

# THE CORRELATION BETWEEN THE IMPLEMENTATION OF ICT STRATEGIES AND POLICIES, THE INCREASE OF THE ORGANISATIONAL PERFORMANCE AND THE ENSURE OF THE ORGANISATION SUSTAINABILITY, IN PARTICULAR HEALTH ORGANISATIONS IN MALAYSIA

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DOI: <https://doi.org/10.5281/zenodo.14012542>

Published Date: 30-October-2024

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**Abstract:** Traditionally organisations try to adopt to the rapid change in market in order to be able to compete. Thus, the use of Information Technology (IT) was one of the changes that organisations tried to be familiar with and benefit from it. Actually, IT before was uses as a technical tool that simplify the work process and make it smooth and reduce time. Thence, the organisations today that still view IT as a technical tool are the one with low information in market, less capability to compete with organisations that have understand the necessity of IT which become a main partner in the development of any organisation IT have been transformed from a technical tool to a strategic partner which is integrated with business to ensure organisation success. In fact, this research highlights the necessity of IT implementation, the right strategies for its implementation, the significant role of each one in the organisation especially the managers in the success of its implementation, the useful frameworks which can help in its governance. Furthermore, this research proves the benefit of IT and how business and IT are two complementary elements not contradictory where each one complete the other and how IT play a significant role in the increase of organisational performance and help in maintaining the sustainability of the organisation directly or indirectly and in different forms and tools.

More than that, Nowadays, among all the industries in Malaysia the healthcare industry is in rapid and great growth, and it can be considered as a very controversial and sensitive one among the different industries because it relates the economy, the technology and the health care. Thus, the challenge is to supply a high health care quality for patient using the best tools, process and to be on time in addition to the minimum cost possible. Thus, the aim of this research is to investigate the current situation of the health care sector in Malaysia regarding the strategies, policies and the implementation of the technology benefits and the challenges. The findings show an increase of the health information system implementation especially in public hospitals based on an outsourcing strategy and the follow of lean healthcare management and risk management for best implementation. This implementation of HIS has approve its efficiency and benefits by reducing costs and time, better safeguards of patient files and increase in the quality of healthcare in addition that it makes the work process more smooth, organized and accurate.

**Keywords:** IT strategy, Business strategy, organisational performance, IT frameworks, Malaysian hospitals, HIS, strategy, privacy policy, hospitals performance.

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## I. INTRODUCTION

Currently, most of organisations from different sectors are strongly dependent on information technology in their processes and functions which become an integral part of organisations. Thus, in order to make this integration of technology structured and successful it should be based on clear strategy that should be driven by the vision of the organisation and its overall strategy (Colleen and Robert, 2006). Moreover, the implementation of an IT strategy needs a budget that should be considered as an investment not as an expense. In addition, there should be a clear renewal policy in order to ensure the well use of IT in the right way in the organisation. Actually, one of the main purposes of any organisation is to increase its organisational performance which be influenced by different factors technology, leadership, people, processes and others (Andre A de Waal, 2007).

In fact, a new approach was adapted in the last years by many health care industries which is the introduction and integration of the new information technology, systems, methods and tools to improve the state of the hospital functions, services, security, data quality and health care quality provided to the patient (Ministry of health Malaysia, 2011; Safurah, Kamaliah, Khairiyah, Nour, and Judith, 2013). The reason behind the integration of this approaches was to minimize the issues that face the healthcare industries such as the reduction of the significant time spend to share a treatment in all the levels of the organisation due to the difficult communication between patient, doctors and staff and to improve the quality of care provided to patients (Karen, Frances, and John, 2009). In fact, in the developing countries such as Malaysia this approach has been started to be adopted in the health care industries to keep up with the development and the rapid change in the health care industry worldwide and in the increasing suffering from the lack of sufficient places and the difficulty to save the patient files (Ministry of health Malaysia, 2011). Thereby, many healthcare industries in Malaysia start to make the organisation functions fully integrated with technology, which will make the processes automated and all the staff and patient data will be transformed into electronic records by the establishment of systems to manage and exchange all of data and functions in the organisation (K. Noraziani, A. Nurul, Sara, Bilal, Sharifa and A. Siti, 2013).

## II. LITERATURE REVIEW

### II-1- Implementation of information technology

Nowadays, the change in the market is very rapid and dynamic and each information internally and externally cost highly which promote the challenge for the companies to be an important competitor in the market. For this, many companies had started to develop strategies to make the information technology a resource that simplify the acquisition and use of information. Furthermore, this will have positive impact in the organisation by improving their competitive position in the market. Thus, the company must have the capability to acquire, develop and manage its IT resources to be an assistant and support for the business strategies and a guide that help in the development of the overall organisation strategy. Moreover, for the right implementation of information technology in the company all the business units, the IT staff, the managers, and the users have a responsibility each from his position in the success of the IT integration. Thus, this make Maria and Bustinza concluding that IT should be supported and integrated with other organisational resources and practices in order to create a competitive advantage. Indeed, IT capability consisting of IT integration in the strategy of the organisation, IT adaptable infrastructure, and IT knowledge at the management and technical levels (Maria and F.Bustinza, 2014). While in the same context Susana and Joaquin Analyse effect of information technology capability and competency on knowledge management processes and the relations between IT competency, knowledge management processes and performance outcomes. Thus, the findings show that IT competency does not have a direct impact in the organisation performance but an indirect one this is by having a significant role of IT in the knowledge management processes which are directly related to market performance that is linked to financial performance (Susana and Joaquin, 2012).

