



**"Gheorghe Asachi" Technical University of Iasi, Romania**



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## PRO-ENVIRONMENTALISM BEHAVIOR, ORGANIZATIONAL PRESSURE, SUSTAINABLE INFORMATION TECHNOLOGY INITIATIVES AND FINANCIAL PERFORMANCE OF MALAYSIAN SERVICE FIRMS

**Noor Ismawati Jaafar\*, Ainin Sulaiman, Suhana Mohezar Ali**

*Department of Operations and Management Information Systems, Faculty of Business and Accountancy, University of Malaya, 50603 Kuala Lumpur, MALAYSIA*

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### Abstract

Many firms are beginning to use sustainable Information Technology (IT) initiatives in their daily operations. The usage is generally associated with several factors, among them pro-environmentalism behavior and organizational pressure. Furthermore, the usage of sustainable IT initiatives has been considered to have influenced the financial performance of firms. Hence, this paper seeks to examine the factors associated with sustainable IT usage and their impact on the financial performance of three-hundred and twenty-eight Malaysian services firms. Structural equation modeling was used and it was found that pro-environmentalism behavior and organizational pressure are associated with the usage of sustainable IT initiatives by organizations and that there is a correlation between pro-environmentalism behavior and organizational pressure. In addition, there is also sufficient empirical evidence to support a relationship between sustainable IT initiatives usage and financial performance.

*Keywords:* financial performance, information technology, Malaysia, organizational pressure, pro-environmentalism behavior, sustainable environment, service firms

*Received: December, 2012; Revised final: April, 2014; Accepted: May, 2014; Published in final edited form: January 2018*

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### 1. Introduction

Information technology (IT) initiatives are seen as a possible solution to many environmental problems (Watson et al., 2010). For example, firms may decide to adopt IT initiatives, such as whether to allow an employee to telecommute or to set up a videoconference rather than flying to a meeting. These initiatives, in a way, could help reduce carbon emissions in the general economy, thereby potentially contributing to sustainable growth (Boccaletti et al., 2008; Dedrick, 2010). Even though IT initiatives offer an opportunity to create a more sustainable environment, yet they have been

understudied. According to Donnellan et al. (2011), IT initiatives that are aligned with the core principles of sustainability (reduce, reuse and recycle) and those that are used in business processes to deliver sustainability benefits across the firms are considered as sustainable IT (SIT).

Generally, the decision whether to use SIT initiatives is often made by individuals who are influenced by factors beyond pure profit maximization. It is the individuals (particularly the senior managers) and not the organizations who make a decision whether or not to use SIT (Lei and Ngai, 2013). In such cases, a manager who has pro-environmentalism behavior, i.e. conscious of the

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\* Author to whom all correspondence should be addressed: e-mail: [isma\\_jaafar@um.edu.my](mailto:isma_jaafar@um.edu.my); Phone: +603-79673969; Fax: +603-79673810

environmental implications of his or her choice, might come to a different decision than one who does not care (Mithas et al., 2010). Hence, a person who has pro-environmentalism behavior would place high importance on the consideration of future consequences (Lindsay and Strathman, 1997). Besides pro-environmentalism behavior, some studies (Campbell, 2007; Chen et al., 2008) indicated that institutional pressure (particularly external pressure such as regulations, pressure from suppliers etc.) could also play a role in directing whether a company will adopt SIT initiatives or otherwise. Considering that there have not been many studies that focus on these two perspectives (i.e. pro-environmentalism behavior and organizational pressure), this paper attempts to do so. Thus, the main objective of the paper is to analyze the relationship between pro-environmentalism behavior of senior managers and organizational pressure for the usage of SIT initiatives.

As mentioned earlier, the usage of SIT initiatives should bring about a more sustainable environment as firms embracing it would be able to increase their environmental performance as well as their financial performance (Melville, 2010). Nevertheless, although a review of the IT literature has illustrated that many studies elucidate whether and how IT contributes to firms' financial performance (Kassinis and Soteriou, 2003; Mithas et al., 2010), very little is known about how sustainable IT initiatives contribute to a firm's financial performance (Dedrick, 2010; Melville, 2010). Accordingly, this study also attempts to analyze the outcomes of the usage of sustainable IT initiatives on firms' financial performance.

