

# THE EFFECT OF COMPETITIVE ENVIRONMENT AND INFORMATION TECHNOLOGY INFRASTRUCTURE ON BANK'S PERFORMANCE IN MALAYSIA

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**Abstract:** *The performance of the bank is very crucial as it provides input and output of the economy. If the performance profitability of bank is sound and in a resilient condition and that will definitely attract more people to make a deal with banks. The performance of banks can influence all the sectors through the monetary circulation. Banking has been a prolific industry for innovation concerning information systems and technologies. In the epoch of globalization, the competitive business environment of the banking institutions is expected to escalate dramatically. Similarly, the banking institutions in Malaysia have experienced noticeable changes in its business environment as a consequence of financial liberalization and consolidation, economic transformation, and more discerning consumers. The study will provide the empirical evidence of the following output: new findings and knowledge that benefited the researchers and managers at banks that emphasize the strategic importance of information technology infrastructure and competitive environment in the performance within the Malaysian banking institutions. The results of the analyses show that information technology infrastructure has a significant effect towards performance, while competitive environment showed an insignificant relationship of information technology infrastructure with the performance. Thus, appropriate strategies are important to enhance their performance and ensure their survival, especially in these turbulent economic times.*

**Keywords:** *Information Technology Infrastructure, Competitive Environment, Performance.*

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## **Introduction**

A healthy economic condition helps the country to sustain the growth over the time. The country's economy is usually supported by its own financial sector. The performance of the bank is very crucial as it provides input and output of the economy. If the performance profitability of bank is sound and in a resilient condition and that will definitely attract more people to make a deal with banks. The customers about the maximum return, they also concern

about the bank's ability secure and protect their assets with guaranteed. In addition, efficient banks can bring a lot of advantages to a country. The performance of banks can influence all the sectors through the monetary circulation. First, the role of banks can provide a long-term loan to develop agriculture sector and the industrial sector. With sufficient fund, the producer is able to increase their production based on the demand and supply of the market. The full exploitation of resources will certainly increase the employment opportunities in a country's rate as well. Hence, a profitable bank can reduce the unemployment rate through creation opportunity of employment (Ibrahim, Shabri, & Rahim, 2013).

Banking has been a prolific industry for innovation concerning information systems and technologies (Shu & Strassmann, 2005). For example, new technologies have enabled new communication channels which were quickly adopted by banks. Likewise, advanced data analysis techniques are presently applied to assess risk in the credit approval (Huang, Chen, Hsu, Chen, & Wu, 2004) and fraud detection (Ngai, Hu, Wong, Chen, & Sun, 2011).

In the epoch of globalization, the competitive business environment of the banking institutions is expected to escalate dramatically. Similarly, the banking institutions in Malaysia have experienced noticeable changes in its business environment as a consequence of financial liberalization and consolidation, economic transformation, and more discerning consumers. These growths have been reinforced by technical advancements which allowed the developer of new and more efficient delivery and processing channels as good as more innovative products and services. Against this background, a number of challenges have come forth. First, are the heightened competitive pressures faced by the banks not only from other banks but also from non-traditional competitors such as non-bank financial intermediaries as well as the capital markets which are offering similar products and services.

An international financial system becomes more complex and diversified. Every nation around the world has set up financial systems to spur economic activity. Banking systems are one of the parts of financial systems that play major roles in economic activity where the banks act as intermediary between clients (depositors) and borrowers. Today, banking systems reach at a higher floor where the banks not only provide a financing or loans but offered many types of services to serve customers' needs. The solidarity of the banking systems acts a focal part in the economic growth and create sustainability in the country to overcome great recession. In modern banking systems, there are types of banking arrangements that attend to community needs, Islamic banking and conventional banking systems. The conventional banking systems play a key role in economic systems has been tenuous with the global financial crisis, including Wall Street crash (1929), the Asian financial crisis (1997), US subprime crises (2007) and information technology (dotcom) company crises (late 2000s). Since that, Islamic financial systems, including Islamic banking systems have grown to reach a higher layer and create a tight competitor to serve customers with advanced and attractive products to the fulfill customers' needs.

Contemporary firms are making significant investments in information technology to align business strategies, enable innovative functional operations, and provide extended enterprise networks. These firms have adopted information technology to foster changes in managing customer relationships, manufacturing, procurement, the supply chain, and all other key activities (Barua & Mukhopadhyay, 2000; Agarwal & Sambamurthy, 2002; Chen & Tsou, 2007), and to enhance their competitive capabilities (Sambamurthy, V., Bharadwaj, A., & Grover, V. (2003)). A number of information system researchers have posited information

technology as an important ingredient of innovation development (Corso & Paolucci, 2001; Dewett & Jones, 2001; Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Firms implement information technology to raise and/or expand the reach of their products and services.