In the other hand Vachara and Derek analyse the deployment of information communication technology (ICT) diffusion initiatives in the Australian construction industry. Actually, they have found that ICT implementation and adoption is a management intensive activity and it can be by following two strategies the in-house development or outsourcing, depending upon the level of internal systems and resources that support the main organisational functions. Thus, the barriers and limitations for the IT implementation in the organisation can be in the group level, personal level such as issues in the IT standardization and security, low budget to invest in IT, and the lack of commitment from participants. Furthermore, in the organisational levels the limitations comprise lack of expertise, time, and clear identification of IT benefits (Vachara and Derek, 2006).

Moreover, the role of managers in the implementation and propagation of IT in the organisation was analysed and examined by David and Giambona who found that there was a broad understanding that managers at all levels have a significant role to play in the effective implementation of ICT and its effect on organisational performance. Indeed, ICT has enabled the fast globalisation of organisations and their markets with implications for where work is tackled and the role and ways of working of managers (David and Giambona, 2008).

## **II-2- Malaysian Governmental strategy for IT implementation in healthcare sector**

In fact, in the last Malaysian plan of 2016-2020 in one of the strategies regarding the health care sector enhancement the strategy focused in improving the system delivery for better health outcomes. Thus, the Malaysian government will formulate the legislations and increase implementation through enhancing the coordination between the private sector and government agencies. Moreover, there will be an adoption of the lean management in the healthcare services in order to simplify the work processes. Furthermore, there will be more integration between hospitals due to the implementation of hospital cluster concept in some selected places which mean that the hospitals in the same place will work as a unified unit and sharing resources. Additionally, there will be an implementation of the eHealth strategy which focus on integrating the existing ICT systems in one unified system, system-wide model to enhance health data management, and support research, development and commercialization initiatives. Moreover, The Malaysian government will help the private sector to raise the information sharing and enhancing the service delivery (Eleventh Malaysia Plan 2016-2020, 2015)

## **II-3- Health information system (HIS) and electronic medical records (EMR) implementation in Malaysian hospitals**

The planning for the implementation of health information systems has started since 1993 in Malaysia in order to improve and enhance dramatically the quality of healthcare treatment and services provided to patients. In fact, the health information system (HIS) is a system based on computer and information technology to manage all the hospital levels, sectors and departments efficiently. HIS comprise different categories of information systems to manage data in different departments such as clinical, financial, laboratory, nursing, pharmacy and radiology systems. (Nurul Izzatty, Nor Hazana, Alina, and Nik Azliza, 2013).

In fact, one of the main components of the HIS is the electronic medical record (EMR) which is a computerized and digital medical record. It provides the medical history of each patient by recording and saving all the data related to patient from all the departments and categories of the HIS which facilitate the access and share of patient records among all the hospital sectors in a confidential and secure manner. Moreover, through the discussion on the SWOT (strength, weaknesses, opportunities, and threats) analysis on the implementation of EMR in Malaysian hospitals. The result found is that firstly the strength of the implementation of EMR are safeguarding information confidentiality, reducing the probability of lost records, improving the quality of documentation and the communication among providers, cost saving by the decrease of workplace inefficiency, improving the data storage by saving records in an electronic way and transformation of old paper- based records by scanning it into EMR, improve service provided by saving the patient and staff time and it help in the emergency cases when the patient is not able to answer questions about his medical history thus it can be easily find in his EMR. Secondly, in the other hand some of the weaknesses in the implementation of EMR can be resumed by the high adoption cost, the lack of interoperability or exchange of data among different EMR due to the lack of standard, it lead to medical errors where studies has shown the increase of medical errors and mortality since the implementation of EMR because healthcare personal rely only on the EMR in the care management plan (K. Noraziani, A. Nurul, Sara, Bilal, Sharifa and A. Siti, 2013), the lack of a single software package to support the hospital needs (Haslina and Sharifah, 2005)., also it require an extensive personnel training (K. Noraziani, A. Nurul, Sara, Bilal, Sharifa and A. Siti, 2013).

Indeed, the ground work of the EMR is the master patient index record (MPI) which is a part of the health information exchange system (HIE) that exchange the patient information and activity in the whole care organisation. In effect, the MPIs are make and attainable from the EMR. Thus, the MPI can be considered as an electronic medical database that contain all the information about the patient such as the first and last name, the gender, the date of birth, the phone number and other information beside the medical history of the patient. The MPI help to ensure that each patient is uniquely identified in the whole hospital which will help to provide an efficient and accurate health care to patients. (Cynthia and David, 2014; Education Module for Health Record Practice, 2012).

