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ASSESSING GOVERNMENT TO BUSINESS SERVICES PERFORMANCE: THE ROLE OF HUMAN AND ORGANIZATIONAL FACTORS

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Abstract

In an attempt to deliver better service performance to businesses and improve the interactions, many public organizations have transformed their business activities by adopting information systems. The reformations of the government-to-business have led to the evaluation of the system service performance and investigation of the factors that shape the success of the IS implementation. Hence, the purpose of the study is to assess the government-to-business service performance and explore the human and organizational factors that influence the success. The findings indicate top management support, facilitating condition, user skills and attitude play a major role in influencing the government-to-business system usage among government agencies. In addition, use of IS in the interaction between government and business has significant influence on the service performance, measured as transparency, service quality and information quality. The findings provide a new perspective for public agencies in their future e-government implementation.

Keywords: government-to-business, system performance, human and organizational characteristics

1 INTRODUCTION

In today's era, the urge from citizens and businesses demand government services to be more accessible and transparent. In an effort to meet the mandate, many government institutions have transformed their public administration services and rushed to adopt web techologies to improve their service performance. Hence, in most countries, present government administration is synonym with e-government, the process by which public agencies deliver information and services via digital means.

While there seem to be endless number of e-government activities, the one that gives the most significant impact to government administration and the social, economic structure is the goverment-to-business (G2B) system. The decision to automate public sector business processes is seen among others as a mean to improve transparency and service quality.

The changes and reformations of the goverment-to-business practices have led to the evaluation of the system performance and investigation of the factors that shape the success implementation. Undoubtedly, it is important for practitioners and researchers to understand the performance success and its factors which will provide further insights into the effective implementation of information technology applications as a business tool in public organizations.

The relative newness of the goverment-to-business initiatives have resulted in mixed approaches in evaluating its success. Although in theory, private and public business systems share similar attributes and elements, in reality they practice different concepts. Hence, evaluating the performance of goverment-to-business systems should not be focused primarily on the tangible cost-benefits analysis. Rather, the aspects must be carefully designed around its relational or functional views, while at the same time ensuring the public reformation goals are not left behind.

Similarly, the factors of government-to-business system performance success can be derived from various factors, which both human and organizational factors are deemed important determinants. Hence, with regard to these issues, the study is proposed to assess the performance success of government-to-business, and investigate the role of human and organizational factors as the antecedents. However, several limitations are placed on the study. First, as there are different types of G2B system, we limit the application to public e-procurement system. Second, as the public e-procurement system is an interorganizational system that requires integration and interaction between buyer and seller, we focus only on the government agencies as the buyer.

2 GOVERNMENT-TO-BUSINESS

2.1 E-business in the Public Sector

In general, the government-to-business system resembles the private business-to-business application. However, while the usage functions and platforms are similar to the B2B marketplace, Oliveira and Amorim (2001) in Henriksen and Mahnke (2005) assert the underlying processes are complex and an extra set of influential factors must be considered that include financial risks, design and implementation risks and legislative issues.

The core functions and purposes of business-to-business systems differ between private and public sector usage. For the former, the main goal of usage is to reduce operational costs, maximise profits and improve performance, whereas for the latter, the main agenda is for value creations in which to reduce transparency (Moe, 2004), improve information flow and management, and more informed decision making (Amit & Zott, 2001). Vaidya, Yu and Soar (2002) also highlight on the detail objectives for government-to-business, which among others are to increase top-level funding availability, to create open marketing which every supplier can compete, to harness aggregated buying power of the government to achieve dynamic pricing of goods and services, to improve efficiency of

the procurement cycle while meeting all legislative mandates and to ensure compliance with purchasing policies, both within departments and across the government agencies.

2.2 Factors of Government-to-Business System Use

Public sector is a large institution with many agencies and huge numbers of employees. Adopting and using the G2B system to change the traditional business process among the agencies though seem to be a simple process, is actually complex and challenging. In this context, as argued by many organizational theorists, there exist relationships that explain the integration between organization and individual in public organizations (Harmon and Mayer, 1986). The government agencies as the organizational entities must be responsible for the structures and processes that constraint or facilitate the system adoption. This is the organizational context emphasized by Tornatzky and Fleischer (1990). In addition, the decision to use the G2B system is also determined by the members of the agencies, especially the users. Thus, we predict two factors influence the G2B system use among government agencies, which are the organizational factor and the individual factor.