The paper proceeds with the theoretical background section, followed by the methodology section, which describes the procedures used for data collection and the operationalization of constructs. The results are reported in the findings section. The paper concludes with a discussion on the findings, limitations and contribution of the research.

## 2. Theoretical background and research model

As mentioned earlier, the usage of SIT initiatives is any IT initiative that is implemented in firms in order to be more sustainable (Donnellan et al., 2011). Initiatives, such as teleconferencing and telecommuting are examples of SIT (Chen et al., 2010). The usage of SIT initiatives has been said to be associated with numerous factors (Lei and Ngai, 2013). For example, Ijab et al. (2012) and Mollaet et al. (2009) included the external environmental context, such as organizational pressure in their studies. Wati and Koo (2010) included organizational context, such as altruistic goals as antecedents of green IT adoption, while Gholami et al. (2013) incorporated personality traits as part of their model to study green IT adoption. Based on past studies, it can be generalized that most studies focused on either the individual or organizational perspectives.

This study, however, has taken a different perspective in that one individual factor and one organizational factor, were examined, i.e. pro-environmentalism behavior (individual) and organizational pressure (organizational), as not many studies have focused on both simultaneously (Gholami et al., 2013). This stance is taken as we believe that for SIT initiatives to be implemented in organizations, it requires the right mindset from the individuals (i.e. senior managers) and reactions towards external institutional pressure (regulations, suppliers and customers) and this study intends to empirical test it (Massoud et al., 2017).

### 2.1. Pro-environmentalism behavior (PEB)

Managers play an important role in conveying the strategic importance of SIT initiatives across the organization, in which resource allocations and their commitment are necessary for them to be successful (Mithas et al., 2010). Managers can influence the institutionalization of new patterns of behavior in several ways, starting from the influence on organizational policies and directives (Mithas et al., 2010). Prior work suggests that the success of IT systems needs investment of complementary resources in the organization, which is only possible when managers are committed and incorporate IT in the strategies and activities of the company (Liang et al., 2007). Mithas et al. (2010) found that managers' commitment plays an important role in influencing the perceived importance of SIT in a sample of firms in India.

Assessing consideration of future consequences (CFC) shows a manager's pro-environmentalism behavior towards SIT initiatives. Personality psychologists in understanding self-control have long been interested in traits related to an individual's concern with immediate vs. future consequences (Strathman et al., 1994). The extent of potential distant outcomes of an individual current behavior and the extent to which an individual is influenced by those outcomes entail individual differences in CFC (Strathman et al., 1994). Individuals with low CFC, attach a high degree of importance to the immediate consequences of behavior while those with high CFC attach a high degree of importance to the future consequences of behavior (Joireman et al., 2008). This is considered as pro-environmentalism behavior (Lindsay and Strathman, 1997).

A growing body of research indicates that individual differences in CFC predict a range of behaviors reflective of self-control (Joireman et al., 2006). For example, relative to those scoring low in CFC, individuals scoring high in CFC report less use of tobacco and alcohol (Strathman et al., 1994), less aggression (Joireman et al., 2003), and more fiscally responsible behavior (Joireman et al., 2005), which are considered to be more pro-environmentalism. When employees are more motivated and involved either individually or within a group, in the

environmental activity, the greater the organizations' capability to achieve their environmental advantages (Del Brio et al., 2007). Hence, we put forward the following hypothesis:

**Hypothesis 1:** *Pro-environmentalism behavior influences the adoption of SIT initiatives*

## *2.2. Organizational pressure (OPR)*

In the context of environmental studies, organizational capabilities such as relationships with customers and suppliers; and market responsiveness lead to higher environmental capability (Aragón-Correa et al., 2008; Mironiuc and Huian, 2017; Sharma et al., 2007), which in this case the adoption of SIT. The views of other stakeholders, such as customers and suppliers may also have important influences on managers' SIT (Mykytyn and Harrison, 1993). Research indicates that strong partnerships with suppliers are a significant element of the successful application of innovative environmental technologies (Geffen and Rothenberg, 2000). Extending this argument, Abdul Rahim and Abdul Rahman (2013) argued that a firm's ability to deploy energy efficient and environmentally sustainable IT processes is likely to be contingent on the external organizational factors such as that of collaborative vendors. Another study found that customer, local communities, environmental interest groups, and the natural environment all affect business manager perceptions concerning sustainable business practices and thereby influence decision-making (Chen et al., 2010). Communication from these groups affects beliefs and preferences, which may then lead to the implementation of more environmentally friendly initiatives, such as SIT.

