knowledge, attitude and communication techniques for counseling and complaint management that can be accessed anytime, anywhere. The document threshold is used to monitor the inventory threshold, especially the slow-moving one, to avoid ignorance.

f. Knowledge Management Map

The initiatives of knowledge management will be presented in the knowledge management map as follows:



Fig. 14 KM Map

Source: Author

The criteria in the knowledge management map for H2O are as follows:

1. People: owner, manager, pharmacist, assistant pharmacist, and staff.
2. Process: training, job rolling, after-action review, SOP, simulation, data archiving, community of practice, morning catch-up, best practice paper, and lesson learned paper. All of these are needed to ensure the competencies of human capital to achieve the goal of an efficient and effective business process for H2O to increase profitability.
3. Technology: Google Drive, Google Spreadsheet, Youtube, WhatsApp, POS System, AI Machine Learning to support knowledge management.

g. Implementation Plan and Justification

Based on the discussion above, the objective for developing knowledge management in H2O will be implemented based on the implementation plan below.

Activities	PIC	January	February	March	April	May	June	July	August	September	October	November	December
Preparation		w1	w2	w3	w4	w1	w2	w3	w4	w1	w2	w3	w4
Performance Metrics Setup	Owner												
Pharmacist and Manager Training	Owner												
System Development													
Business Process Redesign	Owner, Pharmacist, Manager												
Technology implementation	Owner, Pharmacist, Manager												
Knowledge Repository Setup	Pharmacist, Manager												
Implementation													
Staff Training	Pharmacist, Manager, Staffs												
New Policy Setup	Pharmacist, Manager												
Knowledge Sharing	Pharmacist, Manager, Staffs												
Monitoring and Evaluation													
Review Performance	Owner, Pharmacist, Manager, Staffs												
Adjust Process	Owner, Pharmacist, Manager												

Fig. 15 Implementation Plan

Source: Author

According to the implementation, the project will be divided into four phases:

1. Preparation phase. During this phase, H2O will be prepared to implement knowledge management by conducting the first training for pharmacists and managers to know the purpose of this project and what to do in the future as a knowledge management leader. After that, performance metrics for measuring the efficiency (time of service delivery) and effectiveness (customer satisfaction).
2. System development phase. In this phase, the current business process will be redesigned to be more efficient and effective as an additional knowledge management process. Then, implement and customize the technology such as Google Drive, POS system, and AI-Machine Learning, and create knowledge repositories (SOP, customer and medicine database).
3. Implementation and training phase. In this phase, training sessions will be conducted for all staff regarding the new process and technology used by H2O. Review and add some policies about communication, inventory management, and selling methods.
4. Monitoring and evaluation phase. This phase will focus on the performance reviews for one year and evaluate the effectiveness of knowledge-sharing activities, knowledge repositories, and service delivery. If there is any discrepancy, adjust the process based on the feedback given by staff.

IV. CONCLUSION

H2O Pharmacy's profitability has been compromised by high operational costs contradicting its cost-leadership strategy. The primary challenge lies in service delivery inefficiencies, manifested through extended wait times and increased customer complaints compared to competitors. These issues stem from an unstructured knowledge management system, where tacit and explicit knowledge are managed informally through verbal communication and on-site training. To address these challenges, implementing a systematic knowledge management approach based on the SECI Model, supported by appropriate technology, will streamline operations, enhance staff competencies, and improve service delivery. This integration will align operations with H2O's cost-leadership strategy, ultimately improving profitability.

To address the identified issues, the following recommendations are proposed for H2O Pharmacy:

1. Redesign business processes by integrating knowledge management using the SECI Model to facilitate knowledge creation and sharing. It is aimed at reducing service delivery time and enhancing customer satisfaction.
2. Upgrade technology infrastructure to include features for customer data management in POS systems that can be integrated with AI and Machine Learning for counseling and medicine recommendation, slow-moving inventory management, and performance analysis. Then, a database will be created to archive customer and medicine information for faster access to the knowledge without asking the other staff/pharmacist. Thus, the speed at which service is delivered will increase, and the complaints about waiting time will decrease.
3. Refine current training to be more comprehensive, focusing on medical knowledge, effective communication techniques, selling knowledge, and using role-play simulations to enhance practical skills.
4. Enhance customer experience by developing strategies to handle complaints effectively, including an escalation process for unresolved issues. Then, create a feedback loop where customer insights can be used to improve the service.
5. Monitor and evaluate. Use the performance metric to assess the impact of KM initiatives and adjust the process based on feedback.

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