

The Acceptance of MyKad Technology to Curb Smuggling Fuel Activities in Malaysia Based on UTAUT Model

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This paper provides significant insights on the level of acceptance of the MyKad Technology when pumping oil, compared to the worrying smuggling fuel activities in Malaysia. A report by KPDNKK in 2014 said that fuel smuggling has become alarming. Malaysia's government has taken many preventative steps yet still cannot curb it. That is despite the availability of MyKad for minimising human bias, 24 hours a day, seven days a week. Therefore, four independent variables were adopted by the researcher based on the UTAUT model and they are performance expectancy, effort expectancy, social influence, and facilitating conditions. The mean analysis was performed to identify the level of acceptance of each variable based on 380 responses. MyKad Technology needs to significantly improve individuals' performance, and ease of use which is highly recommended by third parties. It also need not require many skills, which will result in a high acceptance for this technology when pumping fuel in Malaysia.

Key words: *Effort expectancy, facilitating conditions, Malaysia, MyKad Technology, performance expectancy, social influence, UTAUT.*



Introduction

Smuggling fuel has become one of the main issues faced by the Malaysian Government (the government), becoming a financial burden that also affects the economic development of the country. Lee (2014) posted an article reporting that the Domestic Trade, Cooperative and Consumerism Ministry (KPDNKK) in 2014 recorded high counts of illegal fuel transactions, despite governmental efforts to curb them. Lee (2014) added that KPDNKK reported a loss of almost RM 2.75 million for diesel subsidies, due to smuggling in 2014. Therefore, smuggling fuel transactions still remain rampant in Malaysia. According to Kim and Kang (2017), technology can reduce illegal transactions and decrease corruption. This showcases the ability of technology to curb illegal actions, by reducing human errors based on emotional bias.

The government upgraded the MyKad to not only an identification card but a personal database, with information revolving around the medical needs and personal details of the card owner (Daud, Hoon, Abushaar, Husain, & Othman, 2019). Further, MyKad now assists in financial matters, with access to bank transactions and public transportation (Touch 'n' Go) (Daud et al., 2019). Although the MyKad has been upgraded, providing a variety of significant benefits to cardholders, some Malaysians still walk around with only a photocopy of their ID despite knowing that such an action is rendered illegal by Malaysian law (Neo, Yeow, Eze, & Loo, 2012). This showed that Malaysia does not have a great intent to properly use MyKad.

Kim and Kang (2017) have found that technology is capable of reducing illegal activities, especially fuel transactions. Therefore performance expectancy, effort expectancy, social influence, and facilitating conditions are the four UTAUT factors selected in this study, to identify consumer acceptance of MyKad technology for fuel transactions.

Problem Statement

Based on KPDNKK's 2014 report, fuel smuggling remains a main concern although the government has carried out a variety of steps to curb it. Consequently the government lost almost RM 1.7 million due to this rising concern. This indicates that the current steps are ineffective.

MyKad is considered one of the greatest technologies developed by the government. Not only does it function as an identification card, it also carries with it a variety of benefits covering financial, transportation, and other industries. But despite MyKad being considered one of the great innovations in Malaysia, Malaysians in general do not greatly consider its associated benefits. A study from Neo et al. (2011) found that 96 percent of Malaysians are willing to

bring a photocopy of their ID and leave the original card at home. The study added several factors include less knowledge about MyKad benefits, lack of facilitating conditions, anxiety about card damage due to excessive use, lack of social support, and the credibility of both applications, as great considerations for Malaysians using MyKad.

The study from Kim and Kang (2017) shows that technology can reduce illegal activities. Based on that perspective, this study indicated that MyKad technology has a great capacity to reduce and eradicate fuel smuggling. However, Neo et al. (2012) found that most Malaysians are still not aware of the benefits that MyKad brings. This posed a question regarding consumer acceptance of MyKad technology for fuel transactions, to eradicate smuggling fuel in Malaysia. Moreover, limited studies identified the usage of MyKad towards fuel transaction as curbing smuggling fuel activities.