Several other studies have investigated the external drivers (i.e. regulations, industry trade associations, consumers, etc.) that cause firms to have increased awareness of environmental issues (Schmidheiny, 1992). In addition, environmental expectations are formulated in the form of legal threats or regulatory rulings (Greening and Gray, 1994). A number of researchers (Chen et al., 2010; Lei and Ngai, 2013) examined how external forces motivate organizational adoption of SIT. It was also found that major catalysts of SIT initiatives in organizations include pressure of regulation where, organizations in highly regulated environment are more likely to practice SIT initiatives (del Rio Gonzalez, 2005). It can be concluded that organizational pressure from competitors, customers, suppliers, trade associations and regulatory bodies would compel firms to adopt more SIT initiatives. Thus, the following hypothesis is formulated:

**Hypothesis 2:** *Organizational pressure influences the adoption of SIT initiatives*

The organizational context within which IT professionals work, set acceptable norms and standards of behavior (Quan and Cha, 2010). It has also been said that there is a correlation between

organizational pressure and pro-environmentalism behavior. The pressure from external sources has been found to influence the organizational adoption of IT innovation regardless of whether it involves direct implementation in the physical application of IT or IT initiatives formulated to improve the IT services (Saldanha and Krishnan, 2012; Soliman and Janz, 2004). Adoption here refers to any internally generated or purchased device, system, policy, program, process, product or service that is new to the adopting organization and would have the capacity to change the nature of the work for the organization (Cook, 2008). These include SIT, which are IT initiatives that are implemented in organizations in order to be more sustainable (Donnellan et al., 2011). Chewlos et al. (2001) also argued that environmental factors impact organizational innovation adoption from the industry perspective. Individual characteristics and the behavior of employees in organizations play an important role in the implementation of SIT by influencing the users' views (Mahmood et al., 2001; Venkatesh and Morris, 2000). Several studies have shown that the adoption of IT initiatives in organizations is as a result of external pressure, which affects those individuals (key employees) who are involved in making decisions in the organizations leading to sustainable IT (SIT) (Bayo-Moriones and Lera-Lopez, 2007; Cummings et al., 2009). Mindful individuals are more likely to attend to their surroundings and be aware of the environmental impacts (Jenkin et al., 2011). Moreover, the relationship between institutional pressure and organizational responsiveness towards the pressure is high when the top management has commitment to the environment (Collwell and Joshi, 2013). Another study found that, through creating communities of interest and encouraging the dissemination of sustainability knowledge, managers can contribute to the formation of environmental beliefs and subsequent actions (Molla et al., 2014). We therefore, propose the following hypothesis:

**Hypothesis 3:** *Organizational pressure has an impact on pro-environmentalism behavior*

## *2.3. Financial performance (FP)*

It is argued that a firm's long-term profitability and existence are best served by balancing them with social and environmental goals (Hart and Milstein, 2003; Porter and Kramer, 2006). Organizations who are able to manage environmental issues show superior financial performance and competitive advantage (Nidumolu et al., 2009). Mithas et al. (2010) suggested that SIT has the potential to impact firm profitability through its impact on revenue growth, cost reduction, risk reduction or a combination thereof. This leads to achieving higher revenue by winning in the environmentally conscious segment of the market. Wong et al. (2012) found financial performance to be positively associated with green initiatives.

Furthermore, the main reason for organizations undertaking SIT initiatives is to reduce cost (Dedrick, 2010). Due to the financial value of SIT, for example, through cost reduction, it is argued that:

**Hypothesis 4:** *Adoption of SIT initiatives has an impact on financial performance improvement*

Based on the discussion above, the SIT initiatives usage model in the Malaysian services firms is presented in Fig. 1.

