DIGITAL TRANSFORMATION AT BB HOSPITAL

CASE STUDY

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Introduction

Under the category of Essential Domestic Services, healthcare is one of the industries undergoing the Industry Transformation Programme (ITP), aiming for a future-ready healthcare system. With an ageing population and rising chronic disease incidence, healthcare needs will increase in demand and complexity[1]. The main agenda is to address these issues with the manpower assets and accessible fiscal in a sustainable manner.

Multiple healthcare sectors have already explored at least one of the three strategies towards this transformation regime:

I. by enhancing skills-upgrading initiatives to build a future-ready healthcare workforce,
II. raising productivity by leveraging on assistive, cost-effective technology to simplify work processes and
III. coming up with patient-centric solutions, catalysing innovation and beta-test new technology in the hospital environment.

Background of BB Hospital (BBH)

BBH is now a 870-bed private hospital that has advanced over the decades, pioneering in medical specialities and services since its humble beginnings in 1868. The hospital has over 400 specialists that harness the latest medical innovations and technology and adopt a holistic approach to treatment to deliver the best medical care option available.

Our Vision: To be the leading healthcare provider in Singapore.
Our Mission: We deliver quality services to each patient through extensive incorporated clinical practice and ceaseless medicinal innovation.

[1] Cordeiro. (2017).

Figure 1: *Vision and Mission of BBH*

Figure 2: *Organisational Chart Representing Hospital Leadership of BB Hospital*

BBH believes strongly in raising the standards of care and efforts in world-class clinical training and research to improve the healthcare standards. As BBH continuously raise the bar on clinical excellence, this organisation is constantly caring for patients' needs for a more pleasant hospitality – one where they get consistent warmth of compassionate care in a mending environment.

However, in the recent months, competition in the healthcare industry has become noticeably intense as competitors has adopted interactive technologically-enhanced systems that helped to boost business processes. In 2017, manpower in BBH were revised in favour of cost-cutting and yet to achieve maximum productivity through a smaller workforce. Subsequently, this caused repercussions to employee satisfaction deteriorating from overloaded duties and extreme work shifts. As a result, both profits and productivity stagnated, also causing the bed occupancy rates to stagnant for the past 4 years.

Current Disruptive Business Issues in BBH

High Staff Turnover Rate

One of the biggest business problem faced by the hospital is the high staff turnover rate in the recent years. With Singapore's aging population, there is a great demand for the quality of healthcare and its services provided by all healthcare institutions nationwide. This has led to the demand in manpower at BBH.

Providing the highest quality patient care is a key aspect in BBH to all patients. As a result, staffs within BBH are facing heavy workload demands from patient care and additional administrative work. The signs of low morale within the healthcare team is observed which shows that the staffs at BBH are feeling burnt out from overwork.

> *"The long working hours can be mentally draining for the team. As much as we hope to provide the best service to our patients, it is difficult to keep up with the high demand of workload. This problem is aggravated by the low manpower in BBH,"* said Mdm Chong, one of the senior nurses in BBH.

Hence, BBH has been facing a high turnover rate in the recent years as many staffs has chosen the option of leaving the hospital if the management does not do anything about this issue. Efforts have been made to employ more staffs to ease the workload but to little avail.

Lack in Patient Safety, Real-time Monitoring of Patient Movements and Vital Signs

BBH has growing concerns in redesigning care processes like patient safety, which poses as one of the greatest challenges for a modern health service. This hospital deals with multiple transportation cases of sick patients and cases of lost, wandering dementia patients. Patients' movements and vital signs are monitored manually by shift jobs conducted by the nurse-in-charge and it becomes a challenge to keep a close surveillance to these patients and track real-time information due to lack of manpower.

> *"For a critically-ill patient, the reduction or change of care, and the movement itself, can become the cause of serious complications and put their health at risk. Cardiac arrest remains a concern for critically-ill patients undergoing transfer",* said Kwai Yoke, a nurse manager at BBH.

When transferring patients, it's important not to lose vital information. Recent studies indicate that transported patients suffer 2-4 times more complications than non-transported ones, and about 46% of patients experience health complications like having a sudden stroke when roaming around the large-area premises[2].

> *"It's very challenging to care for (dementia patients) because they forget and they don't know who they are, where they are and what they're doing",* said Mr Wong, one of the caretakers at BBH.

Whereas for dementia patients, Mr Wong claimed that caregivers have to chase after these patients, some of whom wander around or may also be destructive. Health professionals have been finding ways to monitor movements of patients to ensure a safer environment.

Ineffective Logistic Management

The hospital has started facing issues regarding logistic management in recent years where the volume of patients have increased. Since large volumes of linen are sent for cleaning at once, it is difficult to manually account for the amount of linen sent.

Manpower is needed to account for the stock of linen every week so that any faulty linen can be replaced. The process of stock taking is manual and time consuming.

[2] *Moving monitors, avoiding blind spots.* (2018).

> *"There are high volume of linen to be keep track every week and this is time consuming for us to track them manually. I believe something can be done to reduce the work. Perhaps the hospital can look into investing automated tracking systems which was done by firms in other industries, "* said Mr Tan, one of the logistic manager in the facilities department.

