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Information Technology Outsourcing Decisions in an Emerging Economy: The Influence of Perceived Risks and Benefits

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Abstract: This study examined the effect of perceived risks and benefits on the intention to increase Information Technology (IT) outsourcing amongst 83 companies in Malaysia. Performance risk, financial risk and technical risk were found to be the main risk factors that increased the perceived risks of IT outsourcing, hampering the intention to increase the level of IT outsourcing. Cost saving, focus on core competence, technical resource and time and quality improvement are the main benefit factors that increased the perceived benefits of IT outsourcing, motivating the intention to increase IT outsourcing. Financial risk factor had the highest impact on the overall perceived risks, while technical resource and time was the strongest influencing factor of the overall perceived benefits.

Key words: Information Technology · Outsourcing · Technical · Risks · Resource · Service

INTRODUCTION

IT outsourcing has experienced considerable growth in the last few years [1] Organizations tend to outsource some or all of their IT activities in order to obtain benefits from the outsourcing business strategy. Nevertheless, for any outsourcing decision, there are some risks associated with that decision [2]. Many studies have been conducted to investigate the risks and benefits factors of IT outsourcing in developed countries such as the USA, Japan and Western Europe where their service providers are from developing countries such as India, China and Malaysia. The majority of these studies indicate cost saving as the main benefit. According to Khan, Niazi and Ahmad[3] vendors in developing countries cost one-third or less compared to in-house operations in developed countries. However, in the situation of outsourcing from a developing country such as Malaysia to local or overseas vendors, the advantage of lower labor cost may not be significant, or may not exist at all as Malaysian labor cost is lower than that of developed countries. As with many developing countries, there is limited number of studies on IT outsourcing in Malaysia [4]. Where cost saving is not the primary motivator for IT outsourcing, there is a need to find out the main factors that motivate IT outsourcing decision. The objective of this study is to identify the perceived risks and benefits of IT outsourcing in Malaysia, a developing country. Thus, allowing key decision makers of the client companies to understand whether IT outsourcing is a good decision for their business or not and whether they are able to mitigate the risks associated with that decision or not. For the service provider or the vendor companies, this study would reveal the risk and benefit factors that are of importance to the client companies.

Research Framework: Gewald and Dibbern [5] investigated business process outsourcing in general and divided the risks of business process outsourcing into four: financial, performance, strategic and psychosocial. They also divided the benefits of business process outsourcing into four; cost saving, focus on core competencies, access to specialized resources and quality improvement. As the current study is on outsourcing of technical activities (IT) specifically, Gewald and Dibbern's framework has been slightly modified to suit the purpose of this study. The construct "strategic risks" was changed to "processing risks", which include the process of selecting vendors, deciding the scope of the outsourcing and the contract issues. The "psychosocial risks" was changed to "technical risks", as it is more relevant for the IT sector. One of the benefit factors was changed as well: "access to specialized resources" was changed to "technical resources and time".

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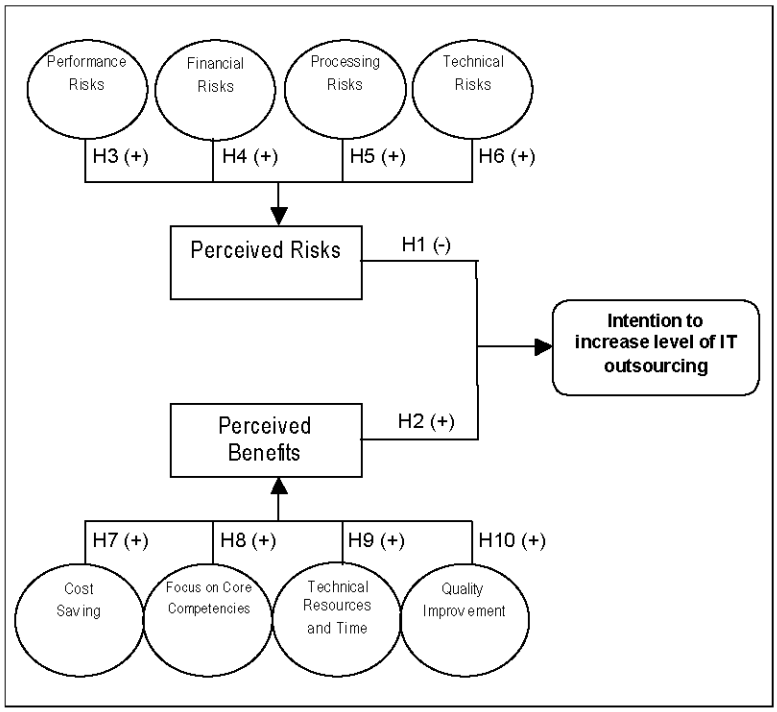