### **II-3-1- Strategies for the HIS Implementation in hospitals**

In fact, IT can play a significant role to accomplish the vision of Malaysian government for the healthcare by helping in the integration of systems in each unit of a hospital to provide an effective care. As mentioned before the implementation of HIS in Malaysian hospitals where in 1998, this was actually in Selayang hospital where the implementation of HIS was successful and effective and represent a good pattern in public hospitals. Thus, to implement HIS in the hospital the strategy adopted by the ministry of healthcare was not to develop in-house systems however, because of the speed at which it is being implemented, they have opted to pursue the outsourcing strategy. (Indah and Surya, 2011). Moreover, initially the idea of outsourcing the public healthcare of Malaysian Ministry of Health (MoH) was raised in 1996 by the government in the Seventh Malaysia Plan in which to maintain its own pool of skilled and experienced labor and to boost service efficiency. But the outsourcing approach has also contributed to the emergence of certain problems, namely the sharp rise in operating expenses. (Fara, Muzani Fuziah, and Kherun, 2006).

Actually, one of the research projects that address the complexities of IT outsourcing projects have mentioned that it requires a stress on effective project risk management strategies adopted by the service provider and receiver. Moreover, it present that an important number of big IT outsourcing deals fail due to bad planning, and bad management of the projects which make the huge projects and systems face more risks and issues. Indeed, risk management strategies are crucial to successful IT outsourcing projects in public sector (Abdrahman Ahlan, Yusri, Sharifah, and Syed, 2012).

### **II-3-2- Privacy Policies for the HIS Implementation in hospitals**

In fact, the privacy of health information is one of the main and significant points that must be taken into consideration during the implementation of HIS and EMR. Furthermore, it should be supported by clear legislation and law from the government to protect the confidentiality of personal health information. Unfortunately, there were many cases of unauthorized breakthrough of personal health information happened but no legal action can be done due to the lack of a privacy act in Malaysia. The adoption of information privacy principles in hospitals' Health Information System (HIS) especially in managing personal health information must benefit both hospital management to mitigate any possible unethical action; such as identity theft, patient information leakages and loss and unauthorized modification of information and the patients by improving their trust and confidence. Indeed, for Malaysia the privacy policy must include three principles the patient agreement, patient free accessibility and transparency in personal health information management. The authority and lawmakers also have to carefully design the personal health information policy to correspond with Malaysia uniqueness in terms of multi-ethnicity, multi-religion, multi-cultures and values. (Suhaila, Rabiah and Zuraini, 2011).

### **II-3-3- The correlation of IT with the increase of hospitals performance**

Currently with the rapid change in the healthcare sector environment and the increase of expectations on delivering high quality of healthcare services this make the Healthcare system faced many challenges. Thus, the lean healthcare practices can significantly contribute to improve healthcare performance that its measurement support to promote the achievement of health system objectives. For instance, for financial performance Most of the healthcare industries aim to reduce cost and improving patient satisfaction and outcomes when implementing lean in healthcare. (Nurul, Nurul Fadly, Naimah, Nur Afni, and Noor Hidayah, 2013).

### **II-3-4- The organisational performance and it's correlation with the information technology**

In general, the high-performance organisations are the one that create a consistent and clear strategies. They provide goods and services that perfectly satisfy customers and meets their needs, they have a clear ethical standards in the organisation, it contain a good managers and leaders to lead change and right decision making in the organisation, they provide continuous training to their employees and create a good communications between employees, they provide a comfortable work environment to their employees in order to make them more able to use their skills and provide solutions that help the organisation.

Thus, the factors that can influence the organisational performance can be the technology implementation and use, the skills of the employees, the fast change in the market and the continuous increase of the competitiveness, and the ethics deployment in the organisation (American Management Association, 2007)

Actually, we cannot forget the significance of technology in the improvement and development of any organisation, from this standpoint Barney, Shan and Ray had done an analysis study on a successful case in Singapore to see how in

specification the web technologies can improve the organisational performance in dependence with the global organisational environment. In fact, the authors found that the web technologies can play an important role to assist the organisation business strategy and optimizing its performance. Furthermore, to have an effective influence of web technologies in the organisation the organisation should not depend on the technical concession but in the complicated fit among the strategy, the technology and the external environment. Indeed, the equilibrium in the organisation environment help the web technology to improve the organisational performance by simplifying the realization of competitive features using three different mechanisms “*the logics of positioning, leverage, and opportunity*”, reciprocally in the revolution state of the organisation environment “*Web technologies can give rise to performance gains by supporting the attainment of legitimacy through two distinct mechanisms: the logics of optimality and social congruence*” (Barney, Shan and Ray, 2010; Fatimetou, Ahmed and Jamaludin, 2015).

Moreover, another study After examining the role of the three strategies the organisational, the business and information systems the authors found that the enhancement in operational performance can only be achieved by aligning technological innovation effectiveness with operational effectiveness not by considering it as dimension of the operational effectiveness in order the maximize the returns in the organisation (Ricardo, Ram, Mario, Phil and Paul, 2010).

