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Organizations Adoption of MyKad Initiative

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Abstract

Malaysia has invested multi-million ringgit on the Malaysia's Multipurpose Identity Card (MyKad) initiative for the protection of citizens from terrorism as well as for effective and efficient government and private sector applications. If it is not used, the initiative is wasted. For the success of MyKad adoption, both individual and organizations need to accept this initiative. Prior studies have been conducted on individual acceptance (e.g. Yeow et al., 2007; Loo et al., 2011); however no study has been conducted on organization acceptance. This research investigates organizations (such as banks, insurance companies, unit trust agencies and hotels) acceptance of MyKad initiative. Organizations do not have MyKad; therefore, their MyKad acceptance (i.e., the dependent variable) can only be measured by their intention to use MyKad reader for identity verification of transactions such as opening a bank/unit trust account, making insurance claims and registering a hotel room. The independent variables were taken from UTAUT's (Venkatesth, 2003) four constructs (i.e. performance expectancy, effort expectancy, social influence and facilitating conditions) and two other variables (i.e. anxiety and perceived credibility). In this preliminary study, fifty questionnaire samples were collected from two cities in Malaysia. The findings show that organizations did not have a high intention to use MyKad reader because of their lack of understanding about its benefits (performance expectancy), ease of use, social support and facilitating conditions. Recommendations were given to increase adoption.

Keywords: National Identity Card, Biometric Verification, Smartcard Applications, UTAUT Theory, MyKad Reader

Introduction

Malaysia's Multipurpose Identity Card (MyKad) was introduced in 2001 to replace the traditional plastic-based identity card and driver's license. The main purpose of the card is to increase government and private sectors effectiveness and efficiency with its many applications. MyKad currently incorporates nine applications including the national identity card (NIC), driving license, passport information, health information, electronic purse, automated teller machine (ATM) access, transit application (named as Touch 'N' Go), public key infrastructure and frequent traveler card. It is volitional for citizens to apply MyKad for identification purposes, e.g. opening bank accounts or dealing with the state (Loo et al., 2011). MyKad is a smartcard with an embedded 64K chip in each card that carries the personal information of the holder. This card is the

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first in the world which can perform multiple government and private sector applications altogether. The person's fingerprint, digital photo and personal information are stored in MyKad (Venkatesh et al., 2003).

MyKad's NIC application uses computer chip in smartcard and fingerprint biometrics recognition technology (i.e. MyKad reader) to identify individuals, herein referred to as MyKad Fingerprint Recognition System (MFRS). For instance, the Police and the Road Traffic Department can access its information, such as the driving license, by using MyKad reader. In addition, it supplements the Malaysians International passport to facilitate efficient exit and re-entry from Malaysian Immigration checkpoints (to travel to East Malaysia and Brunei). Basic and critical medical information, such as allergies and blood type, are also stored in MyKad's chip. Once the citizen registers MyKad with a local bank, it can be used as an ATM or debit card, and once registered with the national transportation payment system, Touch 'n' Go, it can be used to pay for things like bus tickets or road toll fares (Clarke, 2005).

Hong Kong, India, and the Sultanate of Oman are following Malaysia's footstep in implementing the smart NIC. Additionally, a growing number of nations, including China, Thailand, the Philippines and Vietnam, are already rolling out smart NICs. Governments in Western Europe, Southeast Asia and the Middle East have similar projects either in the launch mode or at the planning stage. The United States and the United Kingdom have long resisted the urge to require citizens to bear smart identity cards. However, the scenario has changed since the 9/11 events for many countries presently have plans to launch a variant of smart NIC scheme to counter identity thefts and fight terrorism (Yeow et al., 2007). It is interesting to note that MyKad was launched about the time of the 9/11 incident, indicating that the Malaysian government had the intention to use the card for the protection of its citizens against terrorist activities. This is because MyKad helps in terrorist detection through using MFRS. Whenever a terrorist suspect is identified, the law enforcer will request suspect's card to be swiped using MyKad reader and his/her thumbprint to be scanned. The reader will electronically compare the physical thumbprint with the thumbprint template in MyKad and the thumbprint template in the National Registration Department database (NRD's) (which is accessed through wireless technology).