Fig. 1: Perceived Risks – Benefits of IT outsourcing adoption model, modified from Gewald and Dibbern's model developed in 2009

The literature reviewed indicated two important resources gained from IT outsourcing activity - technical resources and time. The new construct is just a rephrasing of the term "access to specialized resources" to "technical resources and time". Figure 1 shows the modified theoretical framework. It is expected that performance risks, financial risks, processing risks and technical risks would affect the perceived risks of IT outsourcing which would negatively influence the intention to increase the level of IT outsourcing. Whereas cost saving, focus on core competencies, technical resources and time and quality improvement are expected to affect the perceived benefits of IT outsourcing which would positively influence the intention to increase the level of IT outsourcing.

Risk-Benefit Concept: IT outsourcing has many benefit factors that influence organizations to outsource their IT activities. However, IT outsourcing may face serious risks [6] that could fail the project if they are not addressed well during the outsourcing decision making stage. The overall evaluation of perceived risks and benefits from IT outsourcing would influence the intention to increase or decrease the current level of outsourcing. Accordingly, the first two hypotheses were developed:

H1: A high level of perceived risks of IT outsourcing negatively influences the intention to increase the level of IT outsourcing in the organization.

H2: A high level of perceived benefits of IT outsourcing positively influences the intention to increase the level of IT outsourcing in the organization.

Perceived Risks of IT Outsourcing: From the literature reviewed, perceived risks of IT outsourcing are categorized into four: performance, financial, processing and technical risks.

Performance Risks: Performance risk refers to the possibility that the service providers may not deliver the expected level of service to the client [5]. A diminished technical return is the main risk factor associated with IT outsourcing. In this study, it has been categorized under the performance risk. One of the reasons that organizations outsource their IT activities to a third party is to gain an advantage of the technical experience and knowledge that the third party may offer [7]. However, there is no guarantee for the client company that the contracted vendor will continue to keep up with the customer perception of the latest technology. If the client does not adopt the new technology and its competitors do, that might reduce the client competitiveness in

the market [2]. Firms' dissatisfaction of the service provider's performance is one of the risk factors that results in the overall perceived risks of IT outsourcing [8]. Thus the third hypothesis is stated as:

H3: The more the perceived performance risks of IT outsourcing, the more the overall perceived risk of IT outsourcing.

Financial Risks: Searching for the right vendor involves costly activities such as traveling, interviewing, evaluating and consulting [7][8][9][10]. Transitioning the IT functions to the vendor incurs expenses such as setup, redeployment and relocation. Such expenses tend to direct key decision makers to think twice before deciding to outsource. Thus the fourth hypothesis is:

H4: The more the perceived financial risk of IT outsourcing, the more the overall perceived risk of IT outsourcing.

Processing Risks: The literature reviewed indicated that outsourcing decision process, outsourcing scope and IT outsourcing contract are the main processing risk factors associated with IT outsourcing.

Outsourcing Decision Process: Vendor selection is typically based on comparisons made among many service providers in terms of price, lead time and quality. Failure in choosing the right vendor might lead to many problems with the outsourced project.