Another logistic issue would be the management of medical supplies. The hospital has been facing shortages of medical supplies due to inefficient management. The hospital staffs are manually counting, ordering and replenishing the supplies. Such process provides opportunities for human negligence and prone to human error as the the medical staffs have to account for large amount of supplies. Furthermore, medical staffs failed to be predictive in terms of making orders of medical supplies, resulting in several cases of shortage of medical supplies during certain medical procedures.

> *"We need to take extra effort to keep track of used medical supplies within every time interval. Medical staffs have to predict potential future demands for the supplies and to pre-order them so that BBH has enough supplies when needed. With the database of the medical supplies available, we could analyse these data and make predictions of future demand,"* said Mdm Tan, one of the nurses in BBH.

Inefficient Meal Preparations and Food Wastage Problems

Finally, BBH has also been facing the problem of inefficiency in food preparations and food wastage. Analysis of hospital operations has revealed three main causes of food wastage: (1) unserved food waste, which is caused by the over-preparation of food, resulting in leftovers at the end of meal session where there were a surplus of servings as compared to the number of patients; (2) untouched food wastage, which occurs when patients are unable to consume it for any reason, such as the patient being away from the ward due to treatment or surgery; (3) uneaten food wastage, which results from the food being left on the plate as the patient lacks the appetite to finish it, or the serving size is too large for the patient.

Many man-hours are also being used to collect the preferences of the patient and to cook and deliver the food, thus creating more inefficiencies for the hospital. BBH Hospital generates over 500 kg of food waste daily, and the cost incurred by the hospital is significantly high.

Important IS Issues Observations of BBH

It has been 3 months since iLEAD have been approached by BBH for digital transformation leadership and management advice. iLEAD went straight to the client's primary operations ground and made 3 important observations affecting its business.

Poor IT Infrastructure

BBH possesses poor IT infrastructure as they are still using a legacy Electronic Health Record (EHR) system, that is not well connected with other subsystems due to careless consideration of data flow. As a result a lot of data processing is often required to for the legacy system and all subsystems to work together. In addition, their old server is also put together with insufficient load, thus the server is often overloaded when there are too much patients. Whenever this happen, there is a risk of data lost.

> *"It's quite often that our system have downtime, the longest downtime occurred for 5 hours back in 2008 it was chaos and the IT department were always not responsive in solving the problem",* said Ms Siao, a head nurse at BBH.

One possible solution is to improve the IT infrastructure by switching the server to the cloud and to switch to a new information system.

Slow Response of IT Department

The IT department has a slow response time to rectifying IT issues. When IT assistance is requested, which often occurs during the busy operating hours where the load on the system is highest, the IT Department is usually busy preventing the system from going down as they view that as a higher priority. Thus, led to a general observation that IT team are slow to responding as a team and does not communicate well with other departments.

Misalignment Between IT and Business Strategy

The IT strategy is not aligned to the business strategy as the IT department is not effectively supporting business operations. This is mainly due to the bad culture that the department poses, cultivated by the mismatch in leadership style. There has been short in resources and funding towards the IT department, which then led the IT teams to only focus on maintaining the current infrastructure, instead of innovating.

Currently, the department is under the leadership of a non-IT professional. This is largely due to the executive not being interested in IT and believes that investing in upgrading is costly. The hospital decided that a non-IT supervisor will be able to manage the IT department as they are only responsible for maintaining the infrastructure. There were instances where some IT employees shared their ideas and feedback on improving certain existing systems or creating innovative solutions to existing growing problems, but was easily shot down as their leader did not want to take on extra work. Working in such an environment has led their IT staff to having low morales. Beside that there seems to have no communication between IT and other departments, in addition, the slow response to their requests has affected daily operations.

In conclusion, IT is clearly misaligned as there is a need for IT to support business, hence, there is a need for a major change to the IT department to allow technology to support BBH better.

Future Vision for BB Hospital

IS Strategy: To adopt strategic Information System Technology (IST) as a competitive weapon?

Organizations have increasingly been turning their attention to opportunities for achieving competitive advantages through IST[3]. However, as of now, BBH is adopting the Factory Strategy based off the McFarlan's Strategic Grid Analysis. The company depends heavily on IT for its day-to-day operations but has been underutilizing IT for implementing its business strategy - innovating towards offering better healthcare services.

[3] Kim, K., & Michelman, J. (2019).

Despite the high maintenance of day-to-day operations' systems, the hospital does not provide sufficient budgeting for improving technology. This implicates serious consequences for internal and external users when system fails for even a minute or so. Constant pressure on fixing the current infrastructure hinders innovation for the IT department to move forward and automate other business processes. With such circumstances, BBH should switch to the "Strategic Mode" instead of adopting the Factory Strategy.

Strategic alignment results from structuring the IT organization around the needs of the business. Thus, being strategic would help BBH in remaining competitive in the market. In BBH, a patient group usually demands higher quality of service. With continuous development and innovation, it could potentially improve the efficiency of the workforce with less manpower, to improve the quality of services offered with using less resources and to increase the efficiency of operations while cutting costs. Moreover, BBH requires a team of IT staff to be motivated in innovating as to play a part in this transformative journey. Lastly, the strategic IST introduced should focus on reducing the workload of staffs and allow them to focus more on patient care rather than tedious, repetitive work.

With much planning, these IT solutions should be aligned towards improving current business processes in order to support the business strategy and use it as a weapon to help BBH remain its competitive edge in the market.