A previous study of MyKad was confined to the attitude of Malaysians (Yeow and Miller, 2005). Subsequently, Yeow et al. (2007), Yeow and Loo (2009), Loo (2009), Loo et al. (2009) and Loo et al. (2011) conducted several studies to investigate the acceptance of MyKad's NIC and driving license. They discovered that Malaysians do not have high intention of using MyKad's NIC and driving license application, even though more than 96% of them posses MyKad. They prefer to leave the card at home and carry a photocopy, which is not an offence to Malaysian Law (Loo et al., 2011). The reasons include: (1) vague ideas about MyKad benefits; (2) lack of facilitating conditions; (3) anxiety of damaging the card due to excessive use; (4) lack of social support; and (5) the credibility of both applications. To date, there is no study being conducted on the organizations perspective on MyKad, particularly MFRS, as they have to invest substantial money (USD3,000 to USD5,000) on MyKad reader to implement the identity authentication. The success of MyKad project hinges not only on individual consumers' acceptance of MyKad but also on organization consumers' acceptance. Even if individual consumers accept MyKad applications, MyKad project could fail if organizations were unwilling to invest in MyKad reader which is the basic infrastructure for MyKad NIC, driving license, passport and health information applications. Therefore, the present study focuses on the acceptance of MyKad readers by organization consumers from banks,

insurance companies, unit trust agencies and hotels.

User Acceptance Models' Review

There are many models which can explain the user acceptance of technology, namely Technology Acceptance Model (TAM); Theory of Reasoned Action (TRA); Motivational Model; Theory of Planned Behaviour (TPB); a model combining TAM and TPB; Model of Personal Computer Utilization (MPCU); Innovation Diffusion Theory (IDT) and Social Cognitive Theory (Venkatesh et al., 2003).

The researchers have chosen to adopt the UTAUT model which integrates the fragmented theory and research on individual acceptance of information technology into a unified theoretical model that captures the essential elements of eight previously established models (i.e. TRA, TAM, Motivational Model, TPB, TAM+TPB, MPCU, IDT and Social Cognitive Theory). The UTAUT model is able to account for 70% of the variance (Adjusted R^2) in usage intention – a substantial improvement over any of the original eight models and their extensions (Venkatesh et al., 2003). Furthermore, UTAUT originally was empirically tested to ensure its validity when applied to consumer (citizen) acceptance of MyKad (Loo, 2009; Loo et al., 2011). UTAUT model can be applied in this research as this study measures organizations staff perceptions (managers and employees).

Venkatesh et al. (2003) concluded that UTAUT is a definitive model that synthesizes what is known and provides a foundation to guide future research in user acceptance area. By encompassing the combined explanatory power of the individual models and key moderating influences, UTAUT advances cumulative theory while retaining a parsimonious structure. Four constructs were identified as direct determinants of user acceptance and usage behavior, namely performance expectancy, effort expectancy, social influence and facilitating conditions. The present research framework uses these constructs together with two other constructs, i.e. anxiety and perceived credibility to explore the factors affecting organizations acceptance of MyKad readers as shown in Figure 1. The anxiety and perceived credibility constructs were added because of being relevant and are validated through factor analysis in the previous MyKad study (Loo et al., 2011).

Methodology

A questionnaire was developed based on the theoretical framework, trailed and finalized. It consists of 49 questions. Performance expectancy comprises 9 items, effort expectancy 8 items, social influence 5 items, facilitating condition 7 items, anxiety 6 items, perceived credibility 11 items and behavioral intention to use MyKad readers 3 items (please refer to Table 2 for the questions). All questions are rated using a 5-point Likert Scale, i.e. 1-strongly disagree, 2-disagree, 3-neutral, 4-agree and 5-strongly agree.

Since this is a preliminary study, only 50 respondents were selected from five private organizations (e.g. banks, insurance companies, unit trust agents and hotels) in Klang Valley and Malacca. The selection of companies was based on purposive sampling method specifically; these companies were potential organization consumers for MyKad readers. The collected data was analyzed using descriptive statistics.

