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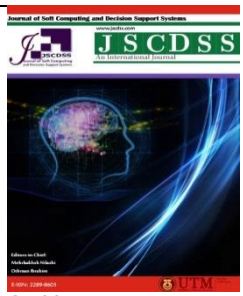

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Organizational Performance and Adoption of Green IT from the Lens of Resource Based View

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Abstract

Global research is being directed towards addressing sustainable development topics. Organizations face an increasing pressure for practicing environment-friendly behaviour. Green Information Technology (IT) is an example of such practices that aims to enhance the organizational performance and sustainability. Regardless of the significance of this technology, inadequate number of studies have focused on its adoption in Malaysian organizations. Therefore, the aim of this study is to investigate the factors that influence the Green IT adoption practices and its impact on organizational performance through the lens of Resource-Based View (RBV) theory. Based on previous literature and the Resource-Based View (RBV) theory, six factors were identified for adopting Green IT in Malaysian organization context. The research model hypothesizes that institutional pressure, organizational strategy, openness, environmental performance, economic performance, and competitive advantage can affect the individual perception of Green IT adoption. The proposed hypotheses in this study will be tested in the upcoming future.

Keywords: Green IT, Resource based view, Adoption, Environment-friendly behaviour, Malaysian organization

1. Introduction

Due to the considerable growth in energy consumption and the significant increase of CO_2 releases, a considerable attention has been paid to sustainability in society and organizations over the last years (Jnr, Majid, & Romli, 2019). Sustainability has become progressively important in order to face the fast consumption of natural resources (Taghavi, Bakhtiyari, Taghavi, Attar, & Hussain, 2014).

Nowadays organizations face an increasing pressure from customers, competitors, managers and public groups for implementing sustainable practices. Adopting the Green IT as a sustainable practice by organizations can offer a win–win condition for internal and external investors (Ainin, Naqshbandi, & Dezdar, 2016). As stated by Asadi, Nilashi, et al. (2019) and Asadi and Dahlan (2017), in order to confront the existing ecological issues, Green IT adoption is considered as a reasonable responsibility of firms that can improve firms' financial performance.

Green IT refers to the designing, manufacture, consumption, and disposal of servers, computers, and diverse peripherals in a well-organized and effective way with a minimal harm to the environment (Boudreau, Chen, & Huber, 2008).

Malaysian manufacturing sector is one of the most significant areas that contribute enormously to the GDP of Malaysia. According to the Malaysian Industry Development Authority (MIDA, 2007), Malaysian manufacturing is vital to the economy development in Malaysia. Organizations, particularly the manufacturing firms, are responsible of environmental protection and sustainability.

Several studies have discussed the necessity for a Malaysian manufacturing organizations to adopt sustainable practices (Adebambo, Ashari, & Nordin, 2014; Asadi, Nilashi, et al., 2019; Zubir, Habidin, Conding, Jaya, & Hashim, 2012). Though, Malaysian manufacturing firms are presently in the developing phases and have substantial

adverse ecological effects. As specified by Asadi, Yadegaridehkordi, Nilashi, and Samad (2019), for long term success of organizations and for their sustainability, the balancing of social, environmental, and economic dimensions is essential and should be the main goal of organizations.

Diverse studies have considered the adoption of Green IT from individual perspectives, especially in Malaysia (Ainin et al., 2016; Asadi, Hussin, Dahlan, & Yadegaridehkordi, 2015; Rahim & Rahman, 2013). Moreover, the level of awareness of Green IT among Malaysian manufacturing firms is limited. Prior researches have investigated the practice, attitude, motivation, and intention of Green IT among Malaysian manufacturing organizations. Furthermore, the majority of studies on Green IT adoption have focused on the organizational level, while limited number of studies have concentrated on the individual level. Therefore, the proposed study aims to fill the aforementioned gap by investigating the significant drivers that impact the adoption of Green IT in Malaysian manufacturing organizations on their performance through the lens of RBV theory.

