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Determinants of Strategic Information Management (Sim): A Case Study in a Malaysia Bank

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Abstract. Whether the banks in Malaysia really know what they are doing or just merely catching up with the global trends in banking business, the utilization of the information technology to realize their banking strategies is a phenomenon known as Strategic Information Management (SIM) to the researchers in the field of information management. SIM as reported in literatures could only happen within the framework of the existence of its determinants. Realizing it or not, banks that have successfully implement SIM would have placed these determinants surrounding their day to day running of their business. This case study, conducted in one of the most prominent bank in Malaysia that have successfully attained SIM showed that among the determinants that have existed in the bank are the government support, industry pressure, demand from competitive markets, information technology and business strategy, and information infrastructure. Apart from that, determinants such as top management support and IT personnel are the determinants that buttress the main determinants.
Keywords: Strategic information management, Information Technology, Malaysia banking, Case Study

1. Introduction

Strategic information management (SIM) is understood by experts in the field of information management as, the ability of an organization to utilize information resources i.e. information and information systems to assist the organization in its implementation of strategies or rather the information resources itself developed into a strategy of the organization (Detlor, 2010), (Meagher, 2003; Webb, 2008), (Marchand, 2005). With SIM, organizations would generally be able to successfully compete in the competitive environment in which they operate (Caudle, 1996; GAO, 1994; Gregus & Benova, 2006; Hackler & Saxton, 2007). Apart from this general benefit, SIM has proven to have assisted

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organizations with some other specific benefits such as offering better and quality products and services, increased productivity, better customer relationships and satisfaction such as understanding the characteristics and needs of customers, response to market trends, monitoring competitors, increased competitiveness, increased collaborative efficiency and effectiveness (Stone and Snowdown, 2007), (Marchand, 2005), (Marchand, 2000), (Wilson, 2003), (Marchand, Kettinger, & Rollins, 2001), (Earl, 1988; Porter, 1980, 1985; Porter & Millar, 1985; Wilson, 2003) SIM normally can be clearly seen through its products and services. For instance, in the banking and financial organizations, the SIM products are like the Automatic Teller Machines, Tele-Banking, Internet Banking, Home Banking and other products and services that are driven by information resources are being developed to assist banking and financial organizations in their competitive strategies. In this context, it would be very interesting to find out the determinants that exist surrounding the banking and financial organizations and how they influence the achievement of SIM and its products and services. This paper reports the preliminary findings from a case study conducted on one of the most prominent banks in Malaysia to explore the determinants that have impacted the development of SIM in an organization.

2. Purpose and Method of the Study

The purpose of the study is to investigate the determinant that have an impact on the development of SIM in organizations. The reason behind this purpose is that, empirical studies on SIM in Malaysian organizations are almost none being explored. Therefore, this study can be considered as an early attempt to explore the phenomenon and as such, a case study method was adopted and carried out in one of the most prominent commercial banks in Malaysia with the objectives of describing the role of the determinants SIM. This particular bank is purposely selected because of its advancement in attaining SIM and this is reflected by the variety of SIM products and services offered by the bank. Series of interviews were conducted with the Senior IT Manager, Information Officer, and Special Project MIS of the bank who is responsible with the development of SIM products and services. He is also a member of the strategic planning team of the bank with the role of advising on the aspect of information resources, a team that is responsible in the development of corporate strategies. Apart from that, documents such as minutes of meetings, memos, annual reports (dated from 1967 to 2011), and some strategic planning documents of the past were analyzed whenever they are permitted to be accessed. Findings from this study are discussed in comparison with the literatures on SIM. It is hoped that this study can shed some lights on SIM in Malaysia, particularly in the banks and financial organizations, before further study can be carried out comprehensively. A conceptual framework generated from the case study is furnished at the end of the discussions of the findings.

3. Findings

This part of the paper discusses the findings from the case study conducted. It starts with the overview of the SIM development in the bank and followed by the determinants that are found in the series interviews and document analysis.

