An analysis of the People's Public Hospital

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Executive Summary

The population of Bundaberg had significantly increased after a boost in their local economy and building more homes, businesses, attractions etc. The one and a half century old Bundaberg Base hospital was getting overcrowded and the treatments of patients were getting delayed to almost a month. The newly built hospital, The People's Public Hospital, offers a big range of services with more rooms for more patients. The hospital was opened in 2060. There are concerns for the future of the hospital because if the Bundaberg keeps increasing their population the hospital could again get overcrowded. In this report, it has been found that patients can tend to stay longer if their treatment is incorrect and it would mean there would be less room for more incoming patients. By adding a database, it increases and speeds the performance of the staff members. It also helps patients recover quicker and be released to the public meaning that it will create more space for more incoming patients.

Keywords:

Activity system diagram – Shows a collection of activities, processes or tasks performed by a group of people in pursuit of a goal.

Business process model notation (BPMn) – A representation for specifying the business processes in a business process model.

Human activity system (HAS) – Comprises a logical collection of activities performed by some group of people.

Information system – System of communication between a group of people to coordinate the action of individuals

Mintzberg's classification – Looking into the ways organizations are structured.

Porter's competitive force model – Consist of five forces analyzing the intensity of the industry and business.

Porter's value chain model – Analyzing the set of activities performed by the organization to deliver a good service or product for the market.

1.

1. Introduction

The government invested $2 billion in creating a new hospital replacing the old Bundaberg Base hospital. In 2014, the population of Bundaberg reached 100,000 people (Bundaberg facts and figures, 2016). The population has significantly increased to more than 900,00 people in 2057 after their local economy was boosted from the adding new theme parks, more tourist attractions, and jobs. The residents demanded a brand new hospital as there were too many people and it took almost a month to admit a new patient into the hospital. The government had decided to get rid of the old building, the Bundaberg Base hospital, which was built back in July 1914 and had been open for more than one and a half century. The new world class hospital offers a big range of services to the community of Bundaberg. Since its opening in July 2060, customers are satisfied with the hospital's services, however, with the continuation of the growth in population, the community does not want the whole business to slow down in assisting their customers. In this report, we analyze the whole business of the hospital, learn more about how they assist and treat patients, find problems and think of a solution for it.

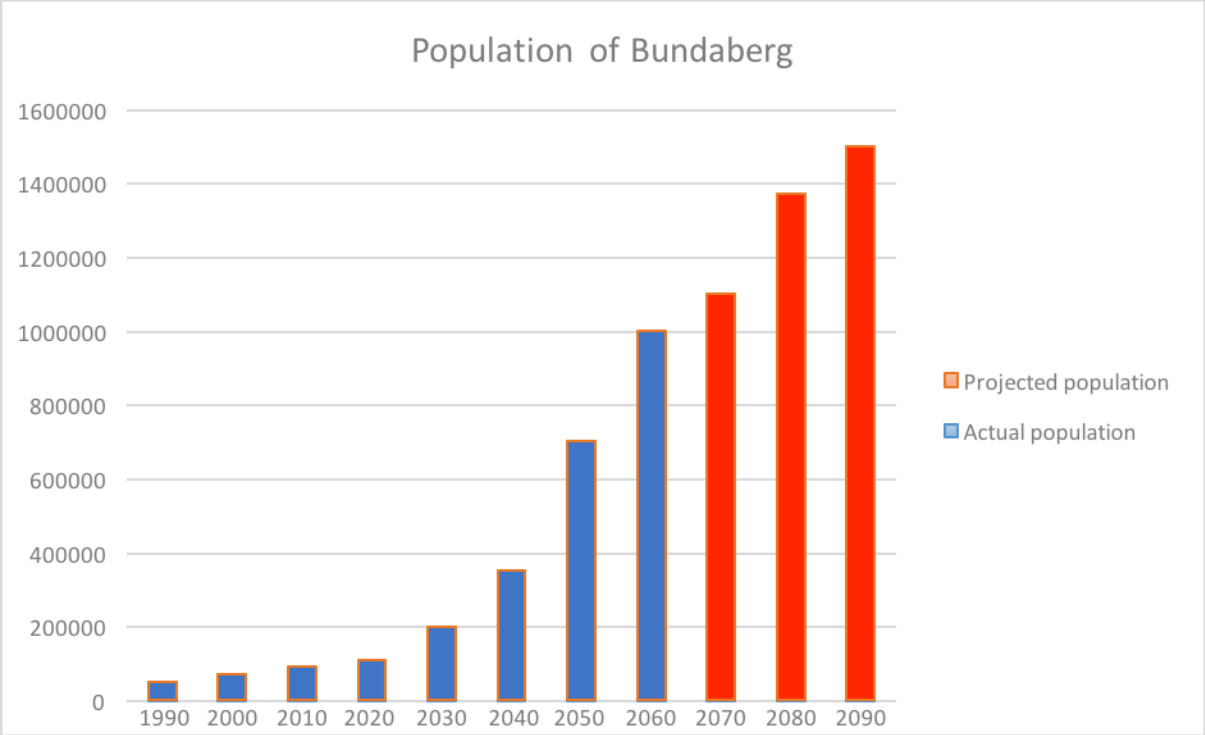


Figure 1.0 – The population of Bundaberg.