**3. Research methodology and data analysis**

*3.1. Sample and data collection procedure*

To test the conceptual model, a dataset generated from a survey questionnaire was used. The questionnaire was distributed to firms in the services sector. The list of firms was obtained from two sources, i.e. SME Corporation (for small and medium enterprises) and MATRADE, the national trade promotion agency (large firms). The lists were compared to eliminate duplication. From the listing two thousand firms were identified. Contacts were made via the telephone to identify the Manager in charge of IT or who had the authority to decide on IT resources. From the initial contacts, only three hundred and ninety nine firms agreed to participate. Three research officers were then deployed to these firms to hand the questionnaire personally to the personnel identified earlier. Although this was time consuming and incurred additional financial resources, it was carried out in an attempt to obtain a better response rate. Nevertheless, only 325 questionnaires were returned and used for analysis.

The questionnaire (see Appendix) was designed following the review of literature pertaining to the area. In order to evaluate the content validity, the questionnaire was pilot tested with three IT managers (1 CEO, 1 IT Manager and 1 Manager) whose companies had implemented SIT initiatives. They commented on the content and scope of the study. They found the questionnaire items to be

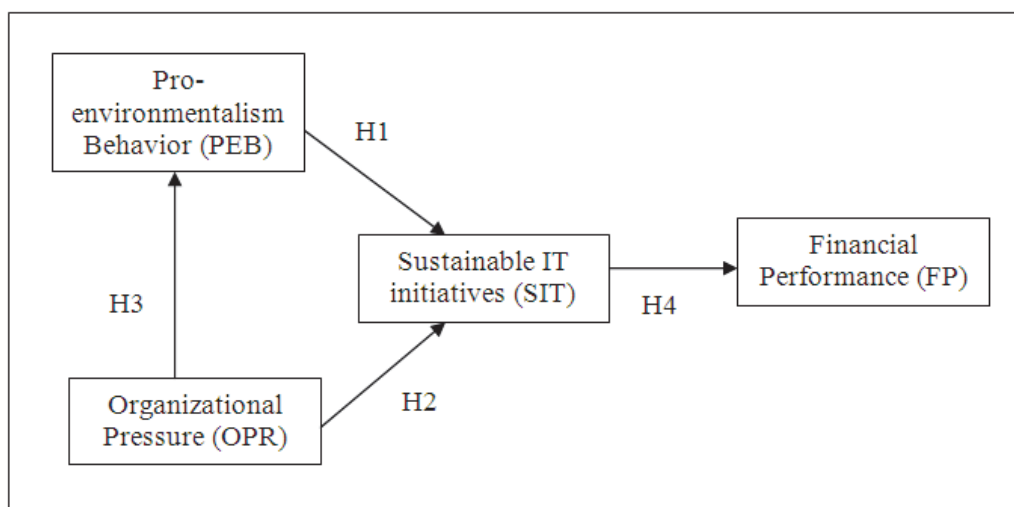
adequate and within the scope of the study.

Based on their feedback, the items were then finalized. Subsequently, a pilot test was conducted in which the questionnaire was distributed to 30 MBA students holding managerial posts in the services sector. From the pilot test it was discovered that some of the respondents were not sure what constitutes SIT initiatives. Hence, the definition of SIT initiatives was included on the front cover of the questionnaire to inform the respondents what is meant by SIT initiatives.

*3.2. Operationalization of constructs*

**Sustainable IT initiatives.** Following Chen et al. (2010), SIT initiatives usage is operationalized through four items: policies that manage overall emissions, manage waste, encourage online collaboration tools to substitute for travel and transforming business processes to be paperless. Given the diversified nature of the SIT initiatives, the level of institutionalization (i.e. the existence of policies/regulations/incentives) of such initiatives as a proxy of usage was used, as suggested by Chen et al. (2010). This measure, as opposed to the traditional usage measures (e.g. frequency and scope), captures the stabilized organizational behaviors (Table 1). Each item asks respondents to indicate their level of agreement to the various SIT initiatives listed (a 5-point Likert scale was used ranging from 1 representing strongly disagree to 5 strongly agree).