3.1. Information Technology Development in Malaysian Banking Industry

The use of Automatic Teller Machines (ATMs) in the beginning of 1970 that offered online banking services saw the beginning of information technology (IT) use in the banking industry in Malaysia. Since then, the Malaysian banking industry has developed along with the global banking trends and IT development and later saw the tele-banking and afterwards PC banking was introduced in the 1990's. In the beginning of the year 2000, Malaysian Central Bank or Bank Negara Malaysia (BNM) has allowed all domestic banks in Malaysia to offer banking and financial products and services over the Internet to their customers. With that development, the banking industry in Malaysian beginning to offer variety of products and services with the utilization of new and advanced information and communication technology that driven by the internet technology. In this context, some banks are very successful and advanced in their effort to benefit from the information technology and the internet infrastructure. This is reflected from their range of products and services that are offered to their customers in which without the utilization of information technology and the internet infrastructure would be impossible to realize. Whether the banks in Malaysia really know what they are doing or just merely catching up with the global trends in banking business, the utilization of the information technology to realize their banking strategies is a phenomenon known as Strategic Information Management (SIM) to the researchers in the field of information management. As reported in the literatures by many researchers, SIM could only happen within the framework of its determinants. Realizing it or not, banks that have successfully implement SIM would have placed these determinants surrounding their day to day running of their business.

3.2. Background of the Bank

For this study, the Bank will be identified as the Bank X. Bank X has been in operation for more than 51 years in Malaysia. Throughout the years until today, the bank X has total assets of USD100 billion, 40,000 staff worldwide and 18 million customers around the world. This bank has embarked on computer-based services in 1978 and was the first bank to use information technology to support banking activities. After several years of using IT in banking, Bank X has a more aggressive move by providing IT-based products and services to clients such as on-line service center, Automatic Teller Machines, Tele-Banking, Internet Banking, and Home Banking and other products and services that are driven by information resources are being developed to assist its bank in their competitive strategies. Compared with other banks in Malaysia, Bank X is a pioneer in providing IT-based product and services to its customers. The Bank

has also received numerous awards, particularly in its involvement using information technology to support banking activities. The bank's achievements over the years have been recognized through the various awards received both from within Malaysia and abroad. Among them are 'IT Organization of the Year', 'Information Technology Management', and 'Best Bank in Malaysia' for its impressive profitability and innovation.

3.3. The Determinants of SIM

Among the determinants that have been identified from the series of interviews and document analysis are:

a. Government support
b. Industry pressure
c. Demand from competitive markets
d. Information technology and business strategy
e. Information infrastructure
f. Information system investment

Government support

There are many initiatives established by the government through its ministries and agencies in support of information and communication technology utilization in Malaysia. These initiatives have facilitated Malaysian business organizations implement their business strategies through the use of ICT. Among the initiatives are the developments of multimedia super corridor (MSC), Multimedia Development Corporation (MDC) and Malaysian Central Bank (Bank Negara Malaysia).

All these initiatives correlate with the development of SIM in the bank. For instance, the multimedia super corridor (MSC) was established in 1996 to provide a comprehensive world-class ICT-enabled working and living environment to catalyze the development of a knowledge-based economy and realizing the need to drive economy towards higher productivity through IT and high value-added economic activities. Companies with strong value-added activities, which were providers or heavy users of multimedia products and services, were given MSC status and enjoyed certain privilege and incentives offered under the Bill of guarantees. These included the freedom of ownership, unrestricted employment of foreign knowledge workers and freedom of sourcing capital globally. With this privilege, the banking industry has a significant impact in providing more efficient services based on IT. There is sufficient evidence from the literature that both government intervention and private sectors involvement are crucial in alleviating the strategic use of IT (Azari & Pick, 2005; Guillen & Suarez, 2005; Raven, Huang, & Kim, 2008; Robison & Crenshaw, 2002; Wilhelm, 2004). The study also implies that the developed nations similarly benefit by government support, quality legal framework, and societal openness leading to betterment in socioeconomic level and to technology utilization. This implies that economically advanced countries

can also improve their technology utilization through policy prioritization of ICT, improved privacy and intellectual property laws; efficient, open business procedures; and greater societal openness. Government initiatives and support as well as support from non-competitive industry players may also encourage utilization some types of IS (Scupola, 2003), and other characteristics of the marketplace such as legal requirements (Lacovou, Benbasat, & Dexter, 1995). In addition, the Government of Malaysia has allocated huge expenditure to provide IT infrastructure to facilitate the strategic use of IT which can be used by financial organizations to provide efficient banking services and to facilitate its customers ((EPU), 1996, 2001, 2006, 2011) . Without good support from the Government of Malaysia, Malaysia banks are unlikely to provide services such as internet banking or related services to the needs of user.