Emergence of Portfolio Management and Governance in BBH

Due to the extensive nature of the transformational project, it becomes more beneficial to classify the IT investments that BBH will be undertaking under the portfolio allocation approach. The four broad classifications of IT investments are Transactional Investments, Informational Investments, Strategic Investments, and Infrastructure Investments. This section of the report will illustrate which classifications the proposed changes fall under and how it will benefit BBH.

Transactional investments help BBH to cut costs as well as serve to increase throughput for the same cost. The proposed improvement that falls into this category is the RFID Linen Leasing system. Transferring the tracking of linen to RFID tracking from manual stock-taking allows for hundreds of man-hours to be freed up, allowing for greater efficiency elsewhere in the hospital, as well as reducing the costs associated with the supply of linen.

Informational investments provide information to increase control and improve quality of services. The proposed E-meal order system falls under this category as it will provide BBH with greater knowledge of the dietary requirements of the patients, allowing for increased quality of food-related services. The proposed telemetry system will allow the hospital to be more efficient in tracking patients as well, giving the hospital greater control over their location information.

Infrastructure investments will boost the effectiveness of the IT services used in BBH, such as servers, networks and computers in order to increase Business flexibility and reduce IT costs. This results in greater data accessibility and efficient information sharing, allowing for standardization of record storage and reduced costs.

Strategic investments will help BBH to gain competitive advantage by supporting entry into new markets or by developing new products and services. The proposed solutions will all serve to increase the

effectiveness of the services rendered by the hospital and the efficiency of hospital processes by way of product and process innovation. This leads to an improved and renewed service delivery and greater competitive advantage, allowing for increased sales and better market positioning.

Decision/ Input rights	Telemetry	IT Infrastructure Strategies	IT Architecture	Integrated EMR, Medical Record System	IT Investment	Supply Chain Management System	E-meal System	RFID Linen Management
C - Suite		X	X		X			
IT department	X	X	X	X	X	X	X	X
Clinical Operations	X			X		X		X
Support Operations	X					X	X	X
BOD		X			X			

Figure 3: *IT Decision Domain*

Furthermore, as managing Information Technology matters is new to the hospital, iLEAD have also proposed a potential means to determine the decision domains of the individual departments as outlined in Figure 3 so that the responsibilities of the departments are outlined clearly. This will ensure that decisions and problems can be resolved quickly and the digital transformation process will proceed without major setbacks.

Managing IS Change: The Key to Successful Digital Transformations

Change in Management

Having identified and gathered the business issues of BBH, iLEAD held a meeting with the top management team, to convey the proposed solutions and plans to carry out the changes needed to change the overall business processes and IT structure of the organization. During the meeting, iLEAD first brought up the critical issues of the hospital that is hindering the mission to deliver quality care to all patients. The lack of IT support and involvement in the hospital business processes started to surface in the discussion of the critical business issues. As such, iLEAD took hold of the opportunity to convince that a strong presence of IT involvement and innovation is key to enable a more streamline process, as illustrated in Figure 4 and 5, and provide BBH with a better market positioning and competitive advantage over its competitors.

The CEO and most of the other top management team members were all keen on the proposed solution and have given their support for a change in the IT structure and process in the business.