Outsourcing Scope: Outsourcing scope is the question of 'what to outsource? Total outsourcing is about outsourcing the entire project with all its functions, staff and assets under the vendor's responsibility [7]. In that situation, firms no longer have full control over the IT staff and their responsibilities. Total outsourcing may face serious problems when the organization fails to align between business strategy and IT due to the loss in control, over time [2] [7]. Selective outsourcing is considered in order to reduce the risks associated with total outsourcing. When an organization outsources some IT functions to a third party and operate other functions internally, the organization will still have control over some IT activities.

Outsourcing Contract: Failing to clarify any component of the contract might become a big problem in the future of the outsourced IT project. The legal issues of the contract are also a concern when an organization decides to outsource its IT project overseas. Some countries do not have enough or strong regulations that protect the business. Contracting with vendors from those countries are considered to be risky and that could affect the outsourced project [11]. Processing risks translate to perceived risks of IT outsourcing from the key decision makers' perspective when they think about IT outsourcing as a strategic option. The fifth hypothesis is derived as:

H5: The more the perceived processing risk of IT outsourcing, the more the overall perceived risk of IT outsourcing.

Technical Risks: The literature reviewed exemplifies that privacy and security issues and the loss of IT expertise are the main technical risk factors that are associated with IT outsourcing.

Privacy and Security: Privacy and security issues in IT outsourcing are of critical concern for many organizations. Firms might experience security issues, such as loss, misuse, or leakage of data when transferring sensitive or confidential information. Contracting out IT processing activities entails a significant loss of control over the performance of those activities [12]. The lack of management control over the outsourced IT projects may affect data privacy and security [11][13][14]. When the service provider is located in a different country where security and privacy regulations are lacking, data privacy and security of the outsourced project might be affected [15][16].

Loss of IT Expertise: Outsourcing IT activities mean that companies no longer need some of their current IT staff [17]. In the USA alone, some 300,000 to 995,000 lost jobs in 2004 were attributed to offshore outsourcing [18]. From the firm's perspective, this would reduce some internal operation cost. However, having no or little IT expertise remaining in the firm is seen as risky, because the firm tends to be dependent on external service providers [2].

The ability to align IT with the firm's strategy might also be weak and this will affect the firm's ability to maintain its competitive advantage [2]. These issues in technical risks will increase the overall perceived risk of IT outsourcing. The technical risks, the sixth hypothesis is phrased as:

H6: The more the perceived technical risk of IT Outsourcing, the more the overall perceived risk of IT Outsourcing.

Perceived Benefits of IT Outsourcing: The literature classified the main benefits of IT outsourcing into four: cost saving, focus on core competencies, technical resources and time and quality improvement.

Cost Saving: Cost saving is an essential motivation factor for IT outsourcing in general [19]. The rationale is that the vendor has better economies of scale and is more focused in managing IT projects [20]. Cost saving is not only driven from the large scale of service that a vendor provides to the organization, but also from the difference in the labor cost between the client country and the service provider country, when the outsourcing is global [21][22]. Djavanshir [15] surveyed the benefits associated with IT outsourcing and found that savings in terms of labor cost was the major concern for in IT outsourcing decisions. Accordingly, cost saving influences the perceived benefits of IT outsourcing. The seventh hypothesis is:

H7: The more the perceived cost advantages of IT outsourcing, the more the overall perceived benefits of IT outsourcing.

Focus on Core Competencies: Some of the IT activities are typically seen as necessary but are not part of core business for many organizations. These activities consume much of the management's time in terms of managing the day-to-day back-office operations. By outsourcing these non-core activities, firms will be able to divert their attention from supplementary tasks and focus on their core functions [20]. The company management can focus more time, energy and resources on the company's core competency and bring better services and products into the market [19][23]. The eighth hypothesis is postulated as:

H8: The more the perceived ability to focus on core competencies through IT outsourcing, the more the overall perceived benefits of IT outsourcing.