Pressure from industry

Research shows that external pressures most often derive from competitors, clients and trading partners (including suppliers and contractors). It is the influence on the firm from the organizational environment via competitive pressure and imposition by trading partners (Lacovou et al., 1995).

The strategic utilization of IS has capable to reduce competitive pressure from the industry and market place, thus, external pressure has become a major force propelling the organization to adopt and utilize various type of IS such e-business (Tsikriktis, et.al, 2004; Joo and Kim, 2004), electronic information sharing (Akbulut, 2003), and e-government (Tung and Rieck, 2005).

Demand from competitive market

IT Senior Manager at Bank X in the interviews have indicated that '*customers today are exposed to so much less sophisticated telecommunications applications, therefore, the customer is very interested if the bank can provide banking facilities or on-line which can facilitate the management of their finances*'. This is align with the study by Marjolijn, Knot, Ende, and Vergragt (2001); Naranjo-Gil and Hartmann, (2007) whereby in more competitive market organizations become interested in new tools and techniques to meet customer demand and to gain market share. Organizations try to defend their market power against entrance or technological laggards by means of different types of innovation (Cohen & Levin, 1989; Damanpour & Gopalakrishnan, 2001). Innovations demand strategic utilization of information that can lead towards a variety innovative strategy (Webb, 2008).

IT and Business strategy

Chauke and Buys (2008) in their study suggest the important of IT strategy and the business of the banks in which understanding of IT and business strategy concurrently portray an environment where effective communication between business and IT is in place to support the strategic utilization of IT. For example, Bank X has the objectives and goals to expand its empire at the global level. Thus, IT has facilitated the smooth running of all operations of Bank X. Further, Strategic Information Management (SIM) is very much related to the

strategy of organizations. It has its purpose to assist organizations with their strategies particularly strategies to achieve competitive advantage (Marchand, 2005; Bruening, et.al (2008). Banks should have a very clear business strategy that could navigate them to achieve the strategic position in the industry (Webb, (2008); Dearstyne, (2006); Hicks, et.al (2006); Teubner and Mocker (2009) because business strategy is the outcome of decisions made to guide an organization with respect to the environment, structure and processes that influence its organizational performance.

Information Infrastructure

In 2003, as part of its drive to improve efficiency, Bank X has signed a US$342 million IT infrastructure outsourcing agreement with CSC, the biggest outsourcing deal in Malaysia. Bank X wanted to improve its IT services to position it for global growth, and, in the event of a major disaster, to reduce its recovery time from three days to less than eight hours, as well as secure data center and recovery Site. Bank X required highly reliable, high-bandwidth connectivity which was achieved using dense wavelength division multiplexing (DWDM)-based circuits provided by CSC through an agreement with Malaysia Telekom.

This dimension essentially refers to a set of services that support SIM in organization. This variable is important factors to facilitate organization with a better SIM implementation according to Earl (1989, 1996, 2000); Henderson & Venkatraman, (1989, 1993); Dearstyne (2006); Hicks, et.al., (2006); Teubner and Mocker, (2009) and Detlor, (2010) Eikekbrokk and Olsen (2007). We defined Information infrastructure as knowledge of the data (Henderson & Venkatraman, 1989, 1993; Detlor, 2010) network management (Curry & Stancich, 2000; Erkus-Ozturk, 2008; Goles & Hirschheim, 1997), and Appropriate Hardware and Software - Choosing an appropriate hardware and software for business is a significant part of business operations (Detlor, 2010 and Hicks, et.al, 2006).

Investment on IS

According to Jun & Kang (2009), investment on information system (IS) is significantly related to the strategic utilization of information systems. Forman (2005) states that a higher level of IS utilization is complex and may require changes in business processes. As the company needs to use IS to integrate to their business operations and transform their business model, it would require significantly more investment in IS (D. M. Lee & Ahn, 2008; Wang & Cheung, 2004). Company need to invest in IS to keep up with and better differentiate from their competitors (Teo, 2007). Several studies also reported that the investment in IT/IS improved the productivity of the sample organizations even through the benefits from increased productivity were harvested by consumers (Brynjolfsson & Hitt, 1996; Dewan & Kraemer, 2000; Kim, Kang, Lawrence, & Sang-Yong, 2008).