2. Prior Studies

Several researches have been done on technology adoption in diverse contexts such as cloud computing, big data, higher education, healthcare (Asadi, Abdullah, & Jusoh, 2019; Asadi, Abdullah, Safaei, & Nazir, 2019; Asadi, Nilashi, Husin, & Yadegaridehkordi, 2017; Qasem, Abdullah, Jusoh, Atan, & Asadi, 2019; Yadegaridehkordi et al., 2020). Nevertheless, "What determines the propensity of an organization to adopt a particular innovation" is a significant question in technology adoption studies (Yadegaridehkordi et al., 2020). Table 1 summarizes previous studies on Green IT based on the applied adoption theories and the influential factors. Overall, the adoption of Green IT in organizations is grouped to individual or organizational levels of analysis. Due to this, this study focuses on the individual drivers towards Green IT adoption in Malaysian organizations. Therefore, the level of analysis is based on individual level, and organization level theories were not considered in this literature. According to Table 1, several adoption theories such theory of reasoned action (Mishra, Akman, & Mishra, 2014), theory of planned behaviour (Dalvi-Esfahani, Alaedini, et al., 2020; du Buisson & Naidoo, 2014; Pollard, 2015), technology acceptance model (Akman & Mishra, 2015), norm activation theory (Lei & Ngai, 2014), belief action outcome framework (Molla, Abareshi, & Cooper, 2014), and self-determination theory (Koo, Chung, & Lee, 2013) were employed for Green IT adoption. Applying the Resource Based View (RBV) can provide a theoretical base to consider the competitive advantage as a significant factor for Green IT adoption. Resource Based View (RBV) can provide a practical method for Information Systems (IS) scholars to comprehend the role of the IS within organizations (Deng & Ji, 2015).

2.1 Resourced Based View (RBV)

The RBV theory, initially proposed by Wernerfelt (1984), describes the organization as a unique composition of resources and capabilities that creates competencies. RBV indicates that organizations achieve sustained competitive advantages through emerging capabilities or resources that are valued, rare, inimitable, non-substitutable, and non-transferable (Clemens & Bakstran, 2010; Priem & Butler, 2001; Sirmon, Hitt, Ireland, & Gilbert, 2011). Based on the RBV theory, an organization's capabilities and resources are the main determining factor of success and competitive advantage (Xie, Huo, & Zou, 2019). By considering Information Technology (IT) as an important type of resource, RBV theory can be considered as a beneficial base to clarify the adoption of the IT as a foundation of sustainable competitive advantage (Deng & Ji, 2015). We applied the theory RBV (Wernerfelt, 1984) for adopting Green IT in the organization.

3. Research model and hypotheses

This part investigates the drivers that have an impact on Green IT adoption and examines the influence of Green IT adoption on organizational performance. The proposed model which has been developed based on the extracted factors is presented in Fig. 1.

3.1 Institutional pressure

The institutional viewpoint presents a beneficial theoretical lens to study the ecological problems from business perspectives since it comprehends that institutional pressure outside the marketplace performs a significant part in creating organizations reactive to others' benefits (Ainin et al., 2016; Chen, Watson, Boudreau, & Karahanna, 2011). Chen et al. (2011), studied how Green IT adoption in organizations is influenced by the institutional pressure. Moreover, focusing on the institutional environment context, Butler (2011a) initiated that cultural-cognitive pressure, normative, and regulative form the IT industrial area in the organization and, accordingly, initiated that normative, regulative and cultural-cognitive forces from the institutional environment form the organizational field of the IT industrial area and, accordingly, influence individual companies toward practicing Green IT. Chen et al. (2011) declared that there is a significant association among intensity for adopting Green IT and institutional pressure. Therefore, the subsequent proposition is expressed:

Hypothesis 1: There is a significant relation between Green IT adoption and Institutional pressure.

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Table 1

Prior Studies on Green IT Adoption.