The phenomenon highlighted above has created many academic gaps to be filled through research. In summation, the ever changing and sophisticated needs of the customers have intensified the already highly competitive marketplace. These customers have become more civilized, better informed and more internalized as the Malaysian economy becomes more and more knowledge based. As a result, banks are required to adopt strategies to keep pace with the changing environment and customers' requirements (Al Swidi & Mahmood, 2011). Banks should also customers their strategic efforts toward adopting organizational processes that facilitate entrepreneurial attitudes, thinking, and behaviour (Sebora, Theerapatuong & Lee, 2010). Producing and handling an organization can occur on a sustained basis are fundamental competitive challenges (Yiu & Lau, 2008; Ireland, Covin & Kuratko, 2009). Therefore, the intention of this research is to empirically study the effect of competitive environment and information technology infrastructure on the bank's performance in Malaysia.

## **Literature Review**

### ***Performance***

In strategic management and organizational fields, organizational performance has been attracting the scholar's attention as one of the most important constructs (Combs, Crook, & Shook, 2005). This is why, over the last few decades, practitioners as well as researchers conducted huge attention to explore the causal components of the organizational performance and what are the mechanisms that through which some variables can affect, positively or negatively, the organizational performance (Jing & Avery, 2008). Yet the extensive research work related to the organizational performance, there is no universal definition of the construct (Ford & Schellenberg, 1982; Johannessen, Olaisen, & Olsen, 1999). One of the recent definitions was provided by Antony and Bhattacharyya (2010) who defined the organizational performance as the measure of organizational success with regards to the value it creates and deliver to internal as well as external customers.

Traditionally, the organizational performance has been measured using the cost and account-based measures (Demirbag, Tatoglu, Tekinus, & Zaim, 2006). Referable to the conflicts of the organizational performance definitions, there has been a continuous debate regarding which is the best criterion of the organizational performance (Jusoh, Ibrahim, & Zainuddin, 2008). The advocates of each financial and non-financial performance standards to try to defend their point of view. Although the majority of the studies measuring organizational performance used the account-based measure, some of the study chooses the non-financial measures due to the following reasoning. Foremost, the financial measures of organizational performance are not stable and might be so sensitive to changing of the industry-related factors. Second, the financial measures can be easily manipulated and hence do not reflect the real performance. Tierce, the fiscal measures, as argued by Kaplan & Norton (1996), lack the strategic focus (Kaplan & Norton, 1996) since they depict the past performance and they might be deceptive when used to foretell the future performance. Last but not least, the financial performance measures might be so difficult to obtain, especially in developing countries which do not have a stock market. Researchers have directed the performance concept as easily as its use in organizational strength for a long time (Campbell, 1977; Kirchoff, 1977; Steers, 1975, 1977), it nonetheless remains

one of the thorniest issues to academics as well as to business practitioners (Ravichandran, Liu, Han, & Hasan, 2009; Venkatraman & Ramanujam, 1986). Consistency in the definition and operationalization of business performance has eluded researchers for a long time (Kirby, 2005). The literature on research addressing this topic is increasing while concurrently becoming divergent, so lessening the chances of consensus in basic terminology and definitions (Richard, Devinney, George, Yip, & Johnson, 2009). However, there is agreement that business performance is affected by the strategies and operations in the market and non-market environments (Orlitzky, Schmidt, & Rynes, 2003).

Ansari and Rahman (2011) investigated the performance of Islamic banks and conventional banks in Pakistan from year 2006-2009. Islamic banks are more liquid than conventional banks, arguing that Islamic banks with higher liquidity are less risky compared conventional during financial crisis. Grounded from the return on asset and return on equity of the banks, there is an insignificant difference between Islamic banks even through Islamic banks have higher liquidity compared than conventional banks. Furthermore, both banks reveal there is no vast difference in term of capital adequacy. Lastly, Islamic banks performs better compared than conventional banks for net interest margin and cost income ration, therefore Islamic banks are more beneficial in term of cost more effective than conventional banks.