In the same context, another research has shown how the combination between the technology and the knowledge management can be a tool to increase the performance and the profit of the organisation which is the use of customer relationship management (CRM) in integration with knowledge management. Actually, CRM as an approach based on strategies and technology help the organisation to ameliorate its business relationship with customers by collecting information about their customers through various points of contact among the organisation and its customers such as the social media, organisation’s website, email, call centre and different marketing tools. Thus, to achieve this the organisations use different software’s to store all the customer information into a single database to record the customer interactions and the automation of workflow processes. But, this information stored in big database cannot be significant and play a role to maintain permanent customers and increase the production and long-term profit in the organisation if this information is not well managed, organized, connected and distributed and here the knowledge management can play a role to extract the meaningful knowledge from those information to transform it into valuable information that can be analysed to attract customer and improving the business performance in the organisation. Indeed, the combination of KM and CRM can help to use the knowledge for, from and about customers by the experts in the organisation in order to attain the organisation goals and optimizing its business and organisational performance (Ali, Majid, Hamideh, Attafar and Arash, 2013; Nour, Seyed, Seyyed, Asghar and Khaled, 2011; Fatimetou, Ahmed and Jamaludin, 2015).

### **II-3-5- Users acceptance and satisfaction**

In research conducted by Indah and Surya to examine the level of user satisfaction of using HIS in Malaysian hospitals. They have found that there are various differences between the types of users for HIS in the quality of function, interface, and HIS performance. Thus, there should be and understand of the users’ requirements by the HIS managers and developers and make a customization of the HIS depending of the type of users to improve the quality of use and increase its benefits. Therefore, future HIS development approach and execution may very well be possible with user cooperation, technical staff training, and support. (Indah and Surya, 2011). Moreover, another research was done to investigate the system acceptance and user satisfaction which is influenced by the performance and capabilities of HIS in the Selayang hospital in Malaysia which is one of the first hospitals that have implement the HIS successfully in Malaysia. The study found that the usefulness is related to system capabilities, the ease of use related to system capability and nurses’ satisfaction. Moreover, factors such as users’ intention to use the system, attitude and their trust on the system should be taken into consideration (Noor’ain, Dilla, Zamzaliza and Siti Noorsuriani, 2013).

### **II-4- IT benefits in general**

Information and communication technologies (ICTs) implementation have many benefits for organisations and could help a company to implement radical new strategies. Thus, Constantinos and Jamie had found that ICT allow and help companies to gain and reach more customers and provide better services to them. Moreover, IT enables strategic innovators to upgrade their business models rapidly therefore preserve themselves from competitive attacks.

Also, IT can be an important element and play a role in the success of many strategic innovators by offering cost-effective solution to develop new business designs (Constantinos and Jamie, 2006).

Additionally, IT can represent a great enabler for mass customisation strategy which is a strategy adopted by organisations to deliver customized goods and services to their customers by the creation of the integration between the organisation and its customers. Actually, this is done by the creation of customer interaction systems and analysis its internal impact also. Thus, IT can optimise the ability to deliver customized products by making an alignment between the IT strategy and the business strategy (Kumiko and Fernando, 2010).

Thus, due to its benefits there is an increase of organisations awareness world-wide to the necessity of integration of IT and the investment in it and this was shown in the technology survey, conducted by the international consulting company McKinsey where executives say their companies are increasing IT spending and implementing new technology platforms to support innovation. Thus, the expectations for IT increase and the managers are continuously setting demands for IT assistance of the business processes and functions. Moreover, the managers foresee IT as an enabler to make new platforms to assist in the innovation and development and it help to guide the strategies in the organisations (Roger and Johnson, 2011).

Likewise, another study on the benefits of IT for organisations from various fields. For instance, IT can help insurers in enhancing their operational performance by providing many improvements in “*new interactive channels, Product innovation, automated service delivery, the changing nature of insured risk, capturing opportunities, and develop a clear picture of the target technology state*”. In fact, organisations have to determine first their IT strategy that will fit and will be aligned with business strategy of the company. Thus, there is three main strategies that the organisations pursuit which are firstly opportunistic companies which is adopting IT innovations for defensive reasons, and only when technologies are mature and well confirmed in the industry. Secondly, fast followers which is the pick-up of selected technologies at early stage to gain competitive advantage. Those organisations are seldom premature adopters; they wait for others to prove that a concept works and they adopt it. Finally, Digital insurers they are aggressive, trendsetting, and visionary organisations that have a sophisticated ability for IT innovation and believe that technology is the key to gain a competitive advantage. Indeed, regardless which strategy an insurer chooses in order to deploy successfully innovative technologies requires the IT organisation and business unit leaders to be aligned and. They should work together to improve decision-making and making productive interactions (Stefano, Oliver and Fabio, 2011).