To reiterate, the framework in this study was formed by the UTAUT model which consists of four independent variables. They are performance expectancy, effort expectancy, social influence, and facilitating conditions towards consumer acceptance of MyKad technology. The researchers believe that this study provides great insights for Malaysians, petrol station owners as well as government agencies, since technology provides many advantages for daily activities.

Purpose of This Study

In order to curb fuel smuggling, the UTAUT model was used, analysing performance expectancy, effort expectancy, social influence, and facilitating conditions, along with four moderating variables (gender, age, experience, and voluntary). This helped identify Malaysians' acceptance of MyKad technology for fuel transactions, since fuel smuggling becomes progressively worse each year in Malaysia. Therefore this study provides great significant insights for the Malaysian government, petrol station owners, and government agencies.

Literature Review

UTUAT Model

The Unified Theory of Acceptance and Use of Technology (UTAUT) model was formed by Venkatesh et al. (2003). It became common for information technology research and technology adoption usage behaviour (Kijasanayotin, Pannarunothai, & Speedie, 2009). It is recognised as the most comprehensive model to go against the barrier of technology acceptance model (TAM) (Lin & Lai, 2019). The UTAUT model was investigated in many areas of technology acceptance research, including internet banking (Raza, Shah, & Ali, 2019), mobile services or devices (Ramirez-Correa, Rondan-Cataluna, Arenas-Gaitan, &

Martin-Velicia, 2019), technology adoption (Ramirez-Correa et al., 2019), electronic diner payment (Esfahani & Ozturk, 2019), social media adoption (El Ouiridi, El Ouiridi, Segers, & Pais, 2016), and more. The Venkatesh et al. (2003) UTAUT model has four variables. They are performance expectancy, effort expectancy, social influence, and facilitating conditions. It has four moderating variables (age, gender, experience, and voluntariness of use). Based on that study, performance expectancy is determinant in any condition and moderated by gender and age. Meanwhile, effort expectancy on intention is moderated by gender, age and experience. Social influence is also heavily affected by all four moderators; age, gender, experience and voluntariness of use. Finally, the effect of facilitating condition is only moderated by age and experience (Venkatesh et al., 2003). Therefore, this study indicates that the proposed model is about consumer acceptance of MyKad technology for fuel transactions.

Performance Expectancy

Performance expectancy indicates the feeling of improvement of performance when individuals use technologies (Venkatesh et al., 2003). It explains that individuals' performance and feeling can significantly improve when technologies provide great benefits. This performance expectancy can be defined as perceived usefulness in the TAM model (Paulau-Saumell, Forgas-Coll, Sanchez-Garcia, & Robres, 2019). Various past studies regarding mobile payment context, app-based tour guides, and food diet apps found a positive relationship regarding performance expectancy towards technology adoption (Paulau-Saumell et al., 2019; Slade, Dwivedi, Piercy, & William, 2015; Lai, 2015; Okumus, Ali, Bilgihan, Ozturk, 2018). Based on past studies, MYKAD technologies can increase Malaysians' feeling as well as performance, which may indicate a high consumer acceptance of MyKad technologies for fuel transactions.

Effort Expectancy

Venkatesh et al. (2003) defined effort expectancy as individuals' ease-of-use when using that technology. This explained the capability of individuals to use that technology without barriers. Further, effort expectancy has almost similarity as perceived ease-of-use in TAM model (Paulau-Saumell et al., 2019). Past studies, especially as to mobile application adoption, found a positive relationship regarding effort expectancy towards technology adoption (Paulau-Saumell et al., 2019; Lai, 2015; Okumus et al., 2018; Yu, 2012). Based on past studies, if Malaysians feel that MyKad technologies are capable and easy to use, it may indicate high consumer acceptance of MyKad technologies for fuel transactions.