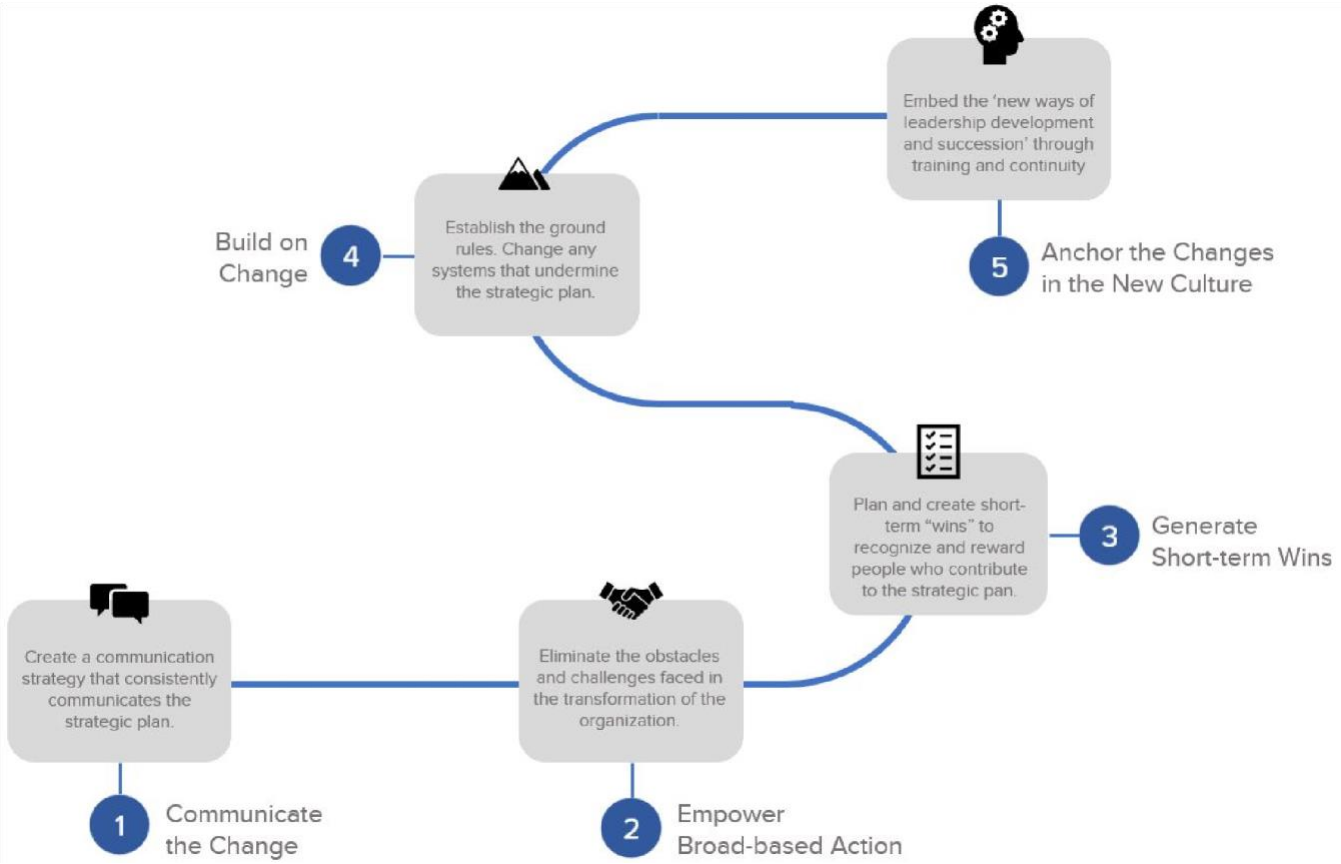

Figure 4: *5-Step Leading Organizational Change Journey Diagram*

Communicate the change	• Create a communication ground to echo the strategic plan • Arrange a town hall business meeting to discuss the change and open up for questions
Empower broad-based action	• Eliminate barrier to make changes • Transfer of power from COO to CIO regarding the management of IT in the hospital
Generate short-term wins	• System successfully implemented • Up to 50% on board with system • Free up 100 man hours • Increase bed occupancy • Increase in patient's welfare and satisfaction
Build on the change	• Regular assessment of change implemented/ feedback • Pinpoint areas with most/least success • Act on feedback
Anchor the changes in the new culture	• Ensure follow up and maintenance on the system involved • Maintaining legacy of CIO and form a new motivated culture in the hospital • Gaining trust from the employees regarding the work of IT department

Figure 5: *Further Explanation of Steps to Leading Organizational Change*

Tackling Resistance Within the Top Management Team

During the top management meeting, there were several doubts and questions raised by Mr. Alson Goh, Chief Operating Officer (COO), on the effectiveness of the E-meal online pre-order system. Mr. Goh commented:

> *"I agree that the E-meal implementation will be of help to the kitchen staffs in managing their food preparation process, to reduce wastage from over preparations but I don't see how it will benefit our staffs in reducing workload as the proposed system will still involve them to collect and key into the system manually."*

This statement indicates the lack of understanding of the hassle involved in the current meal ordering system within the hospital that is faced by the staffs. In response to this, iLEAD gave an insight of the staff's responses when they were questioned on the current process of meal ordering. One of such responses came from Senior Nurse, Jane Lee saying:

> *"Everyday the process of collecting meal orders from patients is so tedious and time consuming. A lot of time is spent on filling up meal slips for patient, confirming and clarifying orders to and fro from the kitchen. Also, there were times where orders were overlooked by the kitchen or meal slips misplaced, resulting in more unnecessary work for us. I wish there was an automated system in place to mitigate human errors."*

After some discussions, the management team acknowledged the struggle of the staffs on the ground and responded favorably to the proposed solution.

Chief Finance Officer (CFO), Ms. Grace Lim expressed concerns over the implementation costs as many of solutions involve a heavy investment on the IT development of the hospital. Ms. Lim seem reluctant to consent on certain implementations such as the RFID linen management system, in which she quoted:

> *"I personally find the RFID linen management implementation a redundant solution. I believe the management can find another way to better manage the linens to lessen our staff workload."*

In response to this resistance, iLEAD negotiated with the management team on the cost benefits of having an automated process to regulate and handle the meal-ordering system. This was done by drafting out the analysis of future benefit to convince the management team on that a total of 200 man hours will be saved weekly on the time-consuming manual process of collecting and washing the linen each time a patient is discharged. This frees up more workload and time for the nurses, which allows them to better able cope with other patient care duties. As such the intangible incentives of better quality care and improved staff morale can be achieved. Additionally, it was demonstrated to the management how the process will be streamlined to manage the linen inventory through the help of RFID technology. This demonstration gave the management team a better understanding of the process and its benefits, hence achieving consensus from the management.

Overcoming Resistance in the IT Department

The current state of the IT department has a not-so-ideal working culture and attitude due to the lack of IT leadership in the department. During the interaction with the department, iLEAD gathered several feedbacks from the department regarding the proposed IT solutions to tackle the hospital business needs. Much to iLEAD's surprise, there were many negative feedbacks and resistance from the department as these changes will require drastic restructuring and changes within the department which many deem as unnecessary. One of the Technical Support Officer, Janice Chew, mentioned:

> *"The management doesn't care about IT investment or innovation. Why bother to make all these changes now?"*

This alarming statement indicates the little emphasis placed on IT within the business functions of the hospital. As a result, iLEAD held a meeting with the IT department to explain the need and importance of the role of IT in addressing the key business issues as well as to seek for the cooperation from every IT personnel in the implementation phase.