In the other hand, another study proves that regardless the many reasons that can be toward the adoption of IT but the main reason is to meet customers’ expectations and satisfaction which is the driving force that lead to the IT implementation in organisations. Moreover, the study highlights the main factors that can affect the implementation of the IT and may contribute in its success which are the internal IT resources, organisational factors, external IT expertise, supplier and customer relations (Thuy Uyen, Michael and Michael J, 2015)

#### **II-4-1 HIS implementation benefits and challenges**

In fact, the health information systems implementation benefits and in some cases accompanied by some challenges and issues. Indeed, the implementation of healthcare information system should be well studied and there should be a customization of system in order to get better results for system users in the hospital as well as for patients. Thus, the benefits, challenges and problems of HIS implementation can be resumed in the points below (Don, Nicola, Duminda, and Maxine, 2011; Devon, Linda, and John, 2010; American hospital association, 2010; Office of the National Coordinator for Health Information Technology, 2011):

**Benefits:** Improve the quality and efficiency of health care in hospitals provided to patients, reduce money and waste, and Improve information sharing, data protection and exchange.

**Challenges:** The human and financial boundaries of hospitals, realistic implementation timeframes, and hospitals and policymakers must make a balance between rapid and careful adoption of health IT, protecting the privacy and security of health information, technical and logistical challenges involved in installing, maintaining and updating HIS, creating a national infrastructure by which business networks can connect to each other, the development of consistent standards to ensure interoperability and privacy, security protocols to ensure trust that the network will handle information adequately, HIS must address legal, organisational, and technical challenges that might disrupt its sustainability, No direct benefits to the health of the rural population were observed, and the technology needs to be suitable to the capabilities and maturity of the health system, and this comprise both human and technological maturity, as “*if you automate a mess, you’ll get an automated mess*”

**Problems:** New errors caused by HIS, and over-reliance on the accuracy of EMRs, Physician order entry system errors, the problem of assured performance and data overload, and maintain the security and privacy of patients.

## **I- Impact of IT implementation in various organisations such as SME and banks**

As a matter of fact, IT is now implemented in all kinds of enterprises in various fields. For instance, in the small and medium-sized enterprises IT adoption is increasing in order to gain competitive advantage. Thus, the major causes of IT implementation failure are the lack of integration between the IT and organisation strategies, the wrong understanding of problems and customer needs, managers are not involved in the various IT adoption phases, lack of needed resources for the implementation, and lack of training for end users (Morteza, Tang, Mohammad and Norzima, (2012).

Moreover, the cultural differences of customers play a significant role on the success of adoption of new technologies. In fact, this was proved by the study done by Yee Yen, Paul and Nena who studied the acceptance of internet banking in USA and Malaysia. Thus, the results demonstrate that consumers globally have various internet banking adoption ways because of the cultural variations. Indeed, in order to promote the internet banking success and maintain the banks competitiveness there should be a focus on the satisfaction of customer needs and the delivery of services that meet their expectations with always analysing and understanding the cultural differences (Yee, Paul and Nena Lim, 2015).

## **II- Information technology frameworks**

Actually, the IT decision makers face many challenges in the implementation of IT which should be flexible and scalable and fulfil the business requirements especially with the increase complexity of IT management and the growing strategic role of IT in business. Thus, some of those challenges are the management of key performance areas to make the IT more effective and efficient, the creation of consensus in the whole company on how IT can meet the current needs and plan for the future, decreasing technology complexity and increasing business agility, making IT-enabled business change with minimal disruption, defining if IT spending is reasonable, prioritization of IT investments and communicate how they will bring value to the business (Martin, Jim, Martin, and Stephen, 2013).

In fact, nowadays there is various frameworks that can be used in the organisations in order to overcome those challenges and providing a full governance of the organisation. Actually, one of the frameworks that have a lot of benefits is IT-CMF (IT capability maturity framework) which is a strong tool designed as a Meta framework that concentrate on the business value derived from IT, help to understand how IT in the organisation is performing, help to make IT moving from a necessity for business into a business changer by supporting CIOs and IT decision makers identifying and ameliorating organisational maturity. Moreover, it offers general and reusable organisational improvement solutions for repeatedly problems by simplifying and understanding the organisational strengths and weaknesses and identifying gaps in IT capabilities. Also, it provides a comprehensive IT management toolset across more than 30 areas, each includes of maturity roadmaps, organisational assessment tools, and a library of organisational amelioration actions (Martin, Jim, Martin, and Stephen, 2013).

As mentioned before organisations increasingly adopt IT governance to ensure IT efficiency, decrease IT costs and better control of IT investments. In this context, Control Objectives for Information and related Technologies (COBIT) is claimed to be the most comprehensive IT governance frameworks. It gives a broad overview of the full life-cycle of IT management. COBIT is a globally accepted set of tools that executives and IT professionals can use to ensure that IT operations are aligned with business goals and objectives.

The COBIT 5 which is the last version launched in 2012 has 5 main key principles for governance and management of enterprise IT which are meeting stakeholder needs, covering the enterprise end-to-end, applying a single integrated framework, enabling a holistic approach, separating governance from management.

Indeed, the aim of COBIT is to bridge the gap between business control models and IT control models. It's designed for management, senior IT professionals and auditors and it assist management balance risk and control in IT investments, gives guidelines for greater IT service and performance management, and support auditors to specify IT risks and make appropriate IT controls (Shengnan and Hans, 2013).