### ***Information technology infrastructure***

Computing technology and information systems represent significant investments for organizations; investments on which they hope to make a return in areas such as efficiency and improved effective decision making. Simply acquiring technology, however, is often not sufficient; in parliamentary procedure to receive the anticipated benefits, it must be utilized appropriately by its designated users. This problem, variously labelled information systems implementation, technology acceptance, and technology adoption, has persisted in the information system literature spanning over two decades (Lucas, 1975; Davis, 1989; DeLone & MecLean, 1992; Agarwal & Prasad, 1997). The productivity paradox is that systems acquired are never used and therefore, the gains in productivity realized from adoption in information technology have not been as expected.

Information technology infrastructure is consistently defined in literature as a set of shared information technology resources that are a foundation for enabling communication across an organization and enabling present and future business applications (Niederman., Brancheau, & Wetherbe., 1991; Duncan 1995; Byrd & Turner 2001). It not only includes the technological components, but also the human components (Duncan 1995; Chanopas, Krairit, & Khang, 2006). Information technology infrastructure flexibility refers to the level to which the firm's information technology resources are malleable (Duncan 1995). The definition of information technology infrastructure flexibility by Byrd and Turner (2001) & Byrd (2001) emphasizes information technology infrastructure's ability to easily and readily support a wide mixture of hardware, software, and communication technologies, to give out information to anywhere inside an organization and beyond, and to support the design, evolution, and execution of a heterogeneity of business applications. Four key elements of information technology infrastructure flexibility have been distinguished in the literature. Connectivity, compatibility, modularity, and information technology personnel competency were first identified by Duncan (1995) and Byrd & Turner (2001). Mishra & Agarwal (2010) added organizational cognition of information technology technologies (technological frame) as another component of information technology infrastructure flexibility. However, most commonly accepted

dimensions of information technology infrastructure flexibility are connectivity, compatibility, and modularity.

### ***Competitive environment***

In a well-known study by Porter (1980), competitive environment is not only limited to competitors, but also contains the underlying economic and competitor's forces, such as threats of new entrants, suppliers, customers, and substitute products. Fahey (1999) shared a similar view by mentioning how detecting, anticipating and understanding the competitive environment is an important

In this study, the environmental dimensions used are dynamism, hostility, market turbulence and technological turbulence. These two dimensions dynamism and hostility are the most widely used dimensions of the environment in previous researches (Hough & White, 2003; Lumpkin & Dess, 2001; Moreno & Casillas, 2008; Wiklund & Shepherd, 2005; Zahra & Garvis, 2000). The strategy, organizational structure, top management's decision making-style, and corporate entrepreneurship have all been found to differ depending on the type of environment a firm encounter (Wiklund & Shepherd, 2005). Moreover, dynamism and hostility also influence the firms' everyday operations and goal achievement and includes sectors such as competitors, suppliers and customers (Daft, Sormunen, & Parks, 1988).

Market turbulence is delineated as the rate of change in customer preferences and composition (Subramaniam & Gopalakrishnan, 2001). In the integrative model of information technology business value, Melville, Kraemer, & Gurbaxani, (2004) emphasized the impacts of industrial characteristics of the relationship between information technology-enabled resources and firm performance. Technological turbulence describes technological changes (Kohli & Jawaorski, 1990). Technological turbulence is also viewed as a condition where an organization can stay ahead through its continuous improvement of products, services and process management (Wang, Chen, & Chen, 2012).

### ***Theoretical framework***

The central premise of the contingency theory is that there must be congruence or 'fit' among key variables such as the environment, structure, and strategy in order to achieve greater firm performance (Morris, 2015; Burns & Stalker, 1961; Child, J., L. Chung & H. Davies. 2003; Lawrence & Lorsch, 1967; Schoonhoven, 1981; Venkatraman, 1989). In other words, the relationship between two variables depends on the level of a third variable.

Drawing on the dynamic capability framework and current literature of the studies to empirically examine on the effect of competitive environment and information technology infrastructure that may lead to performance in banking institutions. This study developed a research framework as depicted in Figure 1.

Based on the above literature review, the following hypotheses are anticipated.

Hypothesis 1: There is a significant relationship between information technology infrastructure and performance.

Hypothesis 2: Competitive Environment moderates the relationship between information technology infrastructure and performance.