Technical Resources and Time: The limited tangible and intangible resources influence firms to outsource IT functions to a service provider, to cover their shortfalls [22]. From another point, reducing the operation time of a project is an important objective for all businesses [15]. Usually the IT service providers are more efficient in performing IT activities than the client companies as they have the much needed experience, resources and skills. This leads them to operate IT projects faster than the client companies. The ninth hypothesis is postulated as:

H9: The more the perceived advantage of Technical Resources and Time in IT outsourcing, the more the overall perceived benefit of IT outsourcing.

Quality Improvement: Some firms choose to outsource to improve quality of their product or service [5]. Organizations expect the IT service providers to use industry best practices to improve quality. Knowledge, established from experience is irreplaceable [24]. Skilled people, advanced technology and experience are the main resources that would increase quality of a service or product and this will in due course lead to increased customer satisfaction level. The tenth hypothesis is postulated as:

H10: The more the perceived quality improvements through IT outsourcing, the more the overall perceived benefits of IT outsourcing.

Methodology: Questionnaire survey method was employed to collect data. The questionnaire developed by Gewald and Dibbern [5] was modified by adding new items that relate to the new variables of " processing risks", "technical risks" and "technical resources and time".

The survey targeted respondents (1 respondent per organization) from organizations that had conducted at least one IT outsourcing activity. This ensured that respondents have experience and knowledge about the risks and benefits of IT outsourcing.

A total of 400 firms were randomly selected from the companies listed in the Multimedia Super Corridor (MSC) Malaysia Company Directory. An online survey form was developed and sent to the 400 companies after telephone contact was established with the IT managers. After 3 weeks, 83 valid responses were received (21% response rate).The respondent companies were from marketing, construction, IT services and banking.

Data Analysis: Statistical Package for Social Sciences (SPSS) was used for data analysis.

Reliability and Validity Analysis: Reliability test was done to check the internal consistency of the questionnaire's items. The test of reliability indicated that the majority of the data are reliable as Cronbach's Alpha was more than 0.70, [25] except for technical risk items with Cronbach's Alpha value of 0.69 (Table 1). By deleting the last item (Tech4) from Technical Risks items, Cronbach's Alpha increased significantly from 0.69 to 0.90 (Table 1).

Table 1: Validity and Reliability Test Results

Construct	Item	Corrected Item-Total Correlation	Cronbach's Alpha Coefficient
Performance risk	Per1	0.724	0.845
	Per2	0.702	
	Per3	0.712	
Financial risk	Fin1	0.78	0.891
	Fin2	0.795	
	Fin3	0.712	
	Fin4	0.755	
Processing risk	Pro1	0.635	0.826
	Pro2	0.609	
	Pro3	0.732	
	Pro4	0.634	
Technical risk	Tech1	0.676	0.69 ** 0.905
	Tech2	0.663	
	Tech3	0.729	
	* Tech4	0.032	
Perceived Risks	PrcvR1	0.766	0.88
	PrcvR2	0.779	
	PrcvR3	0.763	
Cost Saving Advantage	* CS1	0.21	0.789 ** 0.892
	CS2	0.667	
	CS3	0.788	
	CS4	0.776	
Focus on core competencies	Fcs1	0.815	0.911
	Fcs2	0.826	
	Fcs3	0.831	
Technical Resources and Time	Res1	0.852	0.938
	Res2	0.87	
	Res3	0.832	
	Res4	0.855	
Quality improvement	Qlty1	0.881	0.918
	Qlty2	0.812	
	Qlty3	0.817	
Perceived Benefits	PrcvB1	0.89	0.933
	PrcvB2	0.87	
	PrcvB3	0.844	
Intention to increase IT Outsourcing	Intention1	0.805	0.914
	Intention2	0.866	
	Intention3	0.81	