**Pro-environmentalism Behavior.** The pro-environmentalism behavior items are adopted from the Consideration of Future Consequences (CFC) items (Strathman et al., 1994). The study incorporated nine items adopted from Joireman et al. (2008), which were also used by Hevey et al. (2010) in their study. Each item asks respondents to indicate their level of agreement (whether they agree or disagree using a 5-point Likert scale, ranging from 1 representing strongly disagree to 5 strongly agree).



**Fig. 1.** Sustainable IT initiatives usage model

**Organizational Pressure.** The three items – pressure from regulatory bodies, pressure from major customers and pressure from suppliers – for organizational pressure were taken from Chen et al. (2010). Each item asks respondents to indicate their level of agreement (whether they agree or disagree using a 5-point Likert scale, ranging from 1 representing strongly disagree to 5 strongly agree).

**Financial Performance.** The performance of companies practicing SIT initiatives is analyzed using three financial indicators (market share, cost savings and sales volume), which were adapted from Rao and Holt (2005). Each item asks respondents to indicate the financial performance of the firm (whether they agree or disagree that there is an increase in market share, sales volume and cost saving using a 5-point Likert scale, ranging from 1 representing strongly disagree to 5 strongly agree). Based on previous studies (Ainin et al., 2012), Malaysian respondents are less responsive if absolute financial figures are required. The summary of the constructs operationalization is shown in Table 1.

**4. Results**

*4.1. Descriptive statistics*

Table 2 presents the demographic profiles of the respondents. The results illustrate that more than 50 percent of them are small and medium enterprises. This is reflective of the actual breakdown of Malaysian companies in terms of size (DOSM, 2011). In addition, most respondents were holding top management posts (68 percent). This distribution indicates that the respondents were knowledgeable organizational informants. The distribution in terms of the length of service in the firms also indicates that they are highly competent to answer the questionnaire. Consequently, it can be generalized that the potential method bias by using the key informant approach is not a major issue in this study.

Using one respondent to represent one firm may lead to a non-response bias. Therefore, the study

uses the method that compares early to late respondents to address non-response bias (Karahanna et al., 1999). They defined early respondents and late respondents as the first and the last 40 questionnaires received. It is assumed that the late respondents will be more similar to the non-respondents (Lambert and Harrington, 1990). The first 40 and the last 40 respondents were analyzed using the t-test and it was found that the *p* values for all constructs were above 0.05. Thus, it can be concluded that there are no statistically significant differences between the means of the two groups.

Table 3 depicts the mean values of each construct. All constructs had mean values of more than 3 and SIT initiatives usage with 3.69 indicating that the firms were serious in their efforts to use SIT initiatives.

*4.1.1. Measurement model analysis*

This study employed structural equation modelling (SEM), with a two-stage model estimation, as recommended by Anderson and Gerbing (1988). In this approach, a confirmatory factor analysis (CFA) was first conducted, followed by a structural model analysis. By employing this approach, the source of poor model-fit can be identified easily (Kline, 1998). The model fit was evaluated based on multiple fit indices, which include *p*-value for chi-square index, Goodness-of-Fit Index (GFI), Standardized Root Mean Square (SRMR), Root Mean Square Error of Approximation (RMSEA), Tucker-Lewis Index (TLI) and Comparative Fit Index (CFI) (Bollen and Long 1993; Schumaker and Lomax, 2004).

Table 4 depicts the result of CFA analysis. The results provided evidence of a parsimonious model (Bollen and Stine, 1992) with fit indices (GFI =0.90, TLI=0.92, CFI=0.93, RMSEA=0.05 and SRMR=0.04) achieving the cut-off values (Bentler, 1990; Browne and Cudeck, 1989). In addition to reliability and validity statistical analyses performed, this study also conducted a common method variance analysis by performing a Harman’s single-factor test.