Authors	Theories Used	Factors
(Mishra et al., 2014)	Theory of reasoned action (TRA)	Experience of Respondent, Actual Behaviour, Subjective Norms, Level of Awareness, Attitude, Person Related Beliefs, Sector of Respondent Behavioural Intention.
(Dalvi-Esfahani, Alaedini, et al., 2020)	Theory of Planned Behaviour (TPB)	Agreeableness, Intention, Attitude, Perceived behaviour Control, Personal norm, Conscientiousness, Social Norm, and Openness to Experience.
(Asadi, Nilashi, et al., 2019)	Theory of Planned Behaviour (TPB) and Norm Activation Theory (NAT)	Attitude, Intention, Self-efficacy, Personal Norm, Subjective Norm, Ascription of Responsibility, Awareness of Consequence, Cost Saving, Competitive Advantage, Managerial Interpretation.
(Akman & Mishra, 2015)	Technology Acceptance Model (TAM)	Perceived Ease of Use, Level of Awareness, Behavioural Intention, Perceived Usefulness, Attitude, Actual Use, External Factors.
(Asadi et al., 2015)	Integrating TPB and NAT	Attitude, Personal Norm, Subjective Norm, Ascription of Responsibility, Awareness of Consequence, Perceived Behaviour Control.
(Ojo, Raman, & Downe, 2019)	Belief-Action-Outcome (BAO)	Green IT Knowledge, Green IT Belief, Green IT Attitude Pro-Green IT, Social Influence, Pro-Green IT Practice, Green Management Culture.
(Lei & Ngai, 2014)	Norm Activation Theory (NAT)	Personal Norm, Competitive Advantage, Managerial Interpretation, Discretionary Slack, Intention.
(Asadi, Hussin, & Dahlan, 2018)	Integrating TPB and NAT	Attitude, Personal Norm, Subjective Norm, Ascription of Responsibility, Awareness of Consequence, Perceived Behaviour Control, Monetary Cost Benefit Assessment.
(Pollard, 2015)	Theory of Planned Behaviour (TPB)	ATT to Sustainability, Intention to Use the Eco-Button, General Attitude toward Sustainability, Perceived Behaviour Control, Subjective Norm, ATT to Using the Eco-button.
(Molla et al., 2014)	Belief-Action-Outcome (BAO)	Green IT Belief, Pro-environmental IT Practice, Green IT Attitude, Information Acquisition Capability Organizational Context.
(Asadi & Saedi, 2016)	Integrating TPB and NAT	Ethical Climate, Monetary Cost Benefit Assessment, Self-efficacy, Attitude, Personal Norm, Subjective Norm, Ascription of Responsibility, Awareness of Consequence.
(Koo et al., 2013)	Self-Determination Theory	Media Influence, Legislative Pressure, Perceived Usefulness of Green IT, Social Influence, Sustainable Use of Green IT Device, Saving Money, Perceived Enjoyment.
(du Buisson & Naidoo, 2014)	Theory of Planned Behaviour (TPB)	Knowledge and Actual Green Computing Behaviours, Perceived Behavioural Control, Attitude, Environmental Concern, Media Influence, Social Influence, Personal Awareness.

3.2 Organizational strategy

The strategy is considered as a significant driver that impacts the organizational development and likewise affects IT experts and IT executives' belief for adopting green IS practices to attain a long-term ecological benefits (Yang, Zhang, Jiang, & Sun, 2015). Consequently, the organizational strategy is considered as a prominent factor for the integration of Green Information Systems (IS). Organizational strategy can be recognized by the actions implemented by the organization in order to promote the awareness of Green IS and environmental-friendly practices based on ecological issues (Butler, 2011b). Similarly, strategies might also include the activities IT specialists and IT administrators innovate to support green IS-oriented services (Jenkin, Webster, & McShane, 2011). Therefore, the following hypothesis is offered:

Hypothesis 2: Organizational strategy has a positive relation on managerial belief toward the adoption of Green IT.

3.3 Openness

Openness characterizes an individual's openness to novel ideas and practices. Openness has been associated with a questioning intellect, intelligence and intellectual interests (Ainin et al., 2016). The influence of openness on individual's communication with technology has gained the attention of researchers in recent years (Ashkanasy, Bowen, Rohde, & Wu, 2007) with a diversity of findings. There is a positive relationship between openness and job satisfaction in the environment of continuous technological change (Gallivan, 2004). Ainin et al. (2016) in their study highlighted the positive effect of openness on the adoption intensity of Green IT. Therefore, in this study the following hypothesis is proposed:

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Hypothesis 3: Openness has a positive and significant influence on Green IT adoption.