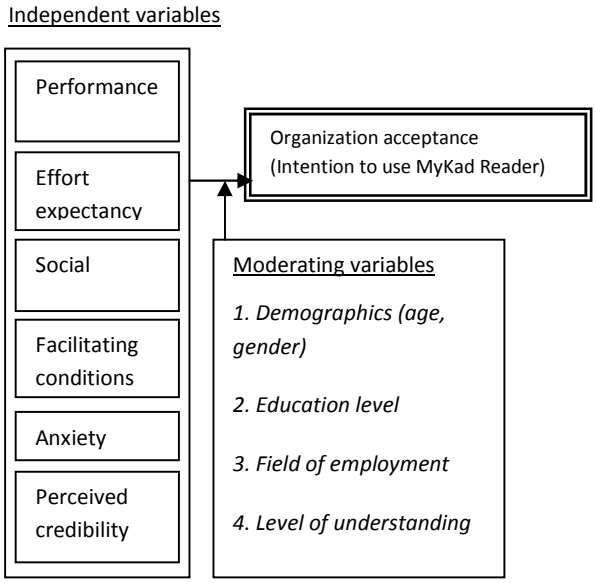

Figure 1 Research Framework

Results and Discussion

Table 1 Respondents Demographics

Variables	**Choices**	**# cases**	**%**
Gender	Male	12	24.0
	Female	38	76.0
Age	20-29	26	52.0
	30-39	16	32.0
	40-49	7	14.0
	Above 50	1	2.0
Educational level	SPM/STPM/A level	13	26.0
	Diploma	18	36.0
	Degree	18	36.0
	Master Degree	1	2.0
Field of	Banking	19	38.0
Employment	Insurance	16	32.0
	Hotels	13	26.0
	Unit trust	1	2.0
	Missing Data	1	2.0
MyKad reader	Nil	5	10.0
understanding	A little	11	22.0
	Moderate	23	46.0
	Good	11	22.0
Managerial	Executives	16	32.0
level	Senior manager	2	4.0
	Operation manager	8	16.0
	Middle manager	11	22.0
	Supervisor	10	20.0
	Missing Data	3	6.0
MyKad readers	Yes	21	42.0
availability	No	29	58.0

Table 1 shows the profile of the respondents. Twenty samples were collected from Malacca, the remaining thirty were from Klang Valley. Ninety-four percent of the respondents were ranked supervisor and above; thus, they are the decision makers or the influencers if the organization decide to adopt MyKad reader. Sixty-eight percent of them have moderate or good understanding of MyKad reader, while 42% have already used MyKad reader.

Table 2 Mean and Standard Deviation (SD) of Independent and Dependent Variables

	Mean	**SD**
1 Performance Expectancy	**3.41**	**.944**
1.1 I would introduce MyKad reader to my company because it is helpful.	3.56	.972
1.2 MyKad reader would increase effectiveness	3.42	.928
1.3 MyKad reader would save a lot of my staff time	3.48	.995
1.4 MyKad reader would improve my staff job performance.	3.18	.983
1.5 MyKad reader would enable my staff and customers to accomplish tasks more quickly.	3.44	.929
1.6 MyKad reader would save time and enable my staff to serve more customers.	3.36	1.005
1.7 MyKad reader would increase my staff productivity.	3.28	.927
1.8 MyKad reader could authenticate the identity of the customers within seconds.	3.54	.952
1.9 I think the benefits would exceed the cost of MyKad reader.	3.40	.808
2 Effort Expectancy	**3.34**	**.897**
2.1 I will introduce MyKad reader to my company because it is easy to use.	3.61	.885
2.2 My staff would find MyKad reader user friendly.	3.42	.928
2.3 My staff would find MyKad reader usage clear and understandable.	3.42	.928
2.4 It would be easy for my staff to become skillful at using MyKad reader.	3.33	.922
2.5 My staff would not take too much time setting up MyKad reader before using it	3.12	.773
2.6 My staff would not take a long time to learn how to use MyKad reader	3.26	.899
2.7 My staff would not think that MyKad reader is complicated.	3.24	.938
2.8 My staff would find it to operate MyKad reader.	3.38	.901
3 Social influence	**3.21**	**.888**
3.1 I will introduce MyKad reader to my company because many competitors have already adopted this technology	3.26	.922
3.2 I think companies that uses MyKad reader are high profile organizations	3.32	.768
3.3 I think having MyKad reader in my company is a status symbol	3.18	.905
3.4 My company management is very supportive of using MyKad reader	3.24	.938
3.5 I think my customers would think that it is prestigious to use MyKad reader	3.06	.913
4 Facilitating Conditions	**3.19**	**.901**
4.1 I think my staffs have the necessary knowledge to use MyKad reader	3.32	.978
4.2 I think my staff is provided with the necessary resources to use MyKad reader	3.30	.931
4.3 I think MyKad reader supports my staff work system	3.24	.847
4.4 Guidance is provided to my company in the selection of MyKad reader	3.16	.842
4.5 User instructions for MyKad reader are available to my company	3.18	.850
4.6 A call centre is available to my company for MyKad reader technical assistances	3.06	.998