*Item deleted

**The Cronbach's alpha value if item deleted

Validity test was conducted to assess whether the items measure what it is supposed to measure. The 'Corrected Item-Total Correlation' value indicates the degree to which each item correlated with the total score. Low value (less than 0.3) means that the item is not valid and measuring something different from the scale as a whole. This test also indicated that the item (Tech4) in the Technical Risks construct is having an extremely low Corrected Item-Total Correlation value with only 0.032, which pointed out that this item is not valid. Another item, CS1 in cost saving construct had a low Corrected Item-Total Correlation value of 0.21. Although the Cronbach's Alpha for Cost Saving construct is 0.78 which is higher than 0.70 and is acceptable, the validity of the first item of the construct (CS1) had a very low Corrected Item-Total Correlation value, which affected the overall validity score of the cost saving construct. By deleting this item, the Cronbach's alpha was higher than the earlier value of 0.78, at 0.89 (Table 1).

Table 2: Factor Analysis (Rotated Component Matrix)

	Component							
	1	2	3	4	5	6	7	8
Tech1				.865				
Tech2				.840				
Tech3				.857				
Tech4								*.671*
CS1								*-.783*
CS2					.716			
CS3					.758			
CS4					.705			

Factor analysis test was run to double check the reliability and validity tests, especially for Tech4 and CS1 items. The Rotated Component Matrix of the factor analysis test confirmed that items Tech4 and CS1 do not belong to their default constructs (Table 2).

The questionnaire items were reviewed and it showed in obvious manner that (Tech4) item was a weak question and is logically less pertinent to the other items in the Technical Risks construct. The item Tech4 is about the loss of IT experts as a result of IT outsourcing, while Tech1, Tech2 and Tech3 are about privacy and security issues.

The item CS1 is the only item with an inverse wording format in the questionnaire; most probably the respondents did not notice the inverse format of the question. As a result of the reliability and validity tests (Tech4) and (CS1) items were eliminated from further statistical analysis.

Multivariate Analysis: The model was tested by three multiple regressions. The first regression is to test on the two independent variables (the perceived risks and the perceived benefits of IT outsourcing) in relation with the intention to increase the level of the IT outsourcing. The second regression tests the four independent variables (performance risks, financial risks, processing risks and

Table 3: Summary of the regression analysis

Regression Test	Hypothesis	Independent Variable	Standardized Coefficients Beta	Sig. Std. Error	Hypothesis Status
1	H1	PrcvR	-0.170	0.038	Accepted
	H2	PrcvB	0.676	0.000	Accepted
2	H3	Per	0.209	0.051	Accepted
	H4	Fin	0.441	0.000	Accepted
	H5	Pro	0.077	0.450	Rejected
	H6	Tech	0.254	0.011	Accepted
`3	H7	CS	0.179	0.040	Accepted
	H8	Fcs	0.214	0.015	Accepted
	H9	Res	0.343	0.003	Accepted
	H10	Qtly	0.233	0.023	Accepted

Dependent Variable for:

Regression Test 1 = Intention to increase the level of IT outsourcing

Regression Test 2 = Perceived Risks of IT outsourcing

Regression Test 3 = Perceived Benefits of IT outsourcing

technical risks) in relation with the perceived risk of IT outsourcing. The last regression is to test the last four independent variables (cost saving, focus on core competence, technical resource and time and quality) in relation with the perceived benefits of the IT outsourcing.

Outliers, Normality and Multicollinearity: The Boxplot graphs of all variables revealed that there are no outliers in the data. The skewness and kurtosis values showed that the data is normally distributed. Multicollinearity problem exists when there are at least two independent variables highly correlated (r=0.9 and above) with each other. The correlations table (Table 3) shows that none of the coefficient "r" value is 0.9 or above. This confirms that multicollinearity does not exist.

Hypotheses Testing: The hypotheses were tested by observing the magnitude of the standardized coefficient (β) of the constructs together with the corresponding levels of significance (P-values).