3.4 Environmental performance

The framework triple bottom line (TBL) recommends that for organizational sustainability, three components, social, environmental, and economic should be balanced for long-term success of the organization (Elkington, 1998). Normally, environmental performance refers to a decrease in emissions, waste, and pollution or a reduction in the use of destructive resources and regularity of ecological coincidences (Gimenez, Sierra, & Rodon, 2012). Numerous organizations in several industries are nowadays attempting to adopt strategies for environmental performance to attain competitive benefits (Rodríguez-Antón, del Mar Alonso-Almeida, Celemín, & Rubio, 2012). Gimenez et al. (2012) stated that there is a significant association among Green IT practices and environmental performance. Thus, we frame the following proposition:

Hypothesis 4: There is a significant association between Green IT adoption and environmental performance of the organization.

3.5 Economic performance

The performance of the organization should be indicated with measures that can reflect the impact on the society, environment along with economic (Dao, Langella, & Carbo, 2011). Nidumolu, Prahalad, and Rangaswami (2009) revealed that when an organization participates in solving environmental problems effectively, a greater competitive advantage of economic performance is probable. This understanding has gained previous literature support. Firms which adopt sustainable practices are rewarded with improved financial performance (market share and profit) (Mithas, Khuntia, & Roy, 2010). Therefore, we hypothesize the following:

Hypothesis 5: *The association among Green IT adoption and the economic performance of the organization is significant.*

3.6 Competitive advantage

Several studies in information systems have investigated the association among IS resources and the performance of organizations. In the information systems context, information technologies are investigated from two perspectives of capabilities and resources. Capabilities and resources have been anticipated as a probable bases of competitive advantage (Dao et al., 2011). While Natural Resource Based View (NRBV) developed RBV through integrating the environment as a resource, competitive advantages and strategic are planned designate rooted in the competencies that enable ecologically sustainable financial actions. In this regard, adopting Green IT can be regarded as the attainment resources for IT and as IT capability development. Therefore, this study presents the following hypothesis:

Hypothesis 6: The association between Green IT adoption and the competitive advantage of the organization is significant.

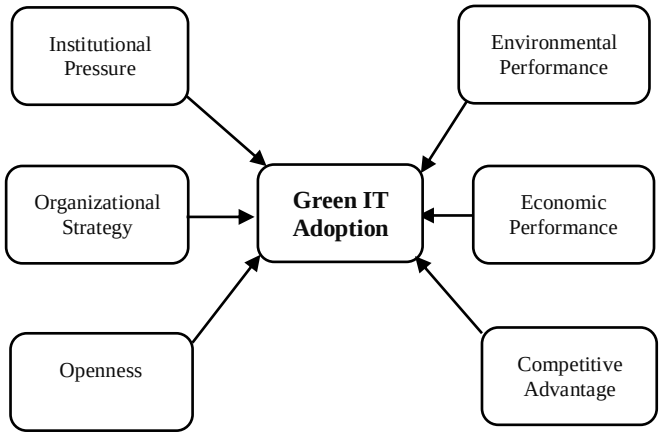

Fig.1. Proposed research model

4 Conclusion

The aim of this study is to investigate antecedents of Green IT adoption and to identify the influence of adopting Green IT on the performance of the organization. In the current research, we have proposed a theoretical model based on the Resource-Based View theory. We suppose that the existing theoretical gap can be filled trough the proposed model. Moreover, this study addresses the current gap in previous literature of the organizational performance and competitive advantage, especially from the individual perspective in Malaysian organizations. Thus, this would give a better consideration of the Green IT and address issues pertaining to its adoption at the individual level. Therefore, six factors of institutional pressure, organizational strategy, openness, environmental performance, economic performance, and competitive advantage were highlighted to have a significant result on the overall adoption decision of Green IT. Finally, it is recommended for researchers to apply the proposed model and investigate the relationship between the factors through statistical analysis (Dalvi-Esfahani, Alaedini, et al., 2020; Dalvi-Esfahani, Wai Leong, Ibrahim, & Nilashi, 2020; Saeidi et al., 2019; Yadegaridehkordi et al., 2020), multi-criteria decision making (Dalvi-Esfahani, Niknafs, Kuss, Nilashi, & Afrough, 2019; Nilashi, Mardani, et al., 2019; Nilashi, Samad, et al., 2019) and machine learning (Ahani, Nilashi, Ibrahim, Sanzogni, & Weaven, 2019; Nilashi, Ahani, et al., 2019; Nilashi, Rupani, et al., 2019; Yadegaridehkordi, Shuib, Nilashi, & Asadi, 2019) approaches to identify the most significant factors in Green IT adoption context.

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