**Table 1.** Operationalization of constructs

<i>Constructs</i>	<i>Item</i>	<i>Source</i>
Financial Performance	<ul style="list-style-type: none"> <li>• Increase in Market share</li> <li>• Increase in Sales volume</li> <li>• Increase in Cost saving</li> </ul>	Rao and Holt (2005)
SIT Initiatives	<ul style="list-style-type: none"> <li>• My firm has policies that encourage installation of software to reduce overall emissions</li> <li>• My firm has policies that encourage installation of software to reduce overall waste</li> <li>• My firm has policies that encourage online collaboration tools (beyond email) to substitute for travel (e.g. video conferencing etc.)</li> <li>• My firm has policies that encourage transforming its business processes to be paperless</li> </ul>	Chen et al. (2010)
Organizational Pressure	<ul style="list-style-type: none"> <li>• Current and foreseeable regulations are pressuring my firm to adopt Green IT practices.</li> <li>• My firm’s suppliers are pressuring us to adopt Green IT practices.</li> <li>• My firm’s major customers are pressuring us to adopt Green IT practices.</li> </ul>	Chen et al. (2010)
Pro-environmentalism Behavior	<ul style="list-style-type: none"> <li>• Consideration of future consequences items</li> </ul>	Joireman et al. (2008)

**Table 2.** Assessment of organization and respondents

<i>Position</i>	<i>Frequency</i>	<i>%</i>	<i>Duration in the position</i>	<i>Frequency</i>	<i>%</i>	<i>Size</i>	<i>Frequency</i>	<i>%</i>
President/CEO	24	7.4	Less than 1 year	63	19.4	Small and medium	228	70.2
Controller	38	11.7	1 - 5 years	179	55.1	Large	97	29.8
GM/CIO	91	28	6-10 years	63	19.4			
MIS Director/Specialist	70	21.5	11 years and above	19	5.8			
Manager	27	8.3						

**Table 3.** Descriptive statistics of constructs

<i>Constructs</i>	<i>No of items</i>	<i>Mean Values</i>	<i>Items</i>	<i>Mean Values</i>
Financial Performance (FP)	3	3.62	- FP1	3.57
			- FP2	3.61
			- FP3	3.69
SIT Initiatives (SIT)	4	3.69	- SIT1	3.73
			- SIT2	3.88
			- SIT3	3.57
			- SIT4	3.59
Organizational Pressure (OPR)	3	3.48	- OPR1	3.33
			- OPR2	3.60
			- OPR3	3.52
Pro-environmentalism Behavior (PEB)	9	3.00		

**Table 4.** Confirmatory factor analysis

<i>Factors and Items</i>	<i>CFA (N=325)</i>			
	<i>SFL</i>	<i>t-value</i>	<i>Composite Reliability</i>	<i>Cronbach's α</i>
<b>Financial performance</b>				
FP1	0.72	a	0.75	0.71
FP2	0.79	12.53		
FP3	0.71	12.49		
<b>SIT initiatives</b>				
SIT1	0.83	a	0.8	0.69
SIT2	0.71	12.49*		
SIT3	0.75	14.24*		
SIT4	0.70	13.92*		
<b>Organizational pressure</b>				
OPR1	0.68	a	0.75	0.76
OPR2	0.63	9.69*		
OPR3	0.88	10.17*		
<b>Pro-environmentalism behavior</b>				
PEB1	0.80	a	0.9	0.72
PEB2	0.78	18.54*		
PEB3	0.79	14.14*		
PEB4	0.74	14.97*		
PEB5	0.64	12.43*		
PEB6	0.75	14.24*		
PEB7	0.79	14.14*		
PEB8	0.92	15.34*		
PEB9	0.78	18.54*		

$\chi^2=70.49, p=.10, RMSEA=.06, SRMR=.04, GFI=.95, CFI=.98, TLI=.98$

Note: CFA=Confirmatory Factor Analysis; SFL=Standardized Factor Loadings; SMC=Squared Multiple Correlation; RMSEA=Root Mean Square Error of Approximation; SRMR= Standardized Root Mean Square Residual; GFI=Goodness of Fit Index; CFI=Comparative Fit Index; a-loadings are specified as 1.0 to make the model identified; \* $p<0.001$ .