An additional commonly known architecture framework is TOGAF owned by the open group. TOGAF (The Open Group Architecture Framework) divide the overall EA (enterprise architecture) into 4 subsets Business, Data architecture, Application architecture, and Technology architecture which is the needed hardware and software infrastructure to support the data, application services, and business deployment. Actually, the most substantial part of TOGAF is the ADM (architecture development method) which main structure cycle comprise:

- Phase prelim (framework ad principles)
- Phase A (Architecture vision)
- Phase B (Business architecture)
- Phase C (Information systems architecture)
- Phase D (Technology architecture)
- Phase E (Opportunities and solutions)
- Phase F (Migration planning)
- Phase G (Implementation governance).
- Phase H (Architecture change management)

Additionally, TOGAF has two main parts beside the ADM, which are the enterprise continuum that provides a framework and context to get appropriate architecture assets such as architecture descriptions, models and patterns from various sources in executing the ADM. Other part is The TOGAF resource base which can be considered as a collection and combination of various resources such as templates, checklists, guidelines, and other detailed materials which support the TOGAF architecture development method (Minli, Decai and Wuliang, 2010).

### III. LITERATURE FINDINGS

#### III- 1- Organisations in General

Firstly, the consideration of information technology as a resource in the organisation make them start developing IT strategies in order to rapidly and simply acquire information to gain competitive advantage in the market. Moreover, this IT strategy should be aligned and integrated with the business strategy of the organisation. Furthermore, to ensure its success all the business units, the IT staff, the managers, and the users have a responsibility each from his position in the success of the IT implementation which can be done through two different strategies the in-house development or outsourcing, depending upon the level of internal systems and resources that support the main organisational functions. Also, companies can follow various strategies as being opportunistic companies, fast followers of technology or, being aggressive, trendsetting, and visionary organisations in the IT adoption.

Secondly, the managers at all levels have a significant and major role to play in the effective implementation of ICT and its effect on organisational performance. Moreover, the cultural differences of customers play a significant role on the success of adoption of new technologies in the organisation that must be taken into consideration by managers during the integration of IT especially that the driving force that lead to the IT implementation in organisations is to meet customers' expectations and satisfaction.

Also, nowadays the implementation of IT in hospitals is increasing dramatically. The health information systems implementation has started since 1993 in Malaysia in order to improve and enhance significantly the quality of healthcare treatment and services provided to patients. Thus, the benefits of HIS are the accessibility and the save of time and space. Furthermore, the benefits of EMR specifically are safeguarding information confidentiality, reducing the probability of lost records, improving the quality of documentation and the communication among providers, cost saving by the decrease of workplace inefficiency, improving the data storage by saving records in an electronic way and transformation of old paper- based records by scanning it into EMR, improve service provided by saving the patient and staff time and it help in the emergency cases when the patient is not able to answer questions about his medical history thus it can be easily find in his EMR , in addition the EMR help in reducing the inaccuracy and duplication of records which was a challenging issue in paper-based records and all of this strength play a role in improving the quality of health care provided to patients.

In the other hand, the high-performance organisations are the one that

- Create a consistent and clear strategies
- Provide goods and services that perfectly satisfy customers and meets their needs



- They have a clear ethical standard in the organisation
- Contain a good managers and leaders to lead change and right decision making in the organisation
- Provide continuous training to their employees

Thus, the web technologies can play an important role to assist the organisation business strategy and optimizing its performance. Moreover, the combination between the technology and the knowledge management can be a tool to increase the performance and the profit of the organisation by the use of customer relationship management (CRM).

While other researches prove that firstly the enhancement in operational performance can only be achieved by aligning technological innovation effectiveness with operational effectiveness not by considering it as dimension of the operational effectiveness in order the maximize the returns in the organisation. Secondly, IT competency does not have a direct impact in the organisation performance but an indirect one this is by having a significant role of IT in the knowledge management processes which are directly related to market performance that is linked to financial performance.

Indeed, the IT decision makers face many challenges in the implementation of IT which should be flexible and scalable and fulfil the business requirements especially with the increase complexity of IT management and the growing strategic role of IT in business. In fact, nowadays there is various frameworks that can be used in the organisations in order to overcome those challenges and providing a full governance of the organisation such as COBIT, TOGAF and IT-CMF.

Thus, the general IT benefits, challenges and causes of failure are:

**Table I: IT benefits, challenges, failure causes**

<b>BENEFITS</b>	<b>CHALLENGES</b>	<b>FAILURE CAUSES</b>
Allow companies to gain and reach more customers	management of key performance areas	Lack of integration between IT and organisation strategy
Providing better services to customers	creation of consensus in the whole company on how IT can meet the current needs and plan for the future	The wrong understanding of problems and customer needs
IT is a great enabler to deliver customized products	decreasing technology complexity	Managers are not involved in the various IT adoption phases
Enhancing operational performance	increasing business agility	Lack of needed resources for the implementation
Creation of new interactive channels	making IT-enabled business change with minimal disruption	Lack of training for end users
Promoting the product innovation in the company	defining if IT spending is reasonable	Lack of understanding of cultural-differences of customers
Automation of the services delivered to customers	prioritization of IT investments	The adoption of wrong strategy for implementation
Acquiring information on the market simply and rapidly	Ensuring the effectiveness and efficiency of IT implementation	The lack of clear policies

### III-2- Health Organisations in Particular

The last Governmental Malaysian plans show a clear strategy which focus in the enhancement of the health care sector by optimizing coordination with private hospitals, the integration of different hospitals to share resources, the application of lean management to simplify the work process and also the focus on the implementation of eHealth strategy which concentrate on integrating the existing ICT systems in one unified system.

