

## The Influence of Environmental Pressure on Information and Communication Technology: A Reliability Test

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**Abstract:** It is widely known that information and communication technology provide unlimited opportunities and advantages for any type and size of businesses, including small and medium-sized businesses. The advancement and day-to-day improvement on technology substantially changed the rhythm of running a business compared to pre-millennial era. Specifically, the emergence of internet technology such as web system technology significantly changed business transaction for both large and small medium enterprises. Therefore, the purpose of this study is to test reliability of information and communication technology specifically web system technology and environmental pressure. For the purpose of this study, only 98 samples were used to test reliability. The findings indicated all four examined variables are consistently reflect the construct it is measuring. Hence, adapted measurement items are reliable to use in the future studies.

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### I. Introduction

The advancement and day-to-day improvement on technology substantially changed the rhythm of running a business compared to pre-millennial era. Specifically, the emergence of internet technology significantly changed business transaction for both large and small medium enterprises (Abou-Shouk, Lim, & Megicks, 2013; Jaganathan, Ahmad, Ishak, Mohd Nafi, & Uthamaputhran, 2018; Rahayu & Day, 2016). The increasing importance of ICT, especially internet revolution has forced small to large profit-oriented business organization to incorporate ICT tools in their daily operation for customer relationship improvement, supplier linkage, cost reduction, profit maximization, product quality improvement and market share expansion.

Although SMEs in Malaysia contributed to the national economy and social development, alarming situation of low usage and penetration of ICT among the Malaysian SMEs caused a need for further research the factor that caused low usage of ICT among SMEs in Malaysia. Furthermore, the issue of pressure has been a debated and much disputed subject in the field of ICT adoption especially in the developing nations (Cavusoglu, Cavusoglu, Son, & Benbasat, 2015; Powell, Beckinsale, & Levy, 2006; Rodríguez-Ardura & Meseguer-Artola, 2010). In the past studies, pressure determinants based on institutional theory incorporated as an environmental factor in the most of information system research (Kung, Cegielski, & Kung, 2015; Riyadh, Akter, & Islam, 2009; Theodosiou & Katsikea, 2012).

Researchers emphasized importance of environmental factors in the past studies (Gangwar, Date, & Ramaswamy, 2015; Rodríguez-Ardura & Meseguer-Artola, 2010; Zhang & Dhaliwal, 2009). All the studies reviewed so far, environmental context linked to condition of the business environment with the external parties such as industry, customer, supplier, trading partner competition and government (Tornatzky & Fleischer, 1990).

Initially, normative pressure by Dimaggio & Powell (1983) regarded as "the collective struggle of members of an occupation to define the conditions and methods of their work, to control the production of the future member professionals, and to establish a cognitive base and legitimization for their occupational autonomy". In the 21st century, normative pressure can be exerted from various parties that enormously interconnected directly and indirectly through information systems that consist of hardware, software, database, network, people and procedures. Since business organization shares the common goal in their value chain, normative pressure from stakeholders is an inevitable matter (Liang, Saraf, Hu, & Xue, 2007; H. H. Teo, Wei, & Benbasat, 2003). Although there are mixed results from previous study, empirical evidence indicated normative pressure strongly influences ICT adoption among SMEs (Soares-Aguiar & Palma-dos-Reis, 2008; Teo et al., 2003).

According to Dimaggio & Powell (1983), mimetic isomorphism refers to "the imitation or copying of other successful organizations when an organization is uncertain about what to do". To clarify type of mimetic pressure, Haunschild and Miner (1997) distinguishes mimetic to three type of imitation, relatively; frequency

imitation (copying very common practices), trait imitation (copying practices of other organizations with certain features), and outcome imitation (imitation based on a practice's apparent impact on others). Nugroho(2015) claimed that competitor pressure as an external pressure capable to influence adoption decision of information communication and technology if competitor's innovation more advanced although results of relationship between competitor pressure and readiness of ICT adoption were not supported. Jeyaraj, Rottman, and Lacity(2006) derived similar argument based on analysis on 48 empirical studies on individual and 51 studies on organizational information technology adoption that were published between 1992-2003. Despite positive influence of mimetic pressure on innovation adoption, some scholars argued that influence of mimetic pressure on adoption decision may vary depend on the stages of adoption (Chan, Alain, & Zhou, 2012).