The first regression indicated that the path coefficient Beta (β) between perceived risk of IT outsourcing and the intention to increase the level of IT outsourcing is negative and weakly significant (β = -0.170, $p < 0.05$), supporting the first hypothesis H1 (Table 3).

As expected, the path Beta (β) between the perceived benefits and the intention to increase the level of IT outsourcing is positive and highly significant (β = 0.676, $p < 0.001$). This supports the second hypothesis H2 (Table 3).

The second regression test indicated that the perceived risks was significantly and most strongly influenced by financial risks (β = 0.441, $p < 0.001$), followed by technical risks (β = 0.254, $p <= 0.01$) and performance risks (β = 0.209, $p < 0.05$). This supports H3, H4 and H6. The impact of processing risks is not significant (β = 0.077), thus H5 is rejected (Table 3).

The third regression test indicated that the most significant factor of perceived benefits was the "technical resource and time" (β = 0.343, $p < 0.01$), followed by quality improvement (β = 0.233, $p < 0.05$), focus on core competencies (β = 0.214, $p < 0.05$) and cost saving (β = 0.179, $p < 0.05$); supporting H7, H8, H9 and H10 (Table 3).

The overall illustrative power of the model was measured by looking at the (R^2) value. R^2values of 0.67 are usually considered to be substantial, while 0.33 is moderate and 0.19 is weak. The first regression showed that 59% of the intention to increase the level of IT outsourcing is explained by the perceived risks and perceived benefits.

While the second regression showed that more than 44% (R^2=0.447) of the perceive risks is predicted by the performance risk, financial risk, processing risk, technical risk. Whereas third regression showed that almost 67% (R^2=0.668) of the perceive benefits is explained by technical resource and time, quality improvement, focus on core competencies and cost saving. Figure 2 shows the three regression results incorporated into the structural model.

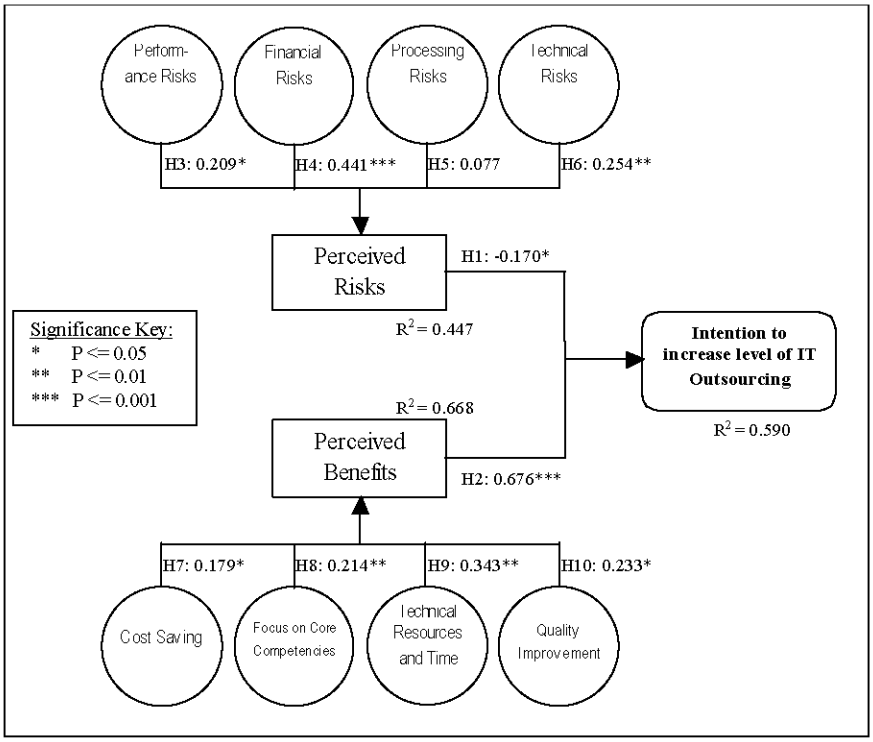

Fig. 2: Regression test results (n=83)

