

EVALUATION ON THE INSTALLATION OF THE AUTOMATIC LANE BARRIERS (ALB) BY CAMPUS COMMUNITY

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Abstract

Purpose of the Study: This study examines the evaluation of Automatic Lane Barriers (ALB) system implementation on the campus community. The objectives of this study are to identify the differences between male and female on their evaluations towards the ALB system; and to determine the differences between staff and student on their attitude, behaviour, perceived usefulness (PU), and perceived ease of use (PEU) towards the ALB system.

Methodology: This study applies the quantitative research design using the survey method where self-administered questionnaires are used as the instrument for data collection. A total of 271 respondents participated in this study.

Main Findings: The findings show that, on the whole, campus community have a positive evaluation pertaining to perceived usefulness of the ALB system implementation only. There is no significant difference between male and female respondents on all variables while there are significant differences between staff and student towards the ALB system for all variables concerned.

Applications of this Study: This study adapted the items in the Technology Acceptance Model (TAM) to a newly implemented Automatic Lane Barriers (ALB) installation to differentiate the acceptance of ALB system according to gender and designation. The main reason for such implementation is to increase security and safety measures for the campus community.

Novelty/Originality of this Study: This study is done immediately after the ALB is enforced. Thus, the findings act as the benchmark for the acceptance of any new innovation for the campus community in the future.

Keywords: ALB system; campus community; perceived ease of use; perceived usefulness; university students.

INTRODUCTION

Background of Study

Campus life leaves a memorable experience for students in the higher learning institutions. This is the place where the students are nurtured in terms of personal growth, achievement, and satisfaction in life (Martin, 2012). The students enter the higher learning institutions with different expectations such as to gain new ideas, get the skills for a specific career, and as the first step towards achieving their dreams (Weiss, 2013). The student campus community has its own routine where the majority of them are involved in club and association activities after their classes. Sometimes, the students have meetings at night. The safety and security of the campus community are at stake, regardless of gender. However, females have a greater fear of their safety as compared to the males (Tomsich, Gover, & Jennings, 2011). The highest reported campus crime is theft especially motor vehicle theft (Beltz, 2015). Therefore, students' safety and security should be provided for them by the authority.

There are many security measures implemented at the higher learning institutions such as better lighting in the campus area, increasing the number of emergency telephone system and crime prevention tips to the campus community (Ripley, Yu, Wagner, & Chapla, 2010). However, the most commonly used system in order to increase the security is access restriction only to the authorized users. Punjab University has higher security measures in protecting female students at the hostels by restricting access to authorized users which include face recognition. If the system detects "access denied", an automatic emergency will call the local authority for security purposes (Farooq, Hasan, Amar, Hanif, & Asad, 2014). At the University of Northern Arizona, the student card is used to access classroom, pay for food and gain entry into the hostels (Beaver, 2016). The access restriction is not only used at the physical location, but also in accessing virtual location. Online banking (Dash, Mohanty, Pattnaik, & Mohapatra, 2011), online ticket reservation (Renny, Guritno, & Siringoringo, 2013), online shopping (Hartono, Holsapple, Kim, Na, & Simpson, 2014) and online tracking system (Rizzo, Barboni, Faggion, Azzalin, & Sironi, 2011) are among many examples of allowing only authorized users to personal information. The systems that are widely used for access restriction are the Radio Frequency Identification (RFID) and smart card. Both systems have the same concept in term of the components where: (1) the transmitter embedded in the cards