Budgeting for IS software and hardware purchases, training and staffing are particularly important to the strategic use of IS (Kim et al., 2008). The software

investment in general is important and contributes to improve and maximize the utilization of hardware investment. The research conducted by Y.J. Kim et.al (2008) shows that software as an important resource has potential to create competitive advantage. Moreover, in the case of high-income countries, there is a need to manage the equipped hardware more effectively by securing more expertise in terms of internal spending. The greater the IS investment, the better organization provide the infrastructure Huang et.al ((2006), IS personnel, software and hardware to support the strategic utilization of information in organization or development of SIM.

From a comprehensive list of supporting factors from related studies (Grover, 1993; King and Sabherwal, 1992; Lee and Kim, 2007; Premkumar and Ramamurthy, 1995; and Tallon, et.al., 2000), this study identified three moderating factors that influence and support some of the factors above to induce the strategic utilization of information and IS. The moderating factors are top management support and IT personnel. Without these factors, will not be successfully implemented to provide SIM development in organization. According to Dearstyne, (2004 & 2005); GAO, (1994); Detlor,(2010); Hicks, et.al, (2006); Earl, (1989, 1996 and 2000); and Teubner and Mocker,(2009), the important factor that contribute to the successful of providing the infrastructure for IS utilization is through the support of top management. Top management is conceptualize as the involvement of the executive or top-level management of the organization in IT/IS activities. The important role of top management support is their direct involvement to bring the successful implementation of IS infrastructure, IS structure, business strategy or IS plans developed by organization (Ragu-Nathan, Apigian, Ragu-Nathan, & Tu, 2004; and Leidner, et.al, 2010).

Research has also revealed that a lack of top management support leads to resources being allocated to other projects that are important for top management (Kappelman, McKeeman, & Zhang, 2006) and consequently to unsuccessful IS activities (Teo & Ang, 2001) and a resistance to IS implementation (Newman & Zhoa, 2008). IT alone is, namely, not an adequate factor for a successful IS strategy since organizational processes involving all managers are also needed (Hackney & Little, 1999). Similarly, it has been shown (Dhillon, 2008) that only accepting the strategic role of IS/IT and its integration with business processes can lead to a sustainable competitive advantage, while mere technological strengths are not an adequate driving factor for successful IS implementation.

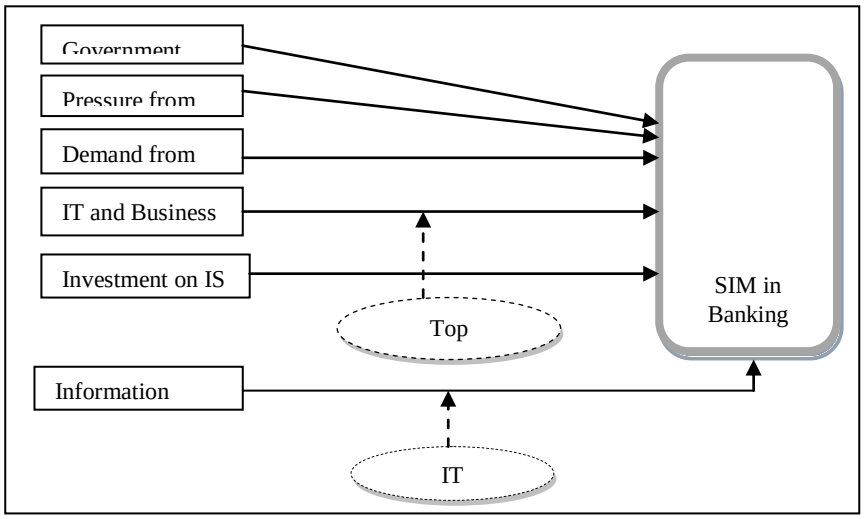
IT personnel

Success of information systems implementations does not only depend on the quality of hardware and software. It also depends on ability of people to use the information systems for information sharing, ability to conduct the sophisticated algorithm, knowledge on hardware and software to get it all work together (Winter, et.al, 2001). Managers need to make judgments and decisions when