2.2.1 Organizational Factor

The importance of top management support or top management emphasis in the adoption and use of G2B system among governmet agencies have been studied by Seong and Lee (2004) and Vaidya et al. (2006). Larsen (2003) defines top management emphasis as the extent to which top and mid-level management allocate sufficient resources to the implementation effort and are willing to accept the risks, while encouraging and promoting the implementation effort.

In each public government agencies, the top management provides an influential decision as they are the key figure in shaping the organizational strategies and ensuring the procurement reformed is well understood. Furthermore, the management team is also responsible for shaping the vision and goal, bringing about collective commitment for change and formulating the necessary strategies (Vaidya et al. 2006). Therefore, based on the discussion, the following hypothesis is offered:

H_1 :   Top management emphasis has a significant relationship with G2B system use.

Another important organizational attribute is the facilitating conditions. In the context of G2B system use, the provision of support from the central government for the public agencies to use the system is one type of facilitating condition that will influence its usage. By assisting the facilities set up and providing assistance when they encounter difficulties, some of the potential barriers to system use will be reduced or eliminated. Besides, support provisions such as trainings, seminars and call centers are the essence for successful government-to-business system use (Croom and Brandon-Jones, 2007 ; Chu et al., 2004). Thus, the discussion leads to the following hypothesis:

H_2 :   Facilitating conditions has a significant relationship with G2B system use.

2.2.2 Human Factor

The behavioural decision to adopt and use the G2B system is also influenced by human or user factor. In this study, two dimensions of human factor will be tested to investigate their relationships with G2B system use, which are information system skills and user attitude. Even though previous studies of human dimensions focus on emotional and behaviour on individual system use, we believe it is imperative to investigate their contributing factor towards information system usage at the organizational level. This again relates to the human relations theory in public organizations.

One of the most important human factor of G2B system use is user skills of the particular system. Similarly, the term skills is used interchangeably with self-efficacy. Compeau and Higgins (1995) define self-efficacy as the belief that one has the capability to perform a particular behaviour. The belief on the capability to successfully execute the behaviour will lead to the expectations of positive outcomes. Hence, investigating user skill is relevant in the context of the study as having an adequate

skills to use the G2B system is an essential characteristic. Thus, the viewpoints lead to the following hypothesis:

H$_3$:   User skills has a significant relationship with G2B system use.

Additionally, user attitude is also posited as an important dimension of human factor in the G2B system use. Fishbein and Azjen (1975) view attitude as the affect that one feels against or for some object or behaviour. From the viewpoint of the G2B system, the attitude of the users towards the system will determine the level of use since should they posses negative behaviour, such feeling may delay the G2B system adoption and use.Thus, we offer the following hypothesis:

H$_4$:   User attitude has a significant relationship with G2B system use.

2.3   Service Performance of Government-to-Business

Many dimensions of G2B system benefits have been used as measures to gauge the outcomes. These include costs reduction, operational efficiency, improved decision making, better communication and coordination, improved transparency and increased relationship development. In this study, we use transparency, service quality and information quality as the service performance measures of the G2B system use among government agencies since they are in line with goals of many G2B system implementation.

2.3.1   Transparency as G2B Performance

In general, two points of view describe transparency. First, transparency corresponds to the outcome measure of communication behaviour. Second, transparency is also seen as an outcome of an exchange process between two or more entities (Street and Meister, 2004). In the meta-systems of governments and electronic markets, transparency is realized via information transfer and sharing of sensitive information that seeks to distribute or share the benefits of greater openness as widely as possible (Lamming et al., 2001).

The elements of transparency lead to various economic and business changes, for example the creation of perfect market commoditization that discloses value creation (Lamming et al., 2001). In the public sector, Panayiotou et al. (2004) affirm transparency is the basic requirement of the sector's buying procedures. Greater transparency can be achieved via information systems as several literatures recognize the important enabling role of IS in this situation (Street and Meister, 2004). In addition, transparency in the public sector will result from the simplified processes and the electronic support of the purchasing activities (Panayiotou et al., 2004). In Italy, the government-to-business system signals the existence of a wider array of opportunities for potential suppliers by reducing the power of invitation. Thus, it reflects the greater openness to market and transparency (Magrini, 2005). Hence, based on the discussion, the following hypothesis is offered:

H$_5$:   The use of G2B system has a significant relationship with transparency.