Moreover, the main goal of the implementation and application of HIS, EMR, MPI, HIE is to improve the situation of health care in general in the country and to enhance the quality of health care data and services provided to patients. In

fact, the integration of this systems with the health care help to save time and money, make data accessible and exchangeable in a confidential way, reduce the loss of records, and improve the documentation of information, accurate identification of patient. Although many issues and challenges has been created after the implementation of the new systems such as the high adoption cost, the lack of interoperability, the increase of medical errors, it require an extensive personnel training, realistic implementation timeframes, Hospitals and policymakers have to make a balance between rapid and careful adoption of health IT, protecting the privacy and security of health information, technical and logistical challenges involved in installing, maintaining and updating HIS, creation of a national infrastructure by which business networks can connect to each other, no direct benefits to the health of the rural population were observed, The technology needs to be adequate to the capabilities and maturity of the health system, and this includes both human and technological maturity, as *“if you automate a mess, you’ll get an automated mess”*. Thus, the lean healthcare practices can significantly contribute to improve healthcare performance that its measurement support to promote the achievement of health system objectives as planned by the government.

Furthermore, the implementation of HIS systems should be accompanied by an understanding of the users’ requirements by the HIS managers and developers and make a customization of the HIS depending of the type of users to improve the quality of use and increase its benefits. Moreover, factors such as users’ intention to use the system, attitude and their trust on the system should be taken into consideration

Actually, the strategy followed to implement the HIS in Malaysian hospitals especially the public one is of outsourcing initiated by the government in the Seventh Malaysia Plan in order to increase the efficiency of services. However, the outsourcing strategy had contributed in the raise of some issues such as the dramatic increase in the operational costs. Thus, this requires to use of risk management strategies to successful IT outsourcing projects in public sector.

Additionally, regarding the policies especially the privacy policies need to be adopted in hospitals’ Health Information System (HIS) which will benefit both hospital and the patients. Indeed, for Malaysia the privacy policy must include three principles the patient agreement, patient free accessibility and transparency in personal health information management and it have to be carefully designed to correspond with Malaysia uniqueness in terms of multi-ethnicity, multi-religion, multi-cultures and values.

#### IV. RESEARCH METHODOLOGY AND EMPIRICAL FINDINGS

##### IV-1- Research design, sample, and data collection

The total number of Malaysian hospitals is 394 including 247 private hospitals and 147 public hospitals. The studies shows that due to many barriers only 15.2 % of these especially public hospitals are implementing the HIS and EMR which can be a number of 22 public hospitals (Nurul Izzatty, Nor Hazana, and Alina, 2014). The study sample is from both genders from the age of 23 to 50. Furthermore, there position varies from managers, nurses and IT professionals with a good experience in work. In this study the data collection was by conducting interviews with the participant. These interviews are an in-depth conversation with the participants and an observation of their non-verbal behaviour ([Jane Ritchie](#), [Jane Lewis](#), ...2013; [David Silverman](#), 2010 ). In addition to use of the observation technique that help to see how things currently work in the real ground at the hospitals.

##### IV-2- Empirical findings

After interviewing staff such as IT managers, officers, centre of research officers, nurses, patient registration staff, Human resource managers, from various hospitals and making observations to observe and understand the work process in Public Malaysian hospitals and some of the private hospitals. We have found that firstly regarding the public hospitals the level of IT implementation and use vary in a large scale from one to another. For instance, some public hospitals do not use IT systems especially HIS and EMRs. While others use the technology partially meaning that for the patient registration can be done through system but his file and history will be all hard copy. Moreover, another level of implementation which show a successful implementation of IT systems especially HIS and EMR in some public hospitals where the patient files are registered and manged trough the systems.

Moreover, in the hospitals where there is no-implementation of IT the different hospital entities were not connected and there no interaction between it, moreover the number of hard copies stored physically which make it hard to manage it and reduce risks such as security risks. While in the other hand for the hospitals that implement IT systems the work process was well organized and patients were more satisfied.

Furthermore, Regarding the strategy followed by hospitals most of the public hospitals follow the strategy of outsourcing in the implementation of new HIS and EMR systems and selection of the third party depend on various criteria the quality, costs, and the customisation of the services to be suitable for the hospital. Although, the development of small software's and application are developed insource by the IT department staff and IT professionals.

In fact, one significant and positive point is the high level of IT implementation and management success in many private hospitals in Malaysia which allow them to provide a high level of quality health care to patients. Thus, many private hospitals are fully integrating IT to provide better services and quality of healthcare and there is a leading private hospital that have start to use the cloud technology to store data by contracting with IBM.