2. An overall analysis of the business of the hospital:

2.1 Part 1- question a:

The brand new building, The People's Public Hospital, was opened to the public in July 2060. It is located in Bundaberg, Queensland Australia, replacing the old Bundaberg Base hospital which was built in July 1914. The Bundaberg community has been provided a new world class standard hospital aiming to bring the best possible service to their customers by solving their problems and giving them a satisfying treatment. The hospital also aims to help Queenslanders get healthier, get good quality service, improved health outcomes, and an engaged and productive workforce.

The government wants every person to be served correct and fairly, so, therefore, all health businesses have to follow the Department of Health strategic plan (Health qld gov, 2016). The strategic plan means the purposes of all health businesses has to give leadership, direction and work together to make sure that the health system is safe and responsive to their community and Queenslanders.

The hospital's services include:

-Oncology
-Neurosciences
-Orthopedics
-Pediatrics
-Pharmacy
-24-hour emergency department
-Nephrology – including renal dialysis
-Cardiology
-Gynecology
-Infectious diseases
-Clinical lab
-Respiratory medicine
-Mental health service
-Medical and surgical service
-Radiation therapy services
-General surgery
-Vascular surgery
-Ophthalmology
-Obstetrics
-Pathology
-Pediatrics surgery
-Trauma response
-General medicine
-Neurosurgery
-Child health
-Hematology
-Intensive care
-Ear, nose and throat
-Urology
-Newborn care unit
-Medical assessment unit
-Rehabilitation
-Geriatrics

Although the hospital provides these services, there are also other competitors nearby. There are eight other health businesses in Bundaberg, two of which are also hospitals. Four businesses are clinics and the other two are pathologies. However, the competitors do not offer the same services as the people's public hospital. Their services are minimal.

2.2 Part 1- question b:

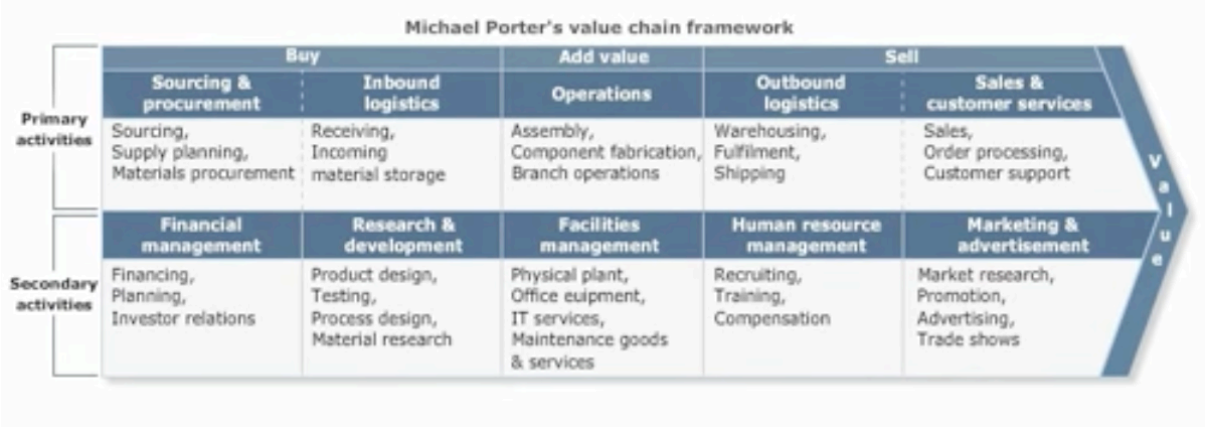
The organization form of the People's Public Hospital in *Mintzberg's classification* is professional. This organization form is also very bureaucratic, similar to the machine organization. Whoever, the use of the professional organization form is dependent on highly trained professional workers (*Mindtools, 2016*). In the People's Public hospital, the organization depends on all the healthcare workers to take care and treat the patients. The decision making is decentralized meaning that the doctor, which is the leader, decides what is best for their patient and getting their treatment. For example, the doctor decides that the patient will have to get a heart transplant, so a team of surgeons will follow and concentrate on the doctor's decision.