In the beginning, coercive pressure refers to "results from both formal and informal pressures exerted on organizations by other organizations upon which they are dependent and by cultural expectations in the society within which organizations function" (Dimaggio & Powell, 1983; Oliveira, Martins, & Lisboa, 2011). The evidence from past literatures indicated customer and supplier are commonly used in the context of coercive pressure (Khalifa & Davison, 2006; Krell et al., 2016; Le, Rowe, Truex, & Huynh, 2012; Soares-Aguiar & Palma-dos-Reis, 2008; Teo et al., 2003). For instance, Teo et al. (Teo et al., 2003) reported coercive pressure has strong positive relationship between intent to adopt EDI and perceived dominance of customer and supplier followed by normative pressure. Despite the strong predictor of IS adoption, consistent relationship between coercive pressure and ICT adoption has not been established.

## II. Methodology

A survey method is used in this study and only 98 samples were used to test reliability. Data were collected by using self-administered questionnaire from small and medium sized companies from Malaysia. Likert-type scale was used to measure the items from all four variables namely; ICT-web system technology adoption and environmental pressure that consists of normative, coercive and mimetic pressures. In connection to adapt the instrument for information and communication technology adoption which focuses on web system technology adoption, 11 items were adapted which was developed in the previous studies (Alam & Noor, 2009; Moore & Benbasat, 1991; Tan, Eze, & Chong, 2009).

For the context of environmental pressure, three variables were measured, namely; normative, mimetic and coercive. Normative pressure was assessed using a seven-item measurement adapted from Son and Benbasat(2007). For mimetic pressure, 6 items measurement were used which adapted from past studies (Son & Benbasat, 2007; Teo et al., 2003). Coercive pressure measured by using measurement items by Khalifa and Davison (2006).

## III. Results

Table 1 illustrated the reliability for all variables of the research. Usually, Cronbach's alpha used to estimate the reliability based on the inter-correlation of all the indicators in the construct. In addition, reliability is defined as "the extent to which an experiment, test, or any measurement procedure yields the same results on repeated trial" (Carmines & Zeller, 1979, p. 11).

**Table 1:** Reliability assessment for variables

Variable	Cronbach Alpha	No. of items
ICT adoption-Web system Technology	0.844	11
Normative Pressure	0.888	7
Mimetic Pressure	0.889	6
Coercive Pressure	0.912	3

As shown in the findings, the Cronbach Alpha for coercive pressure indicates highest value which is 0.912. Reliability value for mimetic pressure (0.889), normative pressure (0.888) and ICT adoption-web system technology eb system (0.844) relatively higher than minimum acceptable of reliability (Nunnally, 1978; Pallant, 2011). In addition, there is no item dropped to increase reliability of the construct. Hence, it can be concluded that questionnaire is good and reliable for further analysis.

## IV. Conclusion

The main objective of this study is to assess the reliability of ICT adoption-web system technology and environmental pressure constructs. Result of this study clearly indicates all measured constructs holds good internal consistency that is consistent across the research. Therefore, these results relatively suitable and reliable in the research. Since the study on technology adoption related to environmental pressure factors are very limited, it is without doubt that this measurements with high internal consistency could be adopted for different

context of research such as region, industry and so on. In addition, it is very crucial to include more variation in the research to establish better and consistent reliability. To sum up, it is hoped that this reviewed reliability analysis on ICT adoption-web system technology and environmental pressure constructs could help researchers who are interested to understand further on ICT technology adoption and environmental pressure constructs.

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