selecting software and hardware. They need to ensure that hardware and software is selected based on the range of functionality and applications required by organization (Association, 2010). For that, they must have knowledge and expertise to select appropriate software and hardware. Xiangfeng et.al (2008) defined IS/IT human resources (human and organizational knowledge, skills, standards, and experience) who are translate IT technological components into a reliable set of understandable, shared IT services that business people can understand. In organization employee must understand and know their responsibility in managing their information systems (Earl, 1989, 1996, 2000; Henderson & Venkatraman, 1989, 1993; Dearstyne, 2005, 2006; Detlor, 2010; Teubner & Mocker, 2009). They must necessarily acquire new competences and qualifications throughout their professional lives so as to successfully meet the needs of their job (Siskos, et.al, 2007).
Siskos, et.al (2007) highlight, the important skills that should carried out by the IT professional are general skills (project or task management and problem solving) and specialized skills or technical skills (analysis, design, development, testing-maintenance, implement-install and documentation). Meanwhile, they should also have appropriate qualification (formal education) and other with the demands of a profession (formal and informal training). Some interesting research has been carried out about the knowledge expected from system analysts. Research into the knowledge and skills expected from system analysts when hired by Fortune 500 companies has revealed that various skills are expected (S. Lee & Kim, 2007).

4. Conclusion

In conclusion, we have prepared a proposed framework as show below that will be used to investigate SIM and development factors in a bank in Malaysia. This framework will be tested on all eight commercial banks in Malaysia to further research.



References

Bank Negara Malaysia (2011). Retrieved from: http://www.bnm.gov.my/

(EPU), E. P. U. (1996). *Sixth Malaysia Plan*. Putrajaya: Percetakan Nasional Berhad.

(EPU), E. P. U. (2001). *Eight Malaysia Plan 2001-2005*. Putrajaya: Economic Planning Unit, Prime Minister's Department.

(EPU), E. P. U. (2006). *Ninth Malaysia Plan 2006-2010*. Putrajaya: Economic Planning unit, Prime Minister's Department.

(EPU), E. P. U. (2011). *Tenth Malaysia Plan 2011-2015*. Putrajaya: Economic Planning Unit, Prime Minister's Department.

Akbulut, A. Y. (2003). An investigation of the factors that influence electronic information sharing between state and local agencies. *Unpublished doctoral dissertation. Louisiana State University and Agricultural and Mechanical College*.

Association, A. L. G. (2010). Spatial Information Management toolkit: guidelines for selecting spatial information systems software and hardware. Retrieved from www.anzlic.org.au/get/2403317162.pdf

Azari, R., & Pick, J. B. (2005). Technology and Society: Socioeconomic Influences on Technological Sectors for United States Counties. *International Journal of Information Management, 25*(1), 25-37.

Brynjolfsson, E., & Hitt, L. (1996). Paradox Lost? Firm-level evidence on the returns to information systems spending. *Management science, 42*(4), 541-558.

Caudle, S. L. (1996). Strategic resources management: fundamental practices. *Government Information Quartlerly, 13*(1), 83-97.

Chauke, L. M., & Buys, A. J. (2008). *Strategic utilization of information rtechnology within retail banking.* Paper presented at the PICMET 2008 Proceeding 21-31 July, CApetown, South Africa.

Cohen, W., & Levin, R. (1989). Empirical studies of innovation and market structure. In R. Schmalensse & R. Willig (Eds.), *Handbook of Industrial Organization* (Vol. II, pp. 1059-1107). Amsterdam: Elsevier.

Curry, A., & Stancich, L. (2000). The Intranet-an intrisinc component of strategic information management. *International Journal of Information Management, 20*(4), 249-268. doi: 10.10.16/SO268.4012(00)00015.3

Damanpour, F., & Gopalakrishnan, S. (2001). Dynamics of the adoption of product and process innovations in organizations. *Journal of Management Studies, 28*, 45-65.