2.3.2   Service Quality as G2B Performance

There are three distinct areas of quality in the public sector; customer, professional and management (Agus et al., 2007). It is without doubt there are differences in the service quality uptake between the private and public organizations. Whereas the former adopt the service quality concept and principals in a much faster rate, the process of adoption among the latter is rather slow due to difficulties in measuring the outcomes. Irrespective of the challenge, public sector organizations have come under increasing pressure to deliver quality services (Agus et al., 2007).

One of the key strategies to improve public sector service quality is by adopting information technology in the administration activities. A report by SAP Global (1995) testifies the ability of a public sector to adopt new business models and IT innovation as an essential indicator of its transformation success. Similarly, the IT uptake to automate the public procurement processes is seen as a strategy to improve the public sector quality of service. Thus, we offer the following hypothesis:

H$_6$:   The use of use of G2B system has a significant relationship with service quality.

2.3.3   Information Quality as G2B Performance

Information quality has also been assessed as an outcome of G2B system use as in Hackney et al. (2007). The success of the information is in its ability in conveying the intended meaning from the perspective of the desired characteristics and the quality of the system such as accuracy, data format, meaningfulness, reliability and timelines. Similar to other information system applications, the public e-procurement system keeps data in data warehouse and provide meaningful information within seconds. In addition, the information will be more organized, well structured and properly managed. In the context of the study, the use of the system is predicted to improve the accuracy, completeness, correctness and consistency of information. Thus, the viewpoints lead to the following hypothesis:

H$_7$:   The use of G2B system has a significant relationship with information quality.

3   METHODOLOGY

3.1   The Sample

The sample of the study consists of federal government agencies that participate in the G2B system in Malaysia. They comprise of organizations and institutions from all ministries. For simplicity, these public organizations are referred as government agencies. 550 questionnaires were randomly distributed and 284 responses representing 284 government agencies from 22 ministries were received, yielding a response rate of 51.64%. However, only 244 were used for the analysis, while the other 40 was discarded due to major incomplete answers.

In order to tackle the issue of non-response bias, two procedures were performed. First, a comparison was done on the acceptance of the responses with the potential respondents' distribution in the sampling frame. Second, a comparison was performed on the responses between early and late respondents. A chi-square test was conducted to compare the percentage of agency distribution and the returned responses. It was assumed there was no significant difference between the sampling distribution and returned percentage. The result indicates the response pattern reflected the sampling frame (χ^2 = 21.96, p = .462), thus ruling out any bias in ministry categorization level.

The second procedure was performed by running an independent sample t-test to confirm there was no significant difference between the early and late responses. It was assumed those who returned the questionnaire after the first reminder have the characteristics of non-respondents. Hence, a comparison between the early respondents and late respondents was conducted. 79.5% of the returned survey were received within a month, and classified as early respondents (n=194). The other 20.5% returned the survey after the first reminder, and classified as late respondents (n=50). The result shows there is no significant differences between the means of all constructs across the two groups ($p > 0.10$ for all paired comparisons). Thus, it was concluded that non-response bias did not pose a major problem for this study.

3.2   The Instrument

The survey instrument used for this study comprised of 3 sections. The first section dealt with the agency's profile and the use of the G2B system, the second section asked about the factors of usage, while the last section required the respondents to answer items related to performance. The items on usage, factors and performance were measured as likert scale, ranging from 1 as strongly disagree to 7 as strongly agree. 6 measures for usage were adapted from Wu et al. (2007), 3 items on skills from Koufaris (2003), 3 items on attitude from Taylor and Todd (1995) and 4 items on top management adapted from Wu et al. (2007). The items on facilitating condition were developed based on both field interview and Thompson et al. (1991), while the items on transparency were developed from interviews and from the concept of information transparency. On the other hand, items on information

quality and service quality were developed based on Watson and Wixom (2003) and Agus et al. (2007).