**Table 5.** Discriminant validity test

Constructs	Average Variance Extracted (AVE)	FP	SIT	OPR	PEB
Financial performance (FP)	0.76	-			
Sustainable IT initiatives (SIT)	0.70	0.26	-		
Organizational pressure (OPR)	0.70	0.01	0.22	-	
Pro-environmentalism behavior (PEB)	0.70	0.05	0.02	0.26	-

This approach utilizes an EFA based on PAF and oblique rotation, in which the common-method variance exists if the analysis results in a single factor solution, or if one of the factors converged, accounts for the majority of the covariance among the measures. The resulting solution yielded in four factor solution with an eigenvalue greater than 1. The first factor accounted for 38.66 per cent of the variance, while the three factors together accounted for 61.34 per cent of the variance, indicating that common method bias was not a significant issue (Podsakoff et al., 2003).

**4.1.2. Structural Model Analysis**

Table 6 describes the results of the structural model test for the main effects. The model was found to fit the data well,  $\chi^2(6) = 4.64; p=0.59$ . Both the incremental and absolute indices achieved the recommended threshold values (GFI=0.99, TLI=0.99, CFI=0.99, RMSEA=0.01, SRMR =0.02) (Browne and Cudeck, 1989; Hu and Bentler, 1999). The model explained 54 percent and 61 percent of the variance in pro-environmentalism behavior and SIT initiative, respectively. Additionally, 73 percent of the variance was recorded for financial performance (Fig. 2).

Organizational pressure significantly influences pro-environmentalism behavior ( $\beta=0.38; t=4.31; p<.01$ ) and SIT ( $\beta=0.28; t=3.34; p<.01$ ). Thus, H<sub>3</sub> and H<sub>2</sub> were supported. The result also implies that pro-environmentalism behavior has an impact on SIT initiative ( $\beta=0.18; t=2.60; p<.01$ ). Hence, H<sub>1</sub> was supported. Finally, the result confirms that SIT initiative has an impact on financial performance ( $\beta=0.25; t=2.60; p<.01$ ). Therefore, H<sub>4</sub> was supported.

**5. Discussion**

Generally, the study has shown that a number of firms in Malaysia have currently embraced SIT initiatives in their organizations. Nevertheless, in

order to have a more sustainable environment, companies must be proactive and should implement as many SIT initiatives as possible. The results of the model show that the first hypothesis, PEB influences the adoption of SIT, was significant (H<sub>1</sub> was supported). As the respondents in the study were senior managers they were able to inculcate their sentiment towards environmental concern into the policies introduced in their firms (Molla et al., 2008). The respondents place a high degree of importance on the future consequences of their behavior, as stated by Joireman et al. (2008), thus indicating their pro-environmentalism behavior. For example, they are aware of the issues of global warming, thus they would adopt initiatives that would be more environmentally friendly and sustainable. The results also show that OPR influences SIT (H<sub>2</sub> was supported).

The firms' attitude towards SIT initiatives was expected to be positive when they are pressured. Based on the stakeholder perspective it is expected that firms act according to government regulations (Lyon and Maxwell, 2007). As the Malaysian government has enforced new guidelines for sustainable initiatives usage, such as SIT, firms need to have a positive attitude towards SIT otherwise they would be subjected to fines and penalties. Moreover, following the institutional theory (Campbell, 2007), when suppliers and business partners are using SIT they do not have much choice but to embrace it, otherwise they would not be able to do business with them. In addition, in order to remain competitive, firms have to adopt SIT, especially when their competitors are doing so, otherwise they may lose existing customers and not be able to attract new ones. This implies that organizational pressure is an important factor in determining whether or not firms embrace SIT initiatives. Generally, this result is similar to the results obtained by Liang et al. (2007) and Chen et al. (2010).