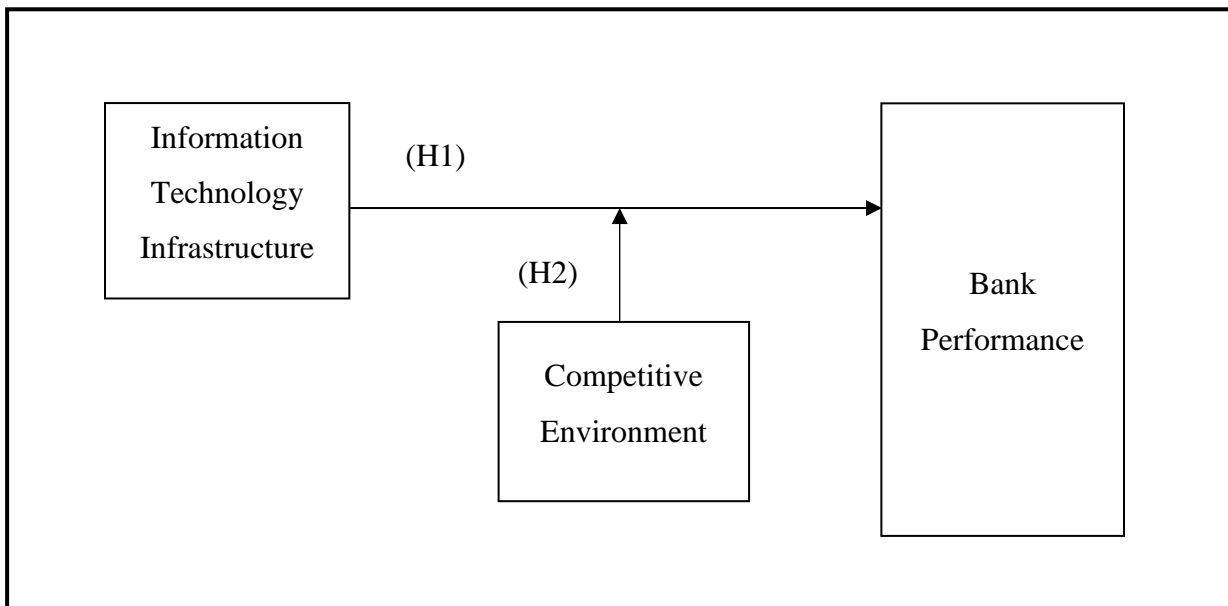


Figure 1: Research Theoretical Framework

## Methodology

This study focused on the banks as the unit of analysis was the branch managers of locally incorporated Islamic (16 banks), commercial (27 banks) and development financial institutions (4 banks) in Malaysia. The local and foreign banks were chosen because these banks have extensive branch networks. The sampling frame was obtained from the Bank Negara Malaysia (BNM). Branch managers were chosen because they are responsible for the strategic business unit level, and therefore they are in the best position to describe the various organizational characteristics of their banks (Dwairi, 2004; Mahmood & Abd Wahid, 2012). The key informants were branch managers and the choice of the banking institutions makes the sample homogeneous.

The instrument for information technology infrastructure use was adapted from Sircar, S., Turnbow, J. L., & Bordoloi, B. (2000), Bharadwaj (2000), Tallon and Pinsonneault (2011), and Tiwana and Konsynski (2010). Dimension in the measurement of information technology infrastructure are as connectivity, hardware compatibility, modularity, and personnel competency. The instrument for competitive environment was adapted from Dess, G. G., Lumpkin, G. T., & Covin, J. G. (1997), Moreno and Casillas (2008), Jaworski and Kohli (1993), and Pavlou and El Sawy (2006). The items in the multidimensional measurement of competitive environment are dynamism, hostility, market turbulence, and technological turbulence. The instrument for bank performance was adapted from Elbashir, Collier and Davern (2008). Items in the measurement of performance are non-financial and financial growth.

The completed questionnaires to be returned by the employees were screened to eliminate those forms improperly filled out. There were 177 questionnaires are valid for data analysis. In order to analyse survey data, this study used two statistical techniques. First, the Statistical Package

for Social Sciences (SPSS) version 20 was used in the initial stage. The SPSS 20 was used to generate descriptive analyses for demographic and variables such as means, standard deviations, and frequencies. The missing data were also assessed using SPSS. In other words, SPSS has facilities for the extensive manipulation and transformation of data collected and includes a range of statistical analysis techniques that contribute to a meaningful research result (Coakes & Steed, 2007). Thus, the objective of data analysis is to ensure completeness, consistency, and reliability data (Zikmund, 2000). The second statistical technique used was Partial Least Squares (PLS) approach to Structural Equation Modelling (SEM) using Smart PLS 3.0 software (Ringle, Wende, & Will, 2005).