3.3   Validity and Reliability

A principal component analysis as a procedure of exploratory factor analysis was conducted to reduce sets of variables using a smaller set of factor by looking for groups among the inter-correlations of a set of variables. All items were loaded using the principal axis factoring and Varimax with Kaiser Normalization rotation. The results produced a total variance of 70.32%. The KMO of 0.920 indicated factor analysis was appropriate, the MSA>0.5 suggested all variables should be included in the factor analysis, and the Bartlett's test was significant, implying the variables were correlated. All items were loaded as the predicted constructs.

A further confirmatory factor analysis was then performed. The CFA yielded a result of chi-square <3, CFI>0.9 and RMSEA<0.08. The cronbach's alpha, convergent validity and composite reliability for all factors are depicted in Table 1. The cronbach's alpha was > 0.7, convergent validity was > 0.50 and the composite reliability was > 0.70. The results confirm that the responses from the government agencies generally support the conceptual distinctions of all the variables proposed in this study. As such, the data can be applied for further analysis. The next section shows the results of the seven hypotheses.

Item	Cronbach's alpha	Variance extracted	Composite reliability
Top Management	0.923	0.759	0.926
Facilitating condition	0.857	0.532	0.849
User skill	0.896	0.745	0.898
User attitude	0.952	0.878	0.956
Use	0.857	0.603	0.856
Transparency	0.921	0.765	0.951
Service Quality	0.960	0.860	0.961
Information Quality	0.978	0.916	0.978

Table 1: Construct validity and reliability

4   RESULTS

Structural equation modelling analyses were run to test the hypotheses. The results of the hypothesis testing are shown in Table 2. Referring to the table, all hypotheses are supported. As for the organizational factor, both top management and facilitating condition are playing the key roles as the predictors to GB system usage among government agencies ($\beta = .318$, $p<0.01$) and ($\beta = .183$, $p<0.05$). Skills and users attitude, which are part of the human factor are also the predictors of system usage ($\beta = .169$, $p<0.05$) and ($\beta = .432$, $p<0.01$) respectively. All the predictors explain about 50% of the variation in G2B system use among government agencies. Apparently, among the factor variables, user attitude has the greatest influence on the G2B system use, followed by the top management emphasis.

The use of the G2B system has also proven that it can improve business transparency ($\beta = .831$, $p<0.01$), service quality ($\beta = .805$, $p<0.01$) and information quality ($\beta = .760$, $p<0.01$). The use of the G2B system explains about 70% of the variation in transparency, 65% in service quality and 58% in information quality.

Hypothesis	Causal relationship		Factor	β	Sig.	Result
H1	Top Management	$\rightarrow$	Usage	.318	***	Supported
H2	Facilitating Condition	$\rightarrow$	Usage	.183	.036	Supported
H3	Skills	$\rightarrow$	Usage	.169	.029	Supported
H4	Attitude	$\rightarrow$	Usage	.432	***	Supported
H5	Usage	$\rightarrow$	Transparency	.831	***	Supported
H6	Usage	$\rightarrow$	Service Quality	.805	***	Supported
H7	Usage	$\rightarrow$	Information Quality	.760	***	Supported

Table 3: Results of Hypothesis Testing

The findings from the study suggest use of information system in the interaction between government and business has indeed significant influence to the public service performance by improving transparency, increasing service quality and enhancing quality of the information. In addition, while many factors shape the usage of the government-to-business system, our study suggest both top management support and facilitating condition as the organizational factor play a significant role in determining the usage success of the government-to-business system among government agencies. Moreover, user skills and attitude are the human attributes according to the context.

5   CONCLUSION

The results of the study highlight the importance of adopting and using information systems in enhancing the public sector business process between the governmet agencies as the buyer and business entities as the seller. One of the important conntibutions of this study is the inclusion and validation of the transparency measure as one of the service performance indicator. In addition, the study has proved user attitude as a human factor has a significant influence to the IS use even at the organizational level. Thus, it may give a strong signal to top management level in order to be more cautious on the effect that users have towards information system adoption and use, especially in the public sector. In addition, the findings of the study can be used to assist public sector policy makers to reevalute and reassess general e-government initiatives in order to seek for best approaches in promoting vast usage of technology in the government administration.

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