Need For Leadership

In order for BBH to remain strategic and maintain the future IT development, iLEAD stressed the need for leadership to envision and spearhead IT strategies and innovations to put the organisation in a good market standing. As such, iLEAD raise a recommendation to the top management team to bring into the team, a Chief Information Officer (CIO), who is able to integrate strategic IT development with existing business processes. This is important for the organization as the IT department should not be managed by the COO office as they are not equipped with the relevant technical knowledge and competency in leading and managing the IT landscape of the business. iLEAD quoted during the meeting:

> *"It is clear that there is a lack of direction for IT development landscape throughout the organization. It is important to have an IT leader who is able to lead and take advantage of technology to streamline processes for the hospital to remain competitive and profitable."*

There were opposing views on this matter as Mr. Goh points out that:

> *"We are a healthcare organization and IT strategies is not our primary source of concern. Unless we are technology company, I don't really see need for a CIO."*

This statement made was greeted with unanimous nods of agreement from several top management members. Hence, it is clear that the top management of BBH does not place much emphasis on IT. However, Professor Alex Sia - Chief Executive Officer (CEO), spoke up in response to the comment by Mr. Goh saying:

> *"But we cannot deny the fact that we are indeed lacking in terms of our IT development as a whole. Additionally, not having a proper leader to manage our IT team."*

With the comment from the CEO regarding the current state of the IT within the organisation, iLEAD went on to convince and persuade the top management team the urgent need for an IT leader in the team to oversee IT integration throughout the business functions. This suggestion was supported by the CEO, which was eventually greeted by the agreement of the other top management team members. Afterwhich, the CEO instructed Ms. Kik Shian Yin, Chief Human Resource (CHR) Officer, to scout for potential candidates who has the potential and experience to lead the digital economy of the hospital.

BBH's Future Relies On Digital Transformation

Roadmap to a Connected Digital Healthcare Future

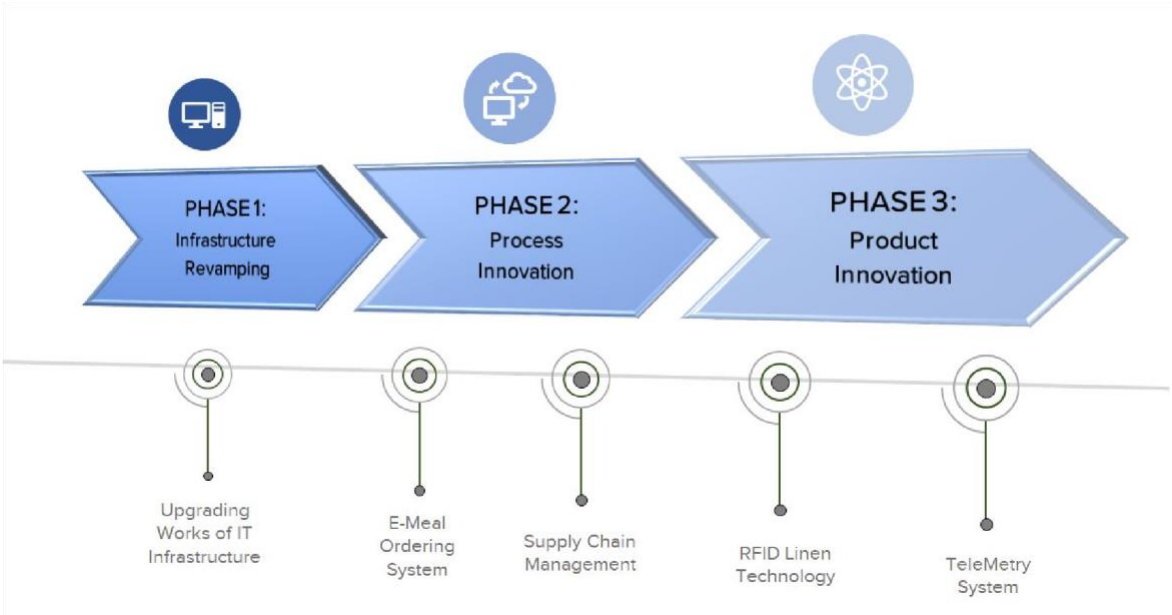

Figure 6: *BBH's Digital Transformation Roadmap*

Nurturing Healthcare Innovation: Proposed Technologies and Services

As mentioned before, some IST to be introduced are TeleMetry, Radio Frequency Identification (RFID) Technology Linen Leasing, Inventory Management System, E-meal Online Pre-order System and Integrated Electronic Medical Record System (EMR).