4.7 I do not think that MyKad reader is expensive	3.10	.863
5 Anxiety	**2.50**	**.820**
5.1 My staff would be afraid of wrong validating the customers with the use MyKad reader	2.46	.788
5.2 My staff would be reluctant to use MyKad reader because they are not familiar with it	2.58	.785
5.3 My staff would think that MyKad reader is intimidating to them	2.58	.731
5.4 My customers would think that scanning fingerprint is not hygienic	2.68	.909
5.5 My customer would think that using MyKad reader is against their religious belief	2.34	.805
5.6 My customers would think that using MyKad reader is hazardous to their health	2.40	.904
6 Perceived Credibility	**2.89**	**.922**
6.1 My customers would be concerned about their personal safety when using MyKad reader	2.72	.834
6.2 My customers would feel threatened if they were to use MyKad reader	2.52	.974
6.3 I am afraid that my customers would not want to use MyKad reader because it will be easy for thieves to steal their identity	2.62	.981
6. My customers do not trust the accuracy of MyKad reader	2.64	1.005
6. My customers think that MyKad reader is not secure	2.56	.861
6.6 My customers think that their personal information (accessed through MyKad reader) may be misused	2.82	.896
6.7 My customers think that MyKad reader could threaten their privacy	2.72	.970
6.8 My customers' fingerprint marks left on glass of MyKad reader may be stolen	2.72	.970
6.9 My customers' MyKad may be unreadable due to damaged card	3.30	.839
6.10 My customers' MyKad may be unreadable due to dirty contacts	3.18	.825
6.11 MyKad reader may fail due to a scar or cut on my customers' thumb	3.02	.937
7 Behavioral Intention	**3.44**	**.934**
7.1 I intend to use MyKad reader in my company	3.42	.928
7.2 I predict I would use MyKad reader in my company	3.46	1.014
7.3 I plan to use MyKad reader in my company	3.44	.861

Behavioral Intention to use MyKad Reader

Table 2 shows the mean ratings (MR) and standard deviation (SD) of all independent and dependent variables of this study. Overall, the respondents' intention to use MyKad reader is moderate as shown by the MR of 3.42 – 3.46. This is not surprising since MyKad reader was widely used in public government sectors, i.e. Employee Provident Fund Department and Income Tax Department. However, it was seldom used in private sectors, especially insurance companies and hotels. The following sections discuss the independent and dependent variables.

Performance Expectancy

The respondents are uncertain of the benefits of MyKad reader as shown by the MR (of Performance Expectancy) of 3.18 – 3.56. They are unsure that MyKad reader can be helpful in increasing effectiveness and efficiency, saving time as well as improving job performance and productivity. Overall, they are indefinite about whether the benefits outweigh the cost of the system. For example, does it make sense for a hotel to implement MyKad reader to curb or detect blacklisted terrorists so as to protect their guest from suicide bombers? Will this idea add value to the hotel, making it more attractive to their potential clients? Will implementing MyKad reader add value to security in the perception of the customers of a bank, insurance or unit trust agency? Another example, the Minister of Domestic Trade, Cooperatives and Consumerism announced the project of fuel purchase using MyKad as petrol subsidies were reserved for Malaysians under a control system launched on 1st May 2010. The aim was to curb smuggling, as there was an alarming level of smuggling of petrol on the border (The Star, 2010). However, the scheme was scrapped for difficulty of implementation due to unfavorable public response particularly from the organizations (petrol pump stations). The organizations, on the other hand, are unsure whether it was worth investing in the expensive system (MyKad reader) as it does not benefit them. Moreover, they are doubtful whether it would benefit the public as it adds complexity and inconvenience when the customers have to insert their MyKad and have their thumbprint verified (Free Malaysia Today, 2010). Again, this reveals the failure to justify the cost-benefits and effectiveness of MyKad reader.

Effort Expectancy

The results indicate that the respondents are uncertain about the ease of use of MyKad reader as shown by the MR of 3.12 – 3.61. They tend not to be at ease with using MyKad reader because they lack requisite knowledge. Additionally, they believe it was time-consuming to set up the system. In addition, they think that it was not easy to install, learn and operate the MyKad reader, as it would require a computer literate user to do so. The commonly seen MyKad reader was IRIS Biometric and Smart Card Reader (BSC) 100M, which was developed by IRIS Corp Berhad (the company which produced MyKad) (Iris, 2002). It was not a plug-and-play system, as the user needs to download the driver from the Internet and install it in a PC with Windows operating system.