Each task has a formal planning and then an analysis of the procedures and the efficiency of the task. In the hospital, there are many different departments and services. For example, a department does surgery, so the workers within that department only focus on doing surgery on patients. Another example, a 24-hour emergency department focuses on incoming patients coming straight from the public, organizing the patient, and organizes what treatment they need and allocate them to a department and ward of the hospital. Tasks are grouped by their departments.
Although the hospital provides many services, there are many different staff roles within the hospital. The staff members include (Better Health, 2016):

- Nurses – Where they manage the patient's care and treatment in the hospital.
- Health professionals – Who help treat conditions and try to prevent the person's disability and disease get worse. Workers such as dietitians, podiatrists, physiotherapists etc.
- Doctors - Medical staff.
- Support staff – Workers such as volunteers, ward clerks, clinical assistance.

The hospital has staff members grouped into a team to work on a department. This is why the organization form of the hospital is professional as it has a large number of workers and teams with the knowledge and skills to help patients.

2.3 Part 1- question c:



3.

figure 2.0 – Michael *Porter's value chain framework*.

Using Michael *Porter's value chain framework*, the primary activities of the hospital are sourcing & procurement, inbound logistics, operations, outbound logistics, and sales & customer services. These primary values are combined into three main groups, buy, add and sell (Youtube, 2016). The first group, buy, includes the sourcing & procurement, and Inbound logistics. In the sourcing & equipment, the hospital purchases the equipment such as beds, machines, office equipment, medications etc. The inbound logistics is the hospital receiving the purchased items and storing them in cabinets or rooms of the hospital. The next group, add, has the primary activity, operations, where the hospital has a clinical lab to create vaccines and also getting the beds and equipment ready for the next patient. The last group, sell, includes outbound logistics, and sales & customer service. The produced vaccines are sold to patients, they are also provided with beddings which the hospital offers to the patient. The hospital buys the required things, combine it and have it available for customers to buy and use. This whole buy, add and sell process all add value to the business of the People's Public hospital.

The secondary activities support either one or the entire group of the primary activities (Youtube, 2016). The table below shows how the secondary activity supports the primary key.

Secondary Activity	What primary activity does it support?	How does it supports the primary activity?
Financial management	Sourcing & planning.	There was an investment of $2 billion dollars in the new hospital. Enough money to also get all the required products, materials, and equipment.
Research & development	Inbound logistics & operations	With the research, the required things like equipment, products were purchased, received, assembled and tested.
Facilities management	Inbound logistics	All equipment, and products looked after, managed and serviced for it to work properly.
Human resource management	All primary activities	Staff members are brought in to work for patient's care. They are trained for the job and apply their knowledge and new skills to the customers.
Marketing & advertisement	Outbound logistics	The clinical labs can maybe find a new cure/treatment which the hospital can sell it to other health businesses.

Table 1.0 – The secondary activities supporting the primary activities with explanation.

2.4 Part 1- question d:

The following table below is an analysis of the competitive strategy of the hospital using *Porter's competitive force model.* Each of the five forces determines if the intensity of the force is low medium or high.

Force	High, Medium or Low force?
Bargaining power of customers	**MEDIUM** – There are always customers coming needing treatment or health assistance. Patients can be sent to the hospital by their doctors or in an emergency situation. The hospital is always open for those who need help. However, if the person has Medicare, the hospital doesn't get money directly from the customer, they get the money from the government. Half of the residents in Bundaberg have Medicare.
Threat of substitutions	**LOW** – As there are other clinics, pathologies, and hospitals nearby. The People's public hospital has a whole range of services. Other business does a few of the same services.
Bargaining power of suppliers	**HIGH** – The medication can also be supplied to all the nearby health businesses. Supplies are shared. Most of the supplies would go to the new hospital as there is a large amount of services that the hospital offers. Supplies can run out quicker than other small medical businesses.
Threat of new entrants	**LOW** – There could be another investor and build a brand new hospital that could be bigger and better. This would change the people's choice of going to the People's Public hospital. They may want to go to the newer place because it's cleaner. Whoever, the amount billionaires who are willing to invest in a new hospital are minimal. A new hospital would cost a lot to make it better than the People's Public hospital.
Rivalry	**LOW** – There are other similar services nearby. Where people may choose to go to a private hospital instead of the public hospital. Pathologies nearby compete with the People's public hospital where they can also find the right treatment and cure for the patient. However, the hospital has a lot of services and a majority of it isn't

	available anywhere nearby.

Table 1.1 – *Porter's competitive force model* analyzing the hospital's strategy.

3. Analyzing an existing human activity system which is problematic:

3.1 Part 2- question a:

Dietitians are experts on nutrition and food. They are professionals who are qualified to work within the health industry. They work closely with patients to assess, diagnose and treat them, giving them the correct diet and nutrition based on the person's current health condition (Bda, UK, 2016). The hospital needs dietitians as they are one of the important members in the hospital. They're located in all areas of the hospital and are important because they help patients heal faster and by getting them out as soon as possible, the hospital can create more room for new customers.