#### IV-3- Research Framework

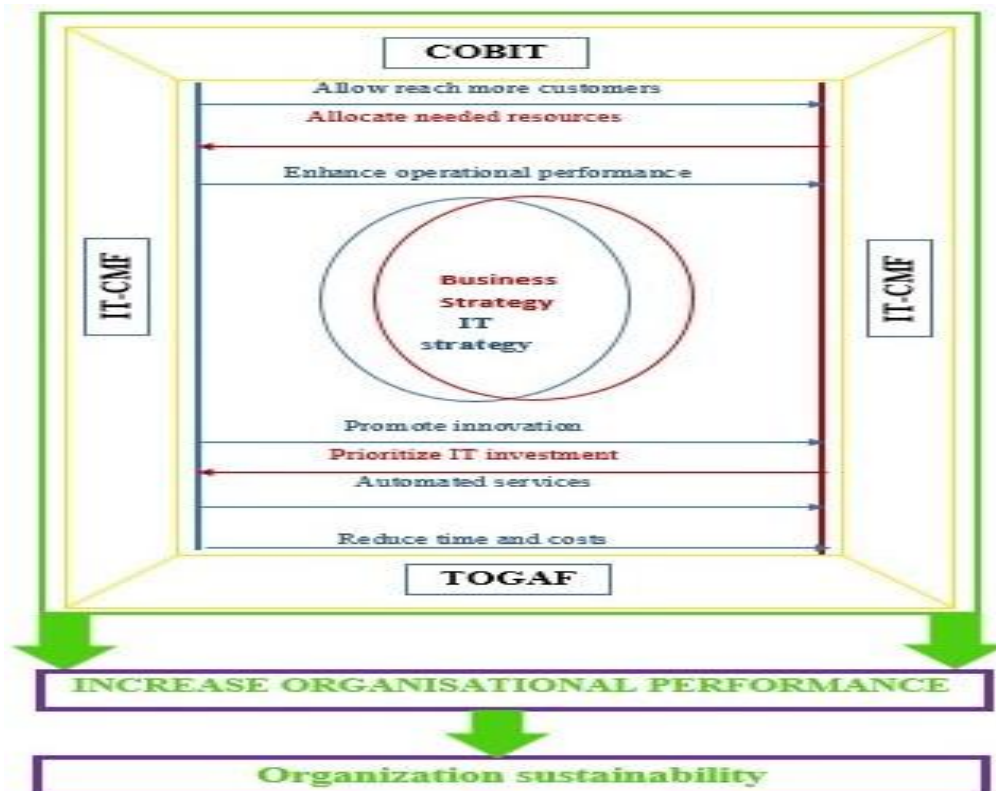


Figure 1: Research framework

The figure above, show the necessity to have an integration between the IT and Business because both play a complementary role for each other. Thus, the IT benefits affect positively the business work as well as the business strategy help IT to sustain and be organized. Furthermore, with the use of some frameworks in the organisation this will help to better governance of IT and its alignment with the overall organisation strategy and make more benefit from its use. Thus, the relation between IT and organisational performance can be direct or indirect but, in both cases, IT had a positive impact in the increase of organisational performance and ensuring the organisation sustainability.

#### V. CONCLUSION

Nowadays, the implementation of IT in organisations in any industry or field is not a choice but it's a necessity that must be well done in order to ensure the competitiveness of the organisation in the market and its ability to grow. Thus, the successful implementation of IT has to be accompanied with the right choice of strategy that must be integrated with the business strategy in order to work together for better and greater benefits. Moreover, the managers and leaders play a major role in the success of the implementation where there should be a continuous monitoring, provide of training to all staff and end users. Furthermore, the use of frameworks such as COBIT, TOGAF, and IT-CMF can help to greatly governance of IT and filling the gap between business and IT. Indeed, the main reason to implement IT is to attract more customers, providing better services to them, and ensuring that they are satisfied with the organisation goods and services. Thus, this will directly have a positive impact in the organisation and optimise its state and ensuring its sustainability.

Other than that, the main points that can be learned from the research review and empirical study regarding the health care IT implementation strategies in Malaysia and the current situation of HIS in private and public hospitals is that:

- There is a strategy to make hospitals more integrated and increasing the coordination between private and public hospitals.
- Promoting the health information exchange (HIE).
- Increase in the HIS implementation.
- Enhancing health care performance through the application of lean management and healthcare practices.
- Laws and privacy policies must be developed with Malaysian society in mind, with the goal of protecting patient information in HIS.
- The main strategy adopted to HIS implementation is outsourcing while for the development of small application and software is done in-source in the hospital by the IT department. And the use of risk management strategies for successful IT outsourcing projects in public sector.
- The level of HIS implementation varies from low, medium and high for public sector while in private sector it varies between medium, high and very high.
- The implementation of HIS has approved its efficiency and benefits by reducing costs and time, better safeguards of patient files and increase in the quality of healthcare in addition that it makes the work process more smooth, organized and accurate.

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