Social Influence

Venkatesh, Thong, and Xu (2012) defined social influence as ‘the extent to which individuals perceive that important others believe that they should have a particular technology in a technology context’. Thus, individuals use that technology due to the influence of third parties such as family members, friends, and social groups members. Past studies, especially mobile marketing, found that positive relationships regarding social influence towards technology adoption intention (Paulau-Saumell et al., 2019; Venkatesh et al., 2012; Slade et al., 2015; Okumus et al., 2018; Yu, 2012). Based on past studies, if Malaysians are strongly influenced by third parties as to the benefits of MyKad technologies, it may indicate high consumer acceptance of MyKad technologies for fuel transactions.

Facilitating Condition

Venkatesh et al. (2003) defined facilitating conditions as the sources of individuals’ perceptions and the support available from technology to perform a behaviour. This can be explained by the definition from Venkatesh and Bala (2008): ‘a person’s perception of their control over their behaviour’. Past studies especially mobile tour guides apps and ICT acceptance found positive relationships regarding facilitating conditions, towards technology adoption intention (Paulau-Saumell et al., 2019; Lai, 2012; Venkatesh & Bala 2008). Based on past studies, the MyKad technologies have great supporting resources at an available rate for Malaysia, which indicates high consumer acceptance of MyKad technologies for fuel transaction among Malaysians.

Findings

Pilot Study

The main purpose for pilot the study is to identify all the items and constructs and make them comprehensible to target respondents. Therefore, 30 responses were collected to carry out this test. Based on Hair (2010), Cronbach alpha value was the measurement value for the pilot study. It must be more than 0.7. Table 1 showed the result of the pilot study.

Table 1: Pilot Study

Constructs	N	Cronbach Alpha
Performance Expectancy	6	0.806
Effort Expectancy	5	0.733
Social Influence	5	0.882
Facilitating Control	6	0.784
Consumer Acceptance	6	0.859

Descriptive Analysis for Demographic Profile

The main aim of descriptive analysis is to summarise the data from the questionnaire. Therefore, researchers run descriptive analyses upon a demographic profile from target respondents and tabulate it, according to frequency and percentage.

Table 2: Respondent's Demographic Characteristics

Construct	Frequency	Percentage
<u>Gender</u>		
Female	173	45.5
Male	207	54.5
<u>Nationality</u>		
Malaysian	301	79.2
Singaporean	44	11.6
Indonesian	15	3.9
Thais	15	3.9
Others	5	1.3
<u>Age</u>		
Under 24 Years Old	41	10.8
24 to 34 Years Old	187	49.2
35 to 39 Years Old	106	27.9

50 to 64 Years Old	35	9.2
More than 64 Years Old	11	2.9
<u>Education</u>		
Secondary	69	18.2
Upper Secondary	129	33.9
Polytechnic	43	11.3
Degree	107	28.2
Master and PhD	32	8.4
<u>Income</u>		
Less than RM 900	27	7.1
RM 900- RM 2000	122	32.1
RM 2001- RM 3000	96	25.3
RM 3001- RM 4000	60	15.8
RM 4001- RM 5000	48	12.6
RM 5001- RM 6000	18	4.7
RM 6001- RM 8000	6	1.6
RM 8001- RM 10000	2	0.5
More than RM 10001	1	0.3
<u>Vehicle Owned</u>		
Car	211	55.5
Light Van	40	10.5
Truck	14	3.7
Motorcycle	113	29.7
Others	2	0.5
<u>Trip Frequency (trips)</u>		
1	50	13.2
2	176	46.3
3	89	23.4
4	38	10.0
5	24	6.3
10	2	0.5
23	1	0.3
<u>Purpose</u>		
Commuting	66	17.4