The human activity system of the dietitian is to give advice to patients on an ideal diet and they also assist nurses. Their role is to go to the hospital, go to each ward and help as many patients they can, and give advice (Hamilton Dietetics Blog, 2012). Also, they have to go to the hospital kitchen and oversee the nutrition services to ensure that food is safe and up to appropriate temperatures, making sure the cross-contamination between patients and staff are limited. They have to make sure that their patients get their nutrients, calories, and vitamin and mineral content (Robertson, C., Hospital, R., Health, S., Health, D. and Healthcare, I, 2016). This is the dietitian's human activity system (H.A.S). However, there are problems that stakeholders find within the H.A.S of the dietician.

Stakeholders have seen a few problems in the human activity system of the dietitian such as:

- The dietician treats the patient twice or another dietitian comes to the patient who has already been served.
- Dieticians face a lot of patients. Memorizing each person's health is hard for them. They also have to read their past notes to remember what they did.
- The communication between the kitchen and the dietician is minimal. The selected nutrition by the dietician isn't directly sent to the kitchen. The requested food is written down on paper. The kitchen doesn't know what and when to cook the food. The dietitian has to inform them. This long procedure makes patient wait a long time for the food to arrive.
- The food can sometimes be given to the wrong person which can then affect their health.

The follow table bellow shows an analysis of the stakeholders in the human activity system:

Stakeholder	Role/Benefits(s)
Dieticians	• Give advice on dietary or nutrition and some education to help patient recover quickly. • Makes sure the patient receives the correct nutrition. • Able to communicate and work with other healthcare workers. • Organizes the food.
Patients	• Feels safe and secure through 24-hour security. • Relies on the healthcare workers.
Receptionist	• Organizes incoming and outgoing patients and visitors.

	• Gives information what's happening in the clinics. • Organizing people's appointments. • Gathers the patient's information. Files records. • Organizes incoming supplies like equipment and delivers it to a specific area of the hospital. • Makes sure that the medical offices run smoothly.
Nurse	• Able to take care of any patient. • In all areas of the hospital. • Understands what their coworkers are dealing with. • Able to work with others. Work in a team.
Families	• Families help the satisfaction of the patient. Improves the outcomes. Supports the patient.
Hospital company	• Income from customers and government. • Makes sure that the business is running according to plan.

Table 2.0 – Stakeholders of the Human activity system and their role and benefits.

3.2 Part 2- question b:

The following below is a rich picture. The picture includes the stakeholders that dietitians encounter and shows how the hospital works when a new patient arrives:

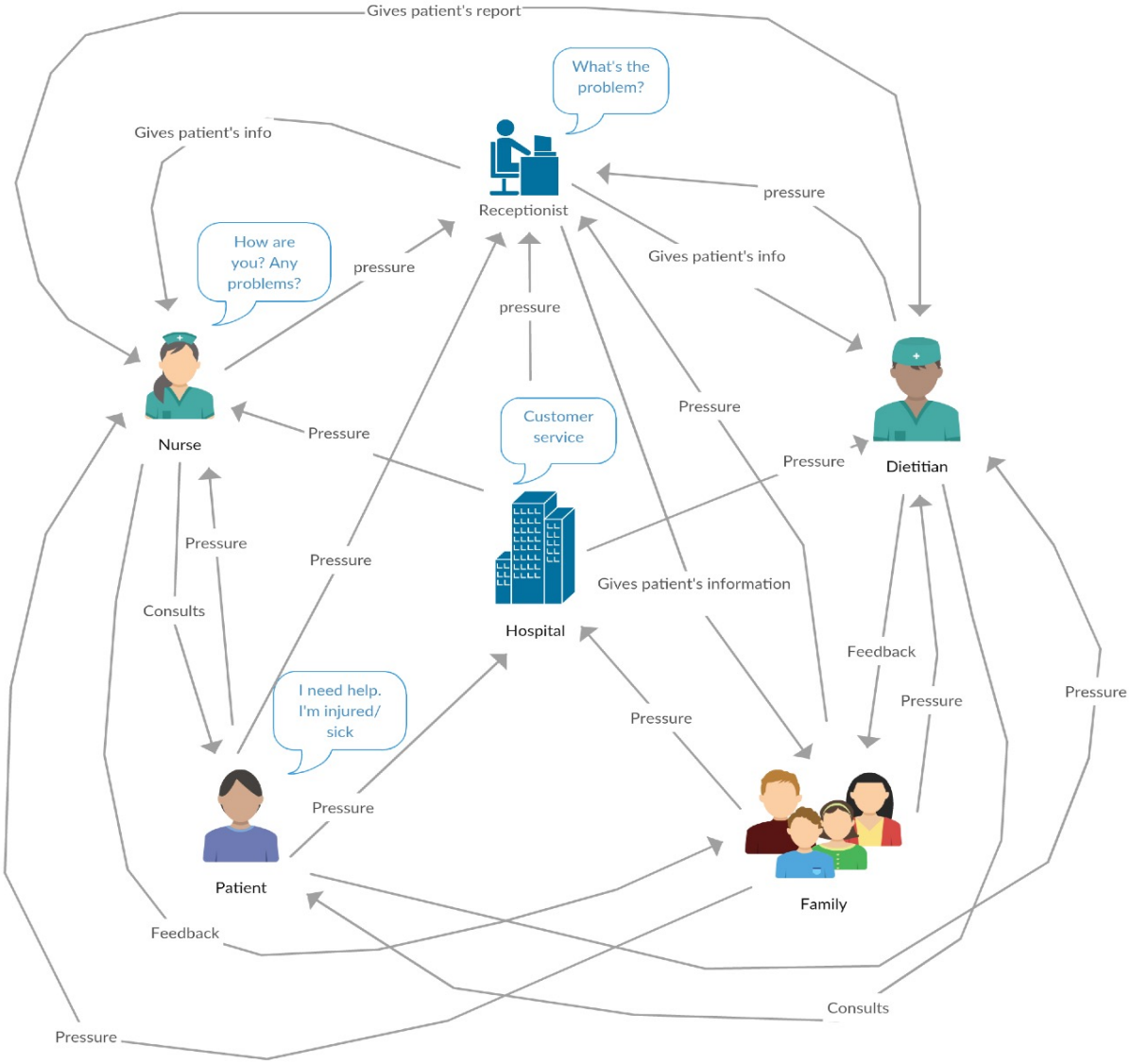


Figure 3.1 – The rich picture of the human activity system.

3.3 Part 2- question c:

The diagram below is an *activity system diagram* showing the human activity system's main inputs, processes, and outputs:

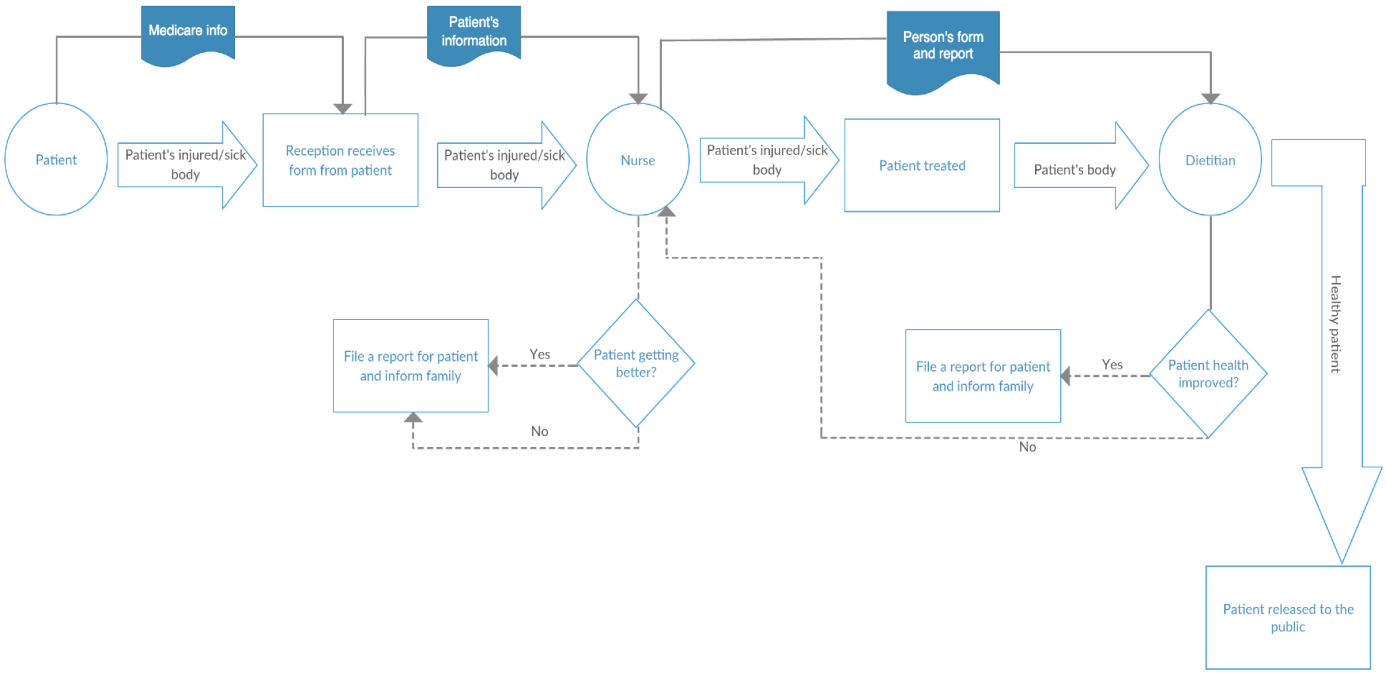


Figure 3.2 – The *activity system diagram* of the human activity system.