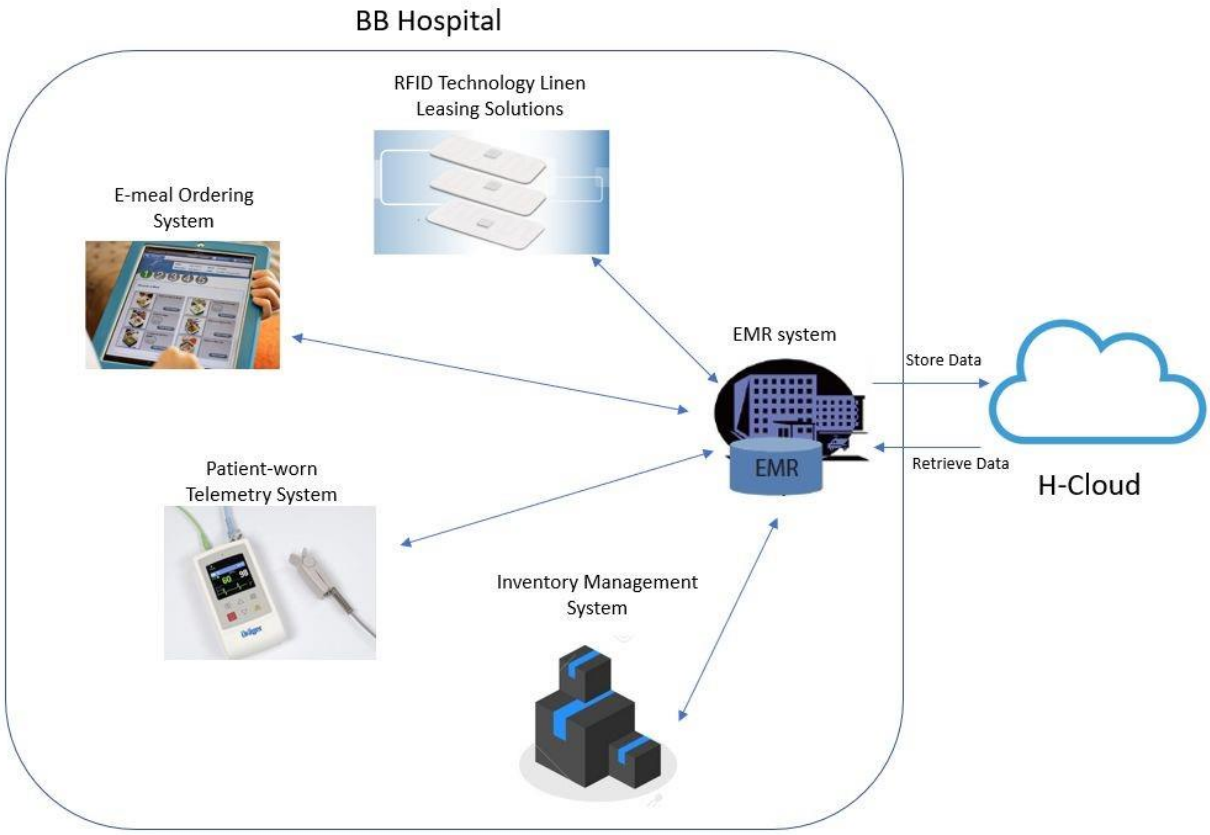

Figure 7: *Overall Architecture and Proposed Systems to be Adopted by BBH*

Upgrading of IT Infrastructure

Before any implementation, BBH should upgrade their current IT infrastructure so it could support the future implementation of various IT solution. The consultant has suggested to partner with IHIS to upgrade our Network infrastructure by using Healthcare-Cloud (H-Cloud). H-Cloud provides better availability of 99.95%, reduce cost operation and automatic failover features to ensures that patient care is not disrupted or compromised. In conjunction with that internally BBH should also upgrade their network from broadband to fibre broadband.

In addition to the upgrade of the network, the legacy Electronic Health Record (EHR) system should be replaced with the integrated EMR to allow future integration of planned and unplanned systems. EMR comes with further benefits of centralising data from multiple systems to allow seamless, automated and error free charting. Moreover, allowing nurses to view patients' data, without separate records retrieval, thus, having a more efficient process.

Although the upgrading works would be costly up front due to all the major changes required, BBH hospital would be in a good position for any future IT implementation once all these upgrades are completed.

Targeting Food Wastage by Learning Consumption Patterns: E-meal Ordering System

One innovation that BBH should have is an E-meal ordering system, which allows patients to indicate their food preferences and pre-order the food electronically every day. This allows patients to easily specify their preferences for the next few days at their fingertips, as well as freeing up valuable time for the nurses from

manual labor. A robotic delivery system would also be implemented to cut down on the time that nurses spend delivering food to the patients. Secondly, the E-meal ordering system will be integrated with an Artificial Intelligence (AI) in order to study the consumption patterns, allergy requirements and dietary constraint. This will allow food planning and preparation to be more efficient, thereby further reducing food waste. Lastly, a system similar to the "ecoDigester" Food System implemented by Changi General Hospital last year will be implemented to reduce and reuse the remaining food waste. This system helps to turn food waste into non-drinkable water by using enzymes to accelerate the decomposition of the food waste. This has been shown to reduce the amount of food waste by up to 98%.

Efficient Tracking of Linens and Garments: RFID Technology

LinTag™ 200 6F8990-001 -HID Global LinTag™ transponders apply securely and discreetly to textiles, enabling RFID tracking of high-volume, commercially laundered bed linens, towels and garments.

Figure 8: *Diagram Illustrating RFID Technology Woven within Linen Sheets*

Another innovation that BBH could adopt is the usage of RFID for linen management. There are several companies in Singapore that provides RFID solutions and Intrasys[4] is chosen to partner with BBH Hospital.

RFID technology allows every single piece of linen to be uniquely identified using the RFID tags, which are sewn into each linen. RFID readers will be installed in doorways to monitor linen movement. This facilitates real-time tracking of the linen. This information will be useful for logistic managers to plan and manage linen in a just-in-time manner. In addition, linen replacement can be done by setting a maximum wash cycle count. With each linen being uniquely identified, the system is able to track its wash cycle. For the linen that

[4] Intrasys. (2019).

has exceeded the maximum wash cycle count, they will be discarded to maintain high quality of linen used in BBH.