Business/Work	209	55.0
Weekend Shopping	75	19.7
Holiday Leisure	17	4.5
Others	13	3.4
<u>Passengers' Numbers</u>		
1	62	16.3
2	139	36.6
3	106	27.9
4	51	13.4
5	21	5.5
10	1	0.3
<u>Policy Awareness</u>		
Yes	260	68.4
No	120	31.6

Table 2 summarises respondents demographic profiles. Malaysian male respondents aged between 24 and 34 dominated this study. Individuals with an upper secondary education dominated this study with 33.9%, followed by degree holders with 28.2%. A total of 122 respondents reviewed their income as between RM 900 to RM 2000. Just one respondent gave an income level of more than RM 10001. Furthermore, cars dominated as the choice for vehicles owned in this study with 211 respondents, mostly for business or working use. Last but not least, 260 respondents were aware of a government policy for foreign vehicles.

Mean Analysis

The mean analysis ensured a level of acceptance from target respondents towards all items in one variable group. Therefore, the researchers identified comparisons among mean value in one variable group, as indicating that the higher mean value for that item reflected high agreement or acceptance from target respondents.

Performance Expectancy

Table 3: Mean Analysis for Performance Expectancy

	Items	Mean
PE1	I think my task can be accomplished more quickly by using MyKad technology to curb smuggling fuel activities.	4.02
PE2	I think my task will be easily completed by using MyKad technology to curb smuggling fuel activities.	3.46
PE3	I feel comfort by using MyKad technology to curb smuggling fuel	3.54

	activities.	
PE4	I think that the quality or output of my life significantly increased after using MyKad technology to curb smuggling fuel activities.	3.56
PE5	I think that my efficiency significantly increased by using MyKad technology to curb smuggling fuel activities.	3.48
PE6	Overall, I would find using MyKad technology to be advantageous to curb smuggling fuel activities.	3.47

(Sources: Develop for Research)

Table 3 shows the result of mean analysis for performance expectancy. The range number is 3.46 to 4.02. By comparing the mean value, target respondents in this study mostly agreed with the statement of ‘I think my task can be accomplished more quickly by using MyKad technology to curb smuggling fuel activities’, with a mean value of 4.02. Target respondents in this study disagreed with the statements ‘I think my task will be easily completed by using MyKad technology to curb smuggling fuel activities’, given that its lowest mean value (3.46).

Effort expectancy

Table 4: Mean Analysis for effort expectancy

	Items	Mean
EE1	I think MyKad technology is easy to curb smuggling fuel activities.	3.80
EE2	I think my interaction with MyKad technology was clear and understandable.	3.36
EE3	I think MyKad technology does not require much effort to be used.	3.38
EE4	I think MyKad technology is friendly.	3.57
EE5	I think MyKad technology is convenience.	3.56

(Sources: Develop for Research)

Table 4 shows the mean analysis result for effort expectancy. The range number is 3.36 to 3.80. Based on the table, the statement which is “I think MyKad technology is easy to curb smuggling fuel activities,” is the most agreed upon, among target respondents in product performance risk due to the highest mean value. Meanwhile, target respondents reviewed disagreed with the statement ‘I think my interaction with MyKad technology was clear and understandable’ in this analysis.

Social influence

Table 5: Mean Analysis for social influence

	Items	Mean
SI1	I think people who important to me would recommend using MyKad technology in oil pumping activities.	3.81
SI2	I think people who important to me would find using MyKad technology beneficial to curb smuggling fuel activities.	3.47
SI3	I think people who important to me would find using MyKad technology to curb smuggling fuel activities is a good idea.	3.39
SI4	I think people who influence my behaviour would think that I should useMyKad technology to curb smuggling fuel activities.	3.64
SI5	I think people who are important to me would think that I should use using MyKad technology to curb smuggling fuel activities.	3.56

(Sources: Develop for Research)

Table 5 shows the mean analysis result for social influence. The mean range of time risk is 3.39 to 3.81. Based on the result, target respondents answered that MyKad technology will be used when recommended by important people in oil pumping activities. In the other hand, target respondents disagreed with the statement that using MyKad technology in oil pumping activities is a good idea.