DISCUSSION

The first regression was conducted to find out how the perceived risks and perceived benefits influence the intention of the key decision maker to increase the level of IT outsourcing (H1 and H2). Although the regression results supported both H1 and H2, the β coefficients showed that the perceived risks has a much lower impact compared with the perceived benefits on the intention to increase the level of IT outsourcing. The impact of the perceived benefits was about four times stronger than that of perceived risks. This shows that the companies' managers are concerned more about the benefits than the risks when it comes to IT outsourcing decision. This result supports the findings of Gewald and Dibbern [5].

The second regression tested the four independent variables named: performance risks, financial risks, processing risks and technical risks, in relation to the perceived risk of IT outsourcing as mentioned in H3, H4, H5 and H6 respectively. H3, H4 and H6 are supported and these findings are similar to previous research findings of Aubert [2], Bahli and Rivard [8], Carmel [9], Djavanshir [15], Doomun [11], Gewald and Dibbern [5], Gonzalez [21], Khalfan [13], Nakatsu and Iacovou [10], Tafti [7] and Yang [16]. On the contrary, H5 was rejected. This indicates that processing risks factor is not a good predictor for the perceived risks of IT outsourcing in Malaysia. This finding contradicts results from other parts of the world that identified outsourcing decision process, outsourcing scope and IT outsourcing contract as the main processing risk factors in IT outsourcing [2][7][11][12][16][26][27][28]. These factors seem to be more controllable by the managers in Malaysia which is possible due to the majority of IT outsourcing vendors being of local companies. Selecting a local vendor is less risky than selecting an overseas vendor since as the managers might have adequate prior knowledge about local vendors. Signing a contract with a local vendor under the regulations of the same country seems safer than signing a contract with a vendor from another country. The results also indicate that financial risks factor has the strongest impact on the overall perceived risks of IT outsourcing followed by technical risks and performance risks.

The third regression tested the last four independent variables (cost saving, focus on core competence, technical resource and time and quality) in relation to the perceived benefit of IT outsourcing. The results obtained supported the hypotheses H7 to H10. These results support the findings of Bahli and Rivard [8], Bhattacharya [20], Djavanshir [15], Gewald and Dibbern [5], Gottschalk and Solli-Saether [19], Osei-Bryson and Ngwenyama [12], Pries-Heje [22], Reyes Gonzales and Llopis [29] and Yang [16]. The results also showed that technical resource and

time factor had the strongest impact on the overall perceived benefits followed by quality improvements, focus on core competencies and cost saving.

CONCLUSIONS AND RECOMMENDATIONS

Performance risk, financial risk and technical risk are the main factors that increase the perceived risk of IT outsourcing which at the end hinder the intention to increase the level of IT outsourcing. While cost saving, focus on core competence, technical resource and time and quality improvement are the main benefit factors that increase the perceived benefit of IT outsourcing which at the end motivate the intention to increase the level of IT outsourcing.

The assessment of the perceived benefits showed that Malaysian companies are more concerned about technical resources, time, quality improvement and focus on core competencies than cost savings. This offers a new perspective for considering the outsourcing proposals; IT service providers will succeed if they offer additional value to the business by providing improved quality, advanced technical resources and reduced transaction time. These will have higher impact than cost savings, in gaining IT outsourcing contracts. From a different point of view, risk mitigation or risk sharing is an important feature that IT service providers may offer; lowering the client's financial risk, technical risk and performance risk seem to be a better option to acquire IT outsourcing contracts in Malaysia.

This study focused exclusively on the Malaysian business environment, thus the results may not be representative of other developing countries. A large scale comparative study involving developing countries and developed countries will be able to add more knowledge and value to IT practitioners worldwide.

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