The number of man hour required for linen management would be largely reduced as the need for manual counting of linen to keep track of the linen count is eliminated as RFID technology provides a real time record of the linen available in the hospital. Additionally, presence of RFID software helps to keep track of data such as location, quantity, times of wash etc. which were difficult to track earlier without these tags. Ultimately, the use of RFID in linen management will result in greater efficiency in managing linen and reduced man hours required for such logistical tasks.

Reducing Manual Labor in Tracking Medical Supplies: Inventory Management System

In view of the problem of the legacy system for tracking medical supplies, the consultants have decided to adopt a new system for the management of medical supplies. DeRoyal [5] is the chosen company for the adopting of the new system. DeRoyal provides The DeRoyal® Continuum® Safe system that uses Impinj platform to accurately and automatically track usage of medical supplies[6] in BBH. The medical supplies will be tagged with RFID. After surgical procedures, hospital staffs can deposit the used supplies in an intelligent bin that captures the information of the supplies used and updates the data into the system, illustrated in Figure 9 and 10. With this knowledge, BBH can analyse the data and forecast preorders when required.

Figure 9: *Procedure of Tracking Medical Supplies using DeRoyal's System*

[5] Hospital Supply Usage Tracking. 2019.
[6] Impinj. 2019.

Figure 10: *DeRoyal's Smart Disposal System Bin*

With the usage of the newly-introduced inventory management system, it will free up BBH's staffs workload and allow them to focus more time on their primary job, which is to provide quality healthcare. In addition, automated tracking of the medical supplies will eliminate the manual stock taking process which is time consuming and prone to human error.

Rethinking Patient Management: Patient-worn TeleMetry System

One of the initiatives in product innovation that BBH will be harnessing is patient-worn TeleMetry system, that is capable of monitoring electrocardiogram (ECG) and runs on WiFi network. TeleMetry monitoring is when healthcare providers monitor the electrical activity of the patient's heart and tracks the location of wandering patients.

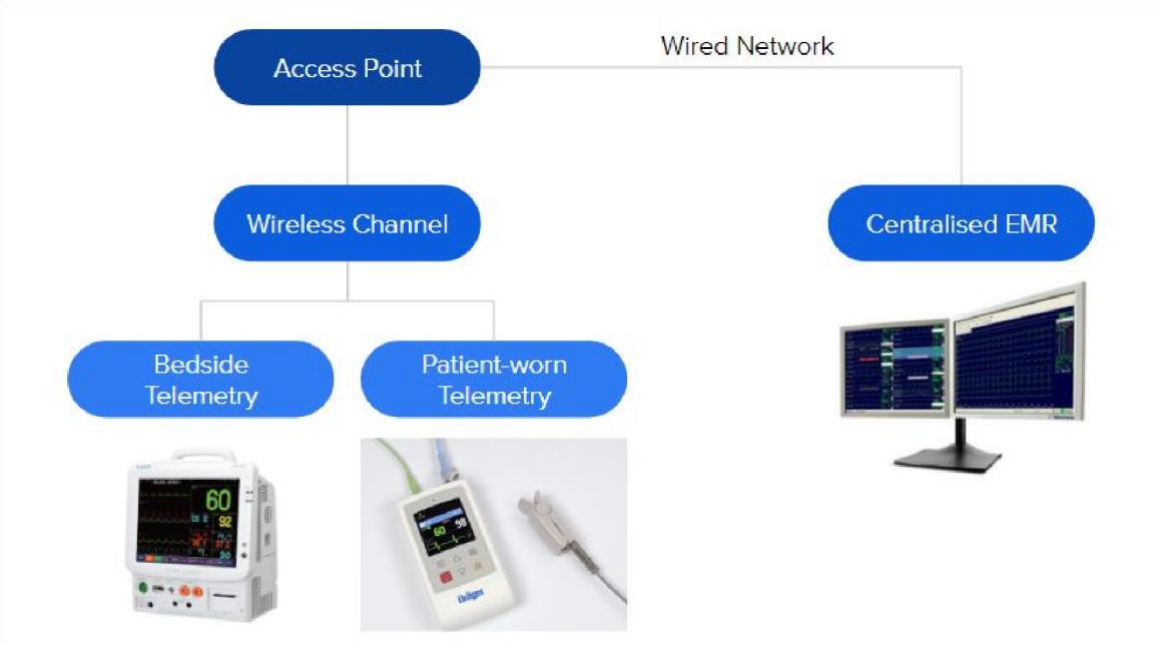

Figure 11: *Diagram of How Patient Data is Retrieved From the TeleMetry System*

Since the data is collected and transmitted automatically from faraway locations, there is reduced requirements of human resource to collect the data manually, which helps to cut operational costs

substantially. Nurses would be connected to patients' data despite being in a different location and its provides information like the patients' demographic to help identify patients easily before giving medication, taking blood samples etc. Moreover, it also has a built-in alarm, which helps to alert nurses instantaneously to offer their assistance. Although the TeleMetry system may have high initial capital outlay for equipment purchase, it is a good investment in the long run to maintain and improve the hospitality services in BBH.