Social Influence

The respondents feel neutral towards the social influence of MyKad reader as shown by the MR of 3.06 – 3.32. They are not convinced that their competitors have adopted the system, and that having the system is a sign of prestige/status and neither were they convinced that their management would support them. Therefore, again there was no reason for them to invest a big sum of money if they could not increase the profile of the company and gain more customers.

Facilitating Conditions

MR of 3.06 – 3.32 show that the respondents are doubtful about the facilitating conditions of MyKad reader. They do not think that they are provided with necessary help to implement MyKad reader, such as necessary expertise, resources (training), user instructions and call centers to assist them. They are uncertain about how to select a suitable MyKad reader that could meet their needs and support their work system. Besides, they feel that the MyKad reader is expensive. It was reported that a firm spent a hefty sum of RM20 million (about USD6 million) to implement MyKad readers (The Star, 2009). One example to illustrate facilitating conditions is a local bank case. Malayan Banking Berhad (the local bank) was awarded the fuel subsidy program; therefore, they had to implement MyKad readers at petrol pumps to ensure that only

Malaysians could obtain fuel subsidy. However, they did not have facilitating conditions that support the use of the MyKad reader. Petrol dealers and oil companies expressed concern that MyKad reader does not support their work systems as it will lead to overcrowding in petrol stations (due to the additional time to setup and scan fingerprint) and give rise to irate customers. Additionally, during the preliminary stage of the project discussion, strong objections came from oil companies who see the installation of biometric identification terminals as an added burden and complained that consumers will be inconvenienced as well [8].

Anxiety

The respondents rated anxiety lowly (MR of 2.34 – 2.68.) The respondents do not think that they would face issues such as wrongly validating a person as the false accept/reject rate of most MyKad readers, (such as Iris BSC 100M reader) are equal or better than 0.01% (Iris, 2002) (which is very low). Additionally, they do not think that the other issues were important; such issues are as scanning fingerprints being against certain religion and could be non-hygienic / hazardous to the health. They do not believe that their staff would be reluctant to use MyKad reader (because of their unfamiliarity) and feel intimidated with the system. It is interesting to note that anxiety was important variable for individual consumer acceptance of MyKad (Loo et al., 2011). Perhaps organization consumers are more aware of the technical capability of MyKad compared to individuals.

Perceived Credibility

The respondents do not think that perceived credibility issue is important as indicated by the low overall mean rating of 2.89 (MR of 2.52 – 3.30). The respondents disagree that MyKad reader would threaten the security, privacy and safety of their customers. However, they are unsure whether MyKad reader would fail due to damaged MyKad, dirty contacts and scar/cut on the customers' thumb (MR of 3.3, 3.18 and 3.02, respectively). Again, it is interesting to note that this variable is crucial to individual consumer acceptance of MyKad (Loo et al., 2011). This is possibly due to information asymmetry between the organizations and individual consumers, i.e. organizations knowing more about the capabilities of MyKad, which enables them to higher perceived credibility of MyKad reader.

Conclusions and Recommendations

In conclusion, the organizations are unsure of the acceptance of MyKad reader due to the lack of understanding about its benefits (performance expectancy), ease of use, social support and facilitating conditions. This is possibly attributed to lack of awareness campaign to educate the organizations about MyKad reader. Most government campaigns on MyKad are focused towards individual consumers about the benefits of its applications. Since MyKad reader is costly especially when organizations need to procure many units for every operation unit (e.g. many hotel branches, bank counters, etc.), the government and the hardware makers should provide more campaigns to introduce the benefits of investing in such systems and address the adoption issues highlighted above. Presently, the organization consumers are taking the 'test the water' approach, learning through trial and error, which may not be effective. It is important for the government to succeed in persuading organization to adopt MyKad, otherwise the full benefits of MyKad would not materialize, i.e. to fight terrorism, to reduce smuggling of petrol, to prevent identity theft and bank fraud and to increase effectiveness of public delivery. These preliminary findings indicate that thus far, the government has not succeeded in convincing organization consumers to adopt MyKad reader. However, further research would be required to investigate the key factors, i.e. performance expectancy; effort expectancy; social influence and facilitating conditions, to ascertain their rank of

importance, validate the constructs and determine the influence of moderating variables such as cultural variables (Hofstede, 2001), organization type, size, etc.

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