## Analysis and Findings

A descriptive analysis was conducted to obtain the overall background information of the respondents. Based on Table 1, each of the demographic information presented in the following sections.

As depicted in Table 1, 38.4% or 68 from the total sample respondents are from the Islamic banks. The second largest group of respondents is from the conventional banks. They accounted for 33.3% (59 respondents) of the total respondents. The smallest group in the distribution was respondents from both type of bank; Islamic and conventional. They accounted for 28.2% or 50 respondents from the total respondents. As depicted also in Table 1, 48.0% or 85 from the total sample respondents offered types of services are from the Islamic and conventional banks. The second largest group of respondents is from the Islamic banks. They accounted for 38.4% (68 respondents) of the total respondents. The smallest group in the distribution was respondents from conventional bank. They accounted for 13.6% or 24 respondents from the total respondents. The sample respondents are distributed across two types of bank ownership. 96.0% or 170 respondents are from local bank incorporated in Malaysia. This was followed by 4.0% (7) respondents from foreign bank.

**Table 1: Bank's Profile**

Bank	Demographic Profile	Frequency	Percentage
Type of Bank	Islamic Banks	68	38.4
	Conventional Banks	59	33.3
	Islamic and Conventional	50	28.2
Types of Services Offered	Islamic Banks	68	38.4
	Conventional Banks	24	13.6
	Islamic and Conventional Banks	85	48.0
Ownership of Bank	Local Bank	170	96.0
	Foreign Banks	7	4.0

The assessment of path-coefficient from the PLS analysis is to evaluate the significance of a hypothesized relationship among the constructs. There are three latent constructs in the overall structural model, namely; information technology infrastructure, competitive environment and performance. A total of two hypotheses was developed to examine the relationship between the constructs.

Table 2 shows the summarized results of the propose structural model with regards to the path coefficients, t-statistics, and p-values. Essentially, the findings also verified whether the

hypotheses are supported or not supported. There is one supported hypothesized links whilst the remaining one were not supported.

**Table 2: Hypotheses Testing Results**

Hypotheses	Relationship	Path Coefficient ( $\beta$ )	T-Statistics	P-Values	Result
H1	Information Technology Infrastructure → Performance	0.182	1.704	0.045	Supported
H2	Information Technology Competitive Environment → Performance *	0.078	0.490	0.312	Not Supported

The findings show that H1: information technology infrastructure will exert positive influence on performance ( $\beta=0.182$ ) of bank branch manager in Malaysia. The research hypotheses of H1 presume that there is a significant relationship between information technology infrastructure and performance of Malaysian banking institutions. This finding provides the empirical support for the hypothesis H1 that information technology infrastructure is a key contributing component for organizational performance. This finding lends support to the claim that information technology infrastructure still does matter (Kumar 2004). The information technology infrastructure is a strategic source that can help increase an organization's strategic business value by enhancing its organizational performance.

However, the hypothesis H2 examines the moderating effect of competitive environment. It is found that competitive environment was insignificantly influenced not supported. It is found that competitive environment was found to be insignificant influenced and not supported in explaining the relationship between information technology infrastructure and performance. This study shows that complete environment insignificantly moderates (reinforces) the relationship between information technology infrastructure and performance. This finding suggests that information technology infrastructure flexibility does not plays important role to increase an organization's agility in more turbulent business environments than in less turbulent environments. The finding of this research is also consistent with many researcher's argument where from a contingency perspective, where is not necessarily suitable for all environmental situations. For example, Covin & Slevin (1989), and Dess, Lumpkin, & Covin, 1997, found this relationship towards performance does not exist.

## Conclusions

This paper contributes to the literature by examining the relationship with information technology infrastructure, competitive environment, performance and to investigate the relationship in this proposed conceptual model within the Malaysian banking institutions. The key contribution of this research is the proposal of a model for measuring the performance of banking institutions in Malaysia. Their performance is a major concern due to their vast economic contributions to the nation. Thus, it is imperative that they implement appropriate strategies to enhance their performance and ensure their survival, especially in these turbulent economic times.



This study is to investigate information study in banking institutions in Malaysia. It was a quantitative research, and further research is needed to better understand the current state of information study in the Malaysia business climate, as well as to confirm the findings of the present study. More advanced analyses need to be applied. Though the findings of this study may not be generalizable, this study does contribute to current understanding of information study. The size of the sample was sufficient for the particular purpose, and allows reasonable conclusions to be drawn, but it cannot be considered representative of all Malaysian companies.

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