Facilitating control

Table 6: Mean Analysis for facilitating control

	Items	Mean
FC1	I feel that using MyKad technology is entirely within my control to curb smuggling fuel activities.	3.83
FC2	I think I have the knowledge and ability to useMyKad technology to curb smuggling fuel activities.	3.54
FC3	I think I am able to skilfully useMyKad technology to curb smuggling fuel activities.	3.18
FC4	I feel I able to useMyKad technology to curb smuggling fuel activities	3.69
FC5	I consider that using MyKad technology to curb smuggling fuel activities rely only on me.	3.47
FC6	I think I have the skills and expertise to use using MyKad technology to curb smuggling fuel activities.	3.42

(Sources: Develop for Research)

Table 6 shows the mean analysis result for facilitating control. The mean range for facilitating control is 3.18 to 3.83. The results show that most target respondents agreed with the statement ‘I feel that using MyKad technology is entirely within my control to curb smuggling fuel activities’. However, target respondents mostly disagreed with the statement ‘I think I am able to skilfully use MyKad technology to curb smuggling fuel activities’.

Conclusion

The KPDNKK report in 2014 justified the conclusion that smuggling fuel activities have become rampant in Malaysia, despite the many governmental efforts to prevent them. MyKad is one technology provided for Malaysian citizens. It offers a solution to minimise human bias while also functioning 24 hours a day, seven days a week. Four independent variables were identified and they are performance expectancy, effort expectancy, social influence, and facilitating conditions towards consumer acceptance of MyKad technology. This paper identified the level of acceptance from target respondents towards four independent variables.

In terms of performance expectancy, the statement ‘I think my task can be accomplished quicker by using MyKad technology to curb smuggling fuel activities’ was most agreed with by target respondents in this study. In other words, if the MyKad Technology can significantly improve individuals’ performance in pumping fuel, there will be a high willingness to accept this technology. This view can be supported by the study from Paulau-Saumell et al. (2019), Slade et al. (2015), Lai (2015), and Okumus et al. (2018) who stated that if the technology is capable of significantly improving individual performance, there will be a higher percentage of technology adoption due to the positive outcome of technology provided.

The statement ‘I think MyKad technology is easy to curb smuggling fuel activities’ was identified as the most agreed statement in terms of effort expectancy. According to the study from Paulau-Saumell et al. (2019) and Okumus et al. (2018), that positive effect regarding effort expectancy and technology adoption can be caused by the perception of ease-of-use among individuals towards mobile application. Therefore, the researchers justify the view that if the MyKad Technology was easy to use among individuals, it may indicate a higher acceptance and significantly decrease oil smuggling activities.

In terms of social influence, the statement ‘I think people important to me would recommend using MyKad technology in oil pumping activities’ was most agreed to by target respondents in this study. Therefore, the researchers have justified the viewed that the benefit of MyKad Technology is to influence individuals, which then affect people close to them such as family members, friends, and social group members, to use this technology. This view can be supported by the study from Slade et al. (2015), who found that social influence positively



related to technology acceptance of mobile marketing, since individuals who accepted the benefits of this technology recommended others to use this technology as well.

The statement 'I feel that using MyKad technology is entirely within my control to curb smuggling fuel activities' was most agreed with by target respondents, in terms of facilitating control. According to the study from Paulau-Saumell et al. (2019), that positive effect regarding facilitating control and technology adoption can be caused by the capacity of individuals towards their usage of mobile tour guide applications. Therefore, the researchers have justified the view that were the MyKad Technology easy to use among individuals and did not require many skills, it would result in a higher acceptance of MyKad Technology.

In a nutshell, the MyKad Technology needs to significantly improve individuals' performance, ease-of-use, be recommended highly by third parties, and not require many skills for usage, to have a high acceptance when individuals pump fuel.



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