3.4 Part 2- question d:

The following is a diagram of the human activity system in the *Business Process* Model and notation:

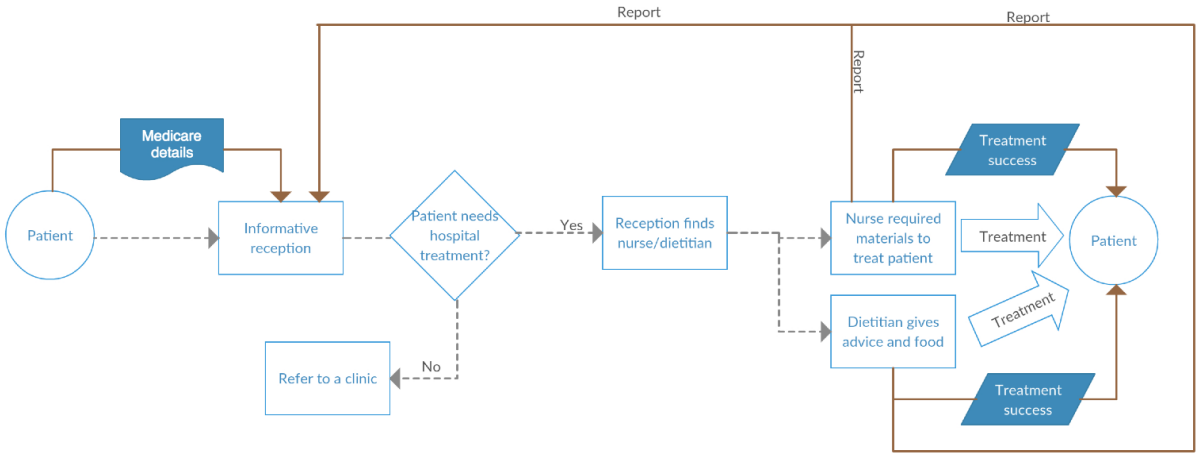


Figure 3.3 – The *Business process* model and notation of the *human activity system*.

3.5 Part 2- question e:

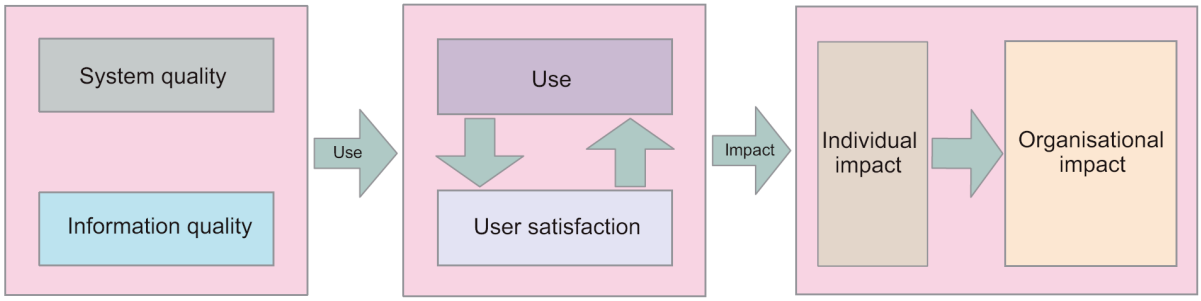


Figure 3.4 – The Delone-Mclean model of the *information system* success

Starting from the system quality in figure 3.4, the system quality is the whole hospital which is being run by healthcare workers. The information quality is a dietitian which they help the recovery of a customer. However, in the use of dietitians (figure 3.4, information quality), there are some parts of their job that customers get a dissatisfaction treatment (figure 3.4, user satisfaction). Customers found problems in the job of a dietitian like they tend to treat the customer twice by the same or another dietitian. There are also too many patients that dietitians face, the delivery of food can take a while and the food nutrition sometimes are given to the wrong person. These problems impact the individual user (figure 3.4, individual impact) as their recovery becomes delayed. The individual user can also impact the whole health organization (figure 3.4, organizational impact) as it creates less space for more incoming patients and fewer customers can be admitted.

3.6 Part 2- question f:

Efficiency: The *human activity* system is efficient in serving their patients. However, a failure like a miscommunication in the treatment of a patient can make the whole system inefficient. Taking more time and effort to treat the patient. It would also take longer to treat more incoming patients.

Efficacy: The hospital can transform their patients from a bad form to a good form. If the patient still continues to be in a bad form, the patient stays longer meaning that the patient will keep repeating the whole process until they're good.

Effectiveness: The HAS is effective because the patient does get treated and gets better to be able to participate in the public again. However, the when the wrong treatment is given, it could make the customer stay in the hospital longer because get their recovery is delayed or their health gets worse.

4. Suggesting a new *information system* to support the HAS of part 2:

4.1 Part 3- question a:

A new *information system* to fix the problem of the *human activity* system is adding a new online database system which is stores every patient's details and filed reports. The database can only be accessible for staff members of the People's Public hospital. This can add value to the business as it can speed up the whole process of the HAS. With adding a new database, this is how the new *information system* looks like:

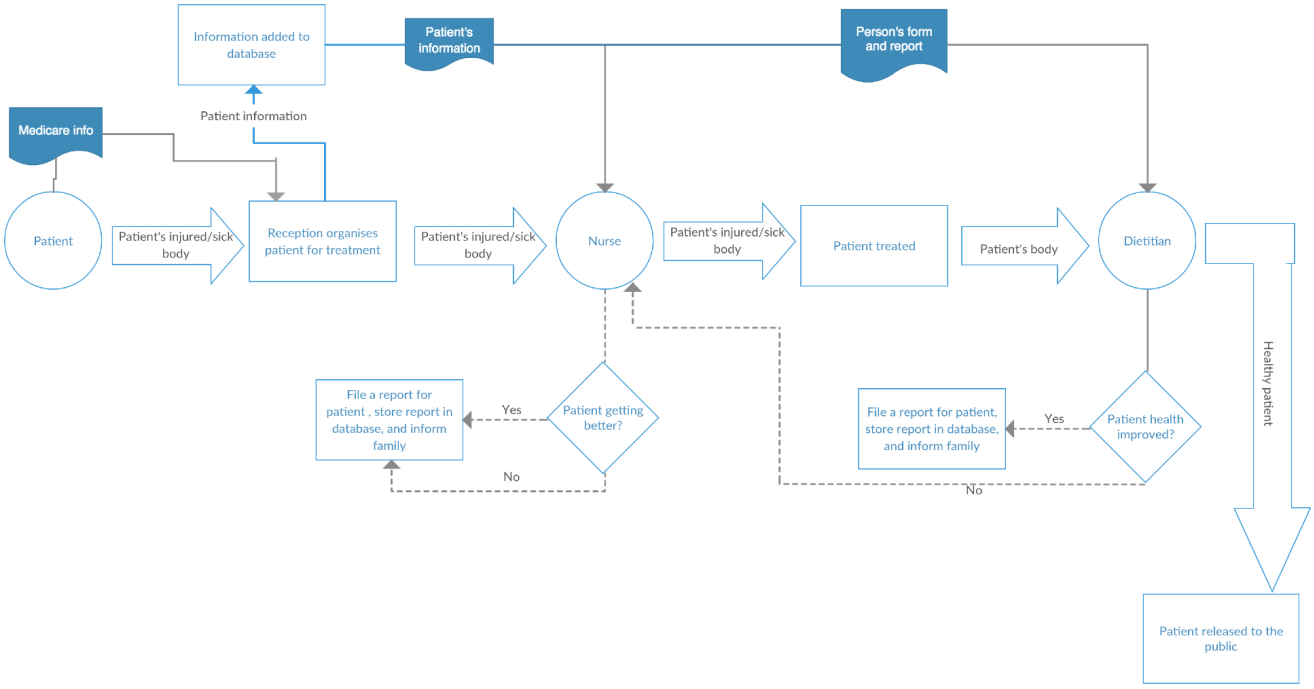


Figure 4.0 – The new *information system* supporting the *Human activity* system.

The stakeholders of the new system includes:

- Dietitian
- Nurse
- Families
- Receptionist
- Hospital business
- Patient

The stakeholders may still be the same as the ones in the *activity system diagram* and it may seem like there are more steps/procedures but with the new database, the process of the whole system will be more effective and efficient in assisting patients. The difference between the activity system and the new *information system* is that the patient's information doesn't need to be passed from one staff member to another. The database eliminates the passing of the reports.

4.2 Part 3- question b:

The new system involves a new online database which can store each patient's health, status, allergies, reports etc. It is accessible online in a secret server. The database can only be used and accessed at the hospital. Not only the nurse and dietitian can use it, every staff member of the hospital can use it to speed up and make their job easier. Every staff member will need to have a smart tablet to access the database and store files. As all the information can be stored in the database, the system can eliminate going to the reception to get files and reports whereas now, the staff member can get the files from the online database and open it on their smart tablets. This helps healthcare workers decide what they're next procedure is on the patient. The new system processes the whole *human activity* system faster.

4.3 Part 3- question c:

The following below is the process model using the BPMn notation for the new *information system*.:

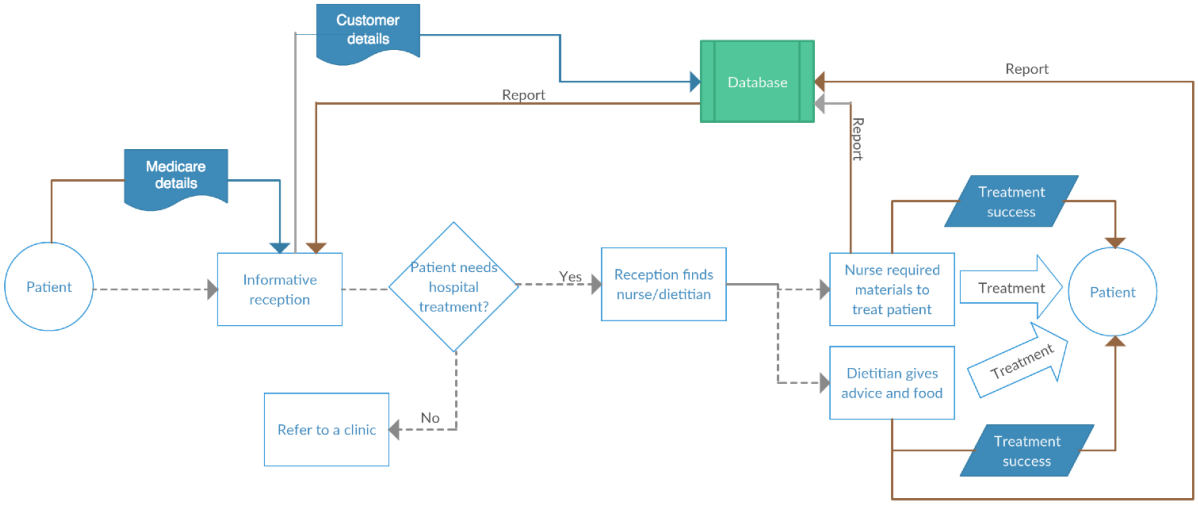


Figure 4.1 – New *information system* implemented into the BPMn notation

4.4 Part 3- question d:

The new *information system* within the hospital is at the back-end of the business because the only ones controlling the database are the healthcare workers. This database is restricted for use only by staff members of the hospital and the public and customers do not have control or use of it. To receive information from a new customer, they will have to fill a form on paper, give it to the reception and they will add the information to the database using a computer. Their details can be accessed for future use. Therefore, this system is at the back-end where customers cannot have the use of the database, only staff.

4.5 Part 3- question e:

The new *information system* has a big impact on the *human activity* system. The problems found in the HAS of the dietitian, were eliminated. This new system now prevents dietitians visiting any patient twice and it organizes each patient by matching their tag to their personal info and filled reports on the database. The dietitian can learn more about their patient by typing the patient's tag on their smart tablet. This eliminates their time going to the reception to get the details. The communication between the dietitian and the kitchen has also been improved. The kitchen can also access the database to see the dietitian's notes and see what food needs to be given to the patients. It also speeds up the process of the food and delivery. However, the food can still be given to the wrong person by misplacing the food onto the wrong tray.

A major concern with the database is that it could be hacked by the anyone in the public, it could cause chaos because the people do not want their information being attained by someone else. To prevent this, a good security firewall should also be added. Also, loss or overloading of data could have a big impact on the business of the people's public hospital. A backup data server should be included. The failure of the database can make every process slower.

4.6 Part 3- question f:

Efficiency: With the new system, the healthcare workers are more efficient because they are creating more time, and are able to visit more patients. The database makes their job easier. All the patient's files and reports are all stored on the database and staff can access it on their tablet and work from there.

Efficacy: Having the patient staying longer slows down the whole process. The new system helps speed up the patients' recovery. The workers can access the patient's record right where they are and on their tablet, see the problem and get an idea of what the next procedure should be.

Effectiveness: Having workers such as the reception, nurses and dietitians using the new system is effective in the whole process of treating the patient. The whole process is quicker with the database, creating healthy people and creating more room space for incoming patients. The whole business can use the database to speed up their process and be more effective.

5. Recommendations and reflection:

5.1 Part 4- question a:

In part 1, it was important to go in depth of the business of the hospital as it helped out in finding problems and solutions to fix or improve it in parts 2 and 3. With the solution of adding a new online database to speed up the dietitian's job, it speeded up the *human activity* system. This database can also be used for every other staff workers in the hospital to also speed up their job. However, the new system can fail if the database gets hacked, lost or overloaded. To prevent failure, the database needs to be secured with a firewall, a backup server where all the data can be duplicated to and optional reset of the whole database every week, month or yearly.

6. Conclusion

In conclusion, adding a secure online database in the business will help minimize concerns on the future of the People's Public hospital. In this report, the hospital had been analyzed seeing how the whole business ran, found problems and found a solution for it. It had been found that the business can slow down by having an error in treating patients. If the whole process slowed down, it would mean less room and lesser patients can be admitted into the hospital and there would be lesser revenue. It had also been found that adding a new database system does speed up the process of the patient's recovery because the staff can now commit lesser errors. Overall, there is always a problem in an organization and by researching and analyzing, problems can be found and be immediately fixed like speeding up the performance of the People's Public hospital by adding an online secure database.

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