**Table 6.** Structural model test (main effects)

Path	$\beta$	t-value	p-value	Hypotheses	Results
SIT ← PEB	0.18	2.60	0.02	H <sub>1</sub>	Supported
SIT ← OPR	0.28	3.34	***	H <sub>2</sub>	Supported
PEB ← OPR	0.38	4.31	***	H <sub>3</sub>	Supported
FP ← SIT	0.25	2.63	0.03	H <sub>4</sub>	Supported

$\chi^2(6)=4.64, p=0.59, RMSEA=.01, SRMR=.02, GFI=.99, CFI=.99, TLI=.99$

Note: PEB=pro-environmentalism behavior, OPR=organizational pressure, SIT= Sustainable IT initiatives, FP=financial performance

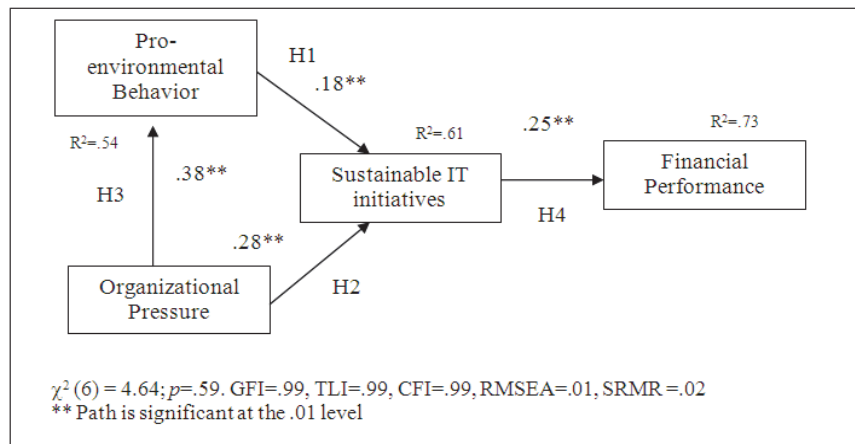


Fig. 2. Structural model

It was also seen that OPR has an impact on PEB (H<sub>3</sub> was supported). Pressure from customers, local communities, regulations and the environment affect managers' perceptions of SIT and influence the decisions they make. If the managers have the knowledge and awareness of the impact of SIT, they are more likely to be more concerned about the effect of IT and become more pro-environmental. This is similar to the findings from previous research (Chen et al., 2010; Lei and Ngai, 2013).

The level of SIT initiatives in organizations has an impact on the FP (H<sub>4</sub> was supported). Firms which are more environmentally friendly would be able to reduce cost as mentioned by Dedrick (2010) thus enhancing their financial performance. This finding is in parallel with Wong et al. (2012) who also found financial performance to be positively associated with green initiatives.

## 6. Limitations and future research

In conducting this research, a few limitations need to be highlighted. First, the study focused on service firms in the Klang valley and the surrounding area. Although the SIT initiatives usage model of the study can be applicable to firms in other areas in Malaysia, further research must be undertaken to determine if the results would be similar. Future research in the Malaysian environment should consider using an even number scale for the purpose of measurement, as the respondents for this study had the tendency to answer along the central axis. In addition, as the study collected data at one point in time, the possibility of endogeneity cannot be ignored. It is proposed that future studies address this problem by using a longitudinal studies approach. Despite the limitations, the study makes several contributions.

Theoretically, previous studies on SIT initiatives focused on one perspective, for example, Chen et al. (2010) focused on the institutional perspective while Joireman et al. (2003) focused on personality factors, i.e. consideration of future consequences. This study, however, focused on two perspectives, i.e. pro-environmentalism behavior and

organizational pressure. Thus, this study adds to the existing literature on SIT initiatives. In addition, the study has shown that a manager's pro-environmentalism behavior is an important factor that effects the implementation of SIT initiatives. Thus, indicating that firms whose managers are more pro-environmentalism, i.e. more conscious of the future, would somehow be able to persuade the firm to implement SIT initiatives.

## 7. Conclusions

This research has important implications for the relevant government agencies. It was found that the existing government regulations instigates firms to implement SIT initiatives, which is similar to Chen et al. (2010) who found that organizational pressure does influence SIT implementation. However, in the Malaysian context, more effort must be exerted to ensure that the regulations are adhered to, perhaps by enforcing stricter penalties. Nevertheless, the firms on their own should realize the consequences to the environment if they do not implement SIT initiatives as required by the law. Malaysian firms are proactive in implementing SIT because it leads to new opportunities (Enkvist and Vanthournout, 2007).

## Acknowledgements

We would like to thank Prof James Y.L. Thong from HKUST for his constructive comments on the initial draft of the paper.

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