New Organisational Structure: New CIO

Figure 12: *Proposed Organisational Chart Representing Hospital Leadership of BB Hospital*

After a few months of searching for the perfect candidate of the CIO by the CHR Officer, Mr Tony Lim was appointed the position of CIO and is responsible in leading the whole project. Mr Tony Lim had obtained a Master's degree in Information Systems (IS) and has been actively involved in the IT field for the past 10 years, which involves overlooking strategic and tactical planning, and coordination of IT systems. With reference to Figure 12, the addition of a Chief Information Officer directly under the command of the CEO, would allow for a greater focus on the importance of matters related to Information Technology within the company.

Conclusion

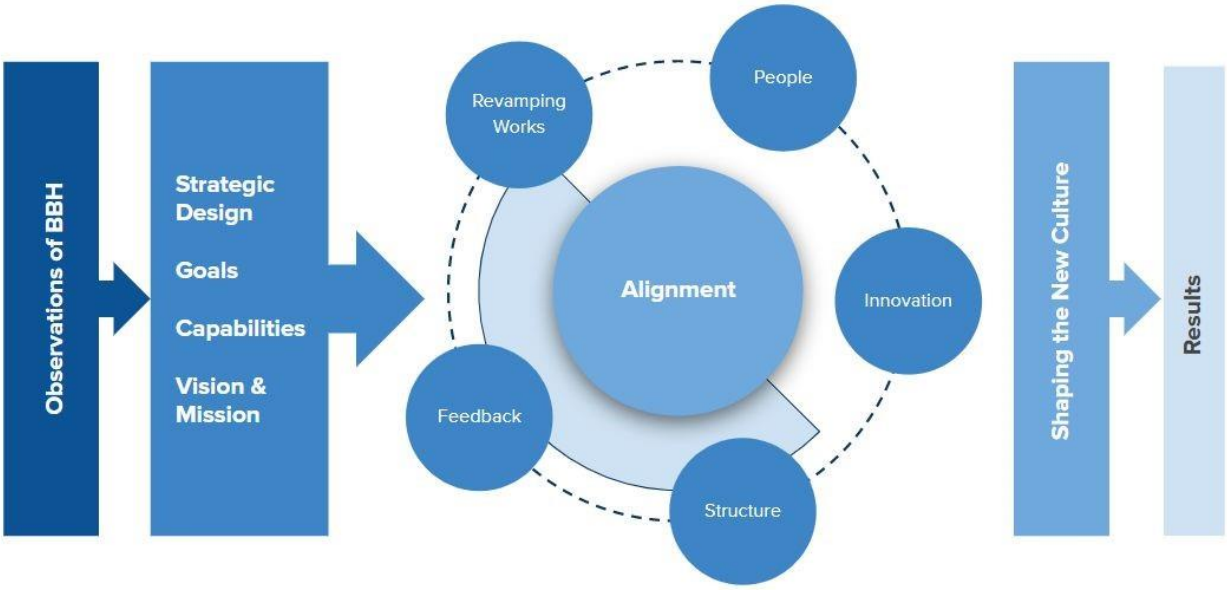

Figure 13: *Organisational System Design Model*

Through the planning process, iLEAD have acquired observations about the hospital and understood the business problems faced. The future vision of BBH towards a future-ready healthcare regime relies on the digital transformation plan which is to nurture strategic ISTs as a competitive tool i.e. TeleMetry, RFID Technology, Inventory Management System, E-meal Online Pre-order System and Integrated EMR. The CIO will be implementing the transformation by supporting clinical and business operations as well as achieving more effective and cost-beneficial operations. Together with the emergence of IS portfolio and governance in the new IT decision domain, as well as managing the change in management, leadership and handling resistance, this would help BBH to realign the business strategy with the IT strategy. The need for new IT culture is cultivated and better business performance is observed as a result.

References

Cordeiro, G. (2017). HEALTHCARE INDUSTRY TRANSFORMATION MAP FOR A FUTURE-READY HEALTHCARE SYSTEM [Ebook]. Retrieved from https://www.mti.gov.sg/-/media/MTI/ITM/Essential-Domestic-Services/Healthcare/Healthcare-ITM--Press-Release.pdf

Hospital Supply Usage Tracking. (2019). Retrieved from https://www.impinj.com/library/solution-briefs/hospital-supply-usage-tracking-deroyal/

Impinj. (2019). RAIN RFID Solutions: Retail, Healthcare, Transport | Impinj. Retrieved from https://www.impinj.com/solutions/

Intrasys. (2019). RFID Point of Sale Management Solution | RFID Readers | RFID Solutions Singapore.Retrieved from https://www.intrasys.com.sg/RFIDSolution/Retail/RFID-Laundry-Asset-Management-System

Kim, K., & Michelman, J. (2019). An Examination of Factors for the Strategic Use of Information Systems in the Healthcare Industry [Ebook]. Retrieved from https://digitalcommons.unf.edu/cgi/viewcontent.cgi?article=1001&context=bacc_facpub

Moving monitors, avoiding blind spots. (2018). Retrieved from https://www.buildingbetterhealthcare.co.uk/news/article_page/Moving_monitors_avoiding_blind_spots/143584

Woo, J. (2018). National Health IT Summit 2018 A Behind-The-Scenes FPH IT Story [Ebook]. Retrieved from https://www.ihis.com.sg/Latest_News/Documents/Pages/NationalHealthITSummit_2018/speakers%20slides/NHITS2018_presentation_by_Mr_James_Woo_Farrer_Park_Hospital.pdf