Dearstyne, B. (2005). Fighting terrorism, making war: critical insights in the management of information and intelligence. *Government Information Quartlerly, 22*, 170-186. doi: 10.1016/j.giq.2005.01.001

Dearstyne, B. (2006). Strategic information management: continuing need, continuing opportunities. *The Information Management Journal*, 28-36.

Detlor, B. (2010). Information management. *International Journal of Information Management, 30*, 103-106. doi: 10.1016/j.ijinfmgt.2009/12

Dewan, S., & Kraemer, K. L. (2000). Information technology and productivity: evidence from country-level data. *Management Sciences, 46*(4), 548-562.

Dhillon, G. (2008). Organizational competence for harnessing IT: a case study. *Information & Management, 45*(5), 297-303.

Earl, M. J. (1988). IT and Strategic advantage: a framework of frameworks. M. J. Earl (Ed.) *Information Management: the strategic dimension*

Earl, M. J. (1989). *Management strategies for information technology*. London: Prentice Hall.

Earl, M. J. (1996). *Integrating IS and the organization. In Information management: the organizational dimension M. J. Earl*. Oxford: Oxford Univerisity Press.

Earl, M. J. (2000). Every business is an information business. In D. A. Marchand, T. H. Davenport & T. Dickson (Eds.), *Information management: the organizational dimension* (pp. 16-22). London: Prentice Hall.

Eikekbrokk, T. R., & Olsen, D. H. (2007). An Empirical investigation of competency factors affecting e-business success in European SMEs. *Information & Management, 44*, 364-383. doi: 10.1016/j.im.2007.02.004

Erkus-Ozturk, H. (2008). *The Role of local and global networking for tourism firms and clusters: the case of Antalya*. Phd Thesis of Middle East Technical. University of Ankara. Ankara, Turkey.

Forman, C. (2005). The Corporate digital divide: determinants of internet adoption. *Management science, 51*(4), 641-654.

GAO. (1994). *Improving mission performance through strategic information management and technology: Learning from leading organization*. Retrieved from http://www.gao.gov/special.pubs/ai94115.pdf.

Goles, T., & Hirschheim, E. (Eds.). (1997). *Intranets: the next IS solution?* : White Paper, Information Research Center, University of Houston.

Gregus, M., & Benova, E. (2006). Strategic information management. *E-Leader Slovakia*. Retrieved from http://www.g-asa.com/download/Gregus_Strategic_Information_Management.pdf

Grover, V. (1993). An Empirically derived model for adoption of customer-based inter-organizational systems. *Decision sciences, 24*(3), 603-640.

Guillen, M. E., & Suarez, S. I. (2005). Explaining the Global Digital Divide: Economic, political and sociological drivers of cross-national internet use. *Social Forces, 84*(2).

Hackler, D., & Saxton, G. D. (2007). The Strategic use of information technology by nonprofit organizations: increasing capacity and untapped potential. *Public Administration Review*(May/Jun).

Hackney, R., & Little, S. (1999). Opportunistric strategy formulation for IS/IT planning. *European Journal of Information System, 8*(2), 119-126.

Henderson, J. C., & Venkatraman, N. (1989). *Strategic alignment: a framework for strategic information technology management.* Cambridge,MA: Massachusetts Institute technology.

Henderson, J. C., & Venkatraman, N. (1993). Strategic alignment: leveraging information technology for transforming organizations. *IBM Systems Journal, 38*(2/3), 472-484.

Hicks, B. J., Culley, S. J., & McMohan, C. A. (2006). A Study of issues relating to information management across engineering SMEs. *International Journal of Information Management, 26*, 267-289. doi: 10.1016/j.l

Huang, S.-M., Ou, C.-S., Chen, C.-M., & Lin, B. (2006). An Empirical study of relationship between IT investment and firm performances: a resource-based perspective. *European Journal of Operational Research, 173*, 984-999. doi: 10.1016/j.ejor.2005.06.013

Ives, B., & Learmonth, G. P. (1984). The Information system as a competitive weapon. *Communication of the ACM, 27*(12), 1193-1201.

Joo, Y. B., & Kim, Y. G. (2004). Determinants of corporate adoption of e-marketplace: an innovation theory perspective. *Journal of Purchasing and Supply Management, 10*, 89-101.

Jun, B.-H., & Kang, B.-G. (2009). Organizational characteristice and electronic commerce utilization in Korea. *Journal of Global Business and Technology, 5*(1), 1-17.

Kappelman, L. A., McKeeman, R., & Zhang, L. (2006). Early warning signs of IT project failure: the dominant dozen. *Information Systems Management, 23*(4), 31-36.

Kim, Y. J., Kang, H., Lawrence, S. G., & Sang-Yong, T. L. (2008). Differential effect of IT investments: complementarity and effect GDP level. *International Journal of Information Management, 28*, 508-516. doi: 10.1016/j.ijinfomgt.2008.01.003

King, W. R., & Sabherwal, R. (1992). The Factors affecting strategic information systems application: an empirical assessment. *Information & Management, 23*(4), 217-235.

Kuppusamy, M., Raman, M., Shanmugam, B., & Solucis, S. (2009). A Perspective on the Critical Success Factors for Information Systems Deployment in Islamic Financial Institutions. *The Electronic Journal on Information Systems in Developing Countries, 37*(8), 1-12.

Lacovou, C. L., Benbasat, I., & Dexter, A. S. (1995). Electronic data interchange and small organizations: adotion and impact technology. *MIS quarterly, 19*, 465-485.

Lee, D. M., & Ahn, H. S. (2008). A Comparative analysis on the e-business adoption factors and performance in large and small companies. *Information Systems Review, 17*(4), 157-180.

Lee, S., & Kim, K. J. (2007). Factors affecting the implementation success of Internet-based information systems. *Computers in Human Behavior, 23*, 1853-1880.

Leidner, D. E., Preston, D., & Chen, D. (2010). An Examination of the antecedents and consequences of organizational IT innovation in hospitals. *Journal of Strategic Information Systems, 19*, 154-170. doi: 10.1016/j.jsis.2010.07.002

Marchand, D. A. (2000). Hard IM choices for senior managers. . In D. Chaffey & S. Wood (Eds.), *Business information management: improving performance using information systems*. London: Prentice Hall, 2005.

Marchand, D. A. (2005). *In Business information management: Improving Performance Using Information Systems. By Dave Chaffey and Steve Wood*. Essex, England: Pearson Education Limited.

Marchand, D. A., Kettinger, W., & Rollins, J. (2001). *Information orientation: the link to business performance*. New York: Oxford University Press.

Marjolijn, J., Knot, C., Ende, J. C. M., & Vergragt, P. J. (2001). Flexibility strategies for sustainable technology development. *Technovation, 21*, 335-343.

Maybank. (2010). Annual Report Year 2010. Kuala Lumpur: Maybank.

McFarlan, F. W., McKenney, J. L., & Pyburn, P. (1983). The Information archipelago: plotting a course. *Harvard Business Review, 61*(1 (Jan-Feb)), 145-156.

Meagher, R. (2003). Putting 'Strategic' into information management: if information is not startegically managed as an asset, information management will be under-resourced, under-valued, under-appreciated, and under-respected. *Information management journal, 37*(Jan-Feb). Retrieved from http://findarticles.com/p/articles/mi_qa3937/is_200301/ai_n9231023/

Naranjo-Gil, D. a. H. F. (2007). How CEOs use management information system for strategy implementation in hospitals. *Health Policy, 81*, 29-41. doi: 10.1016/j.healthpol.2006.05.009

Newman, M., & Zhoa, Y. (2008). The Process of enterprise resource planning implementation and business process re-engineering: tales from two Chinese small and medium-sized enterprises. *Information Systems Journal, 18*(4), 405-426.

Parson, G. L. (1983). Information technology: a new competitive weapon. *Sloan Management Review*(Fall), 3-14.

Porter, M. E. (1980). *Competitive strategy: techniques for analyzing industries and competitions*. New York: Free Press.

Porter, M. E. (1985). *Competitive advantage: creating and sustaining superior performance*. New York: Free Press.

Porter, M. E., & Millar, V. E. (1985). How information gives you competitive advantages. *Business Review*, (July/Aug). Retrieved from http://www.stevens.edu/MSIScourses/450/Articles/ValueOfIT/Compadvantage1.pdf

Premkumar, G., & Ramamurthy, K. (1995). The Role of interorganizational and organizational factors on the decision mode for adoption of interorganizational system. *26*, *3*, 303-336.

Ragu-Nathan, B. S., Apigian, C. H., Ragu-Nathan, T. S., & Tu, Q. (2004). A Path analytic study of the effect of top management support for information systems performance. *Omega, 32*(6), 459-471.

Raman, M., Stephenaus, R., Alam, N., & Kuppusamy, M. (2008). Information Technology in Malaysia: E-service quality and Uptake of Internet banking. [Article]. *Journal of Internet Banking & Commerce, 13*(2), 1-18.

Raven, V. P., Huang, X., & Kim, B. B. (2008). E-Business in Developing Countries: A Comparison of China and India. *International Journal of E-Business Research 3*(1), 91-108.

Rezaei, A., Asadi, A., Rezvanfar, A., & Hassanshashi, H. (2009). The Impact of organizational factors on management information system success: an investigation in the Iran's agricultural extension providers. *The International Information & Library Review, 41*, 163-172. doi: 10.1016/j.iilr.2009.05.002

Robison, K. K., & Crenshaw, M. W. (2002). Postindustrial Transformations and Cyber-Space: A Cross-National Analysis of Internet Development. *Social Science Research, 31*, 91-108.

Scupola, A. (2003). The Adoption of Internet commerce by SMEs in the South of Italy: an environmental, technological and organizational perspective. *Journal of Global Information Technology Management, 6*(1), 52-71.

Siskos, Y., Grigoroudis, E., Krassadaki, E., & Matsatsinis, N. (2007). A Multicriteria accreditation system for information technology skills and qualifications. *European Journal of Operational Research, 182*, 867-885. doi: 10.1016/j.ejor.2006.07.017

Stonehouse, G., & Snowdon, B. (2007). Competitive Advantage Revisited: Michael Porter on Strategy and Competitiveness. *Journal of Management Inquiry, 16*(3), 256-273. doi: 10.1177/1056492607306333

Tallon, P. P., Kraemer, K. L., & Gubaxani, V. (2002). Executives' perceptions of the business value of information technology: a process-oriented approach. *Journal of Management Information Systems, 16*(4), 145-173.

Teo, T. S. H. (2007). Organizational characteristics, modes of Internet adoption and their impact: a Singapore perspective. *Journal of Global Information Management, 15*(2), 91-117.

Teo, T. S. H., & Ang, J. S. K. (2001). An Examination of major IS planning problems. *International Journal of Information Management, 21*(6), 457-470.

Teubner, A., & Mocker, M. (2009). Information strategy towards a comprehensive model of information strategy. In R. D. Galliers & D. E. Leidner (Eds.), *Strategic information managementL challenges and strategies* (4th ed.). New York: Routledge.

Tsikriktis, N., Lanzolla, L., & Frohlich, M. (2004). Adoption of e-processes by service firms: an empirical study of antecedents. *Productions and Operations Management, 13*(3), 216-229.

Tung, L. L., & Rieck, O. (2005). Adoption of electronic government services among business organizations in Singapore. *Journal of Strategic Information Systems, 14*, 417-440.

Wang, S., & Cheung, W. (2004). E-business adoption by travel agencies: prime candidates for mobile e-business. *International Journal of Electronic Commerce, 8*(3), 43-63.

Webb, J. (2008). *Strategic information management: a practitioner's guide*. Oxford: Chandos publishing.

Wilhelm, A. (2004). *Digital Nation: Toward an Inclusive Information Society*. Cambridge, Massachusetts: MIT Press.

Wilson, T. D. (2003). Information management. In J. Feather & P. Sturges (Eds.), *International encyclopedia of information and library science*. London: Routledge.

Winter, A. F., Ammenwerth, E., Bott, O. J., Brigl, B., Buchanuer, A., Graber, S., . . . Winter, A. (2001). Strategic information plans: the basis for systematic information management in hospitals. *International Journal of Medical Informatics, 64*, 99-109.

Xianfeng, Q., Boxiong, L., & Zhenwei, G. (2008). Conceptual model of IT infrastructure capability and its empirical justification. *Tsinghua science and technology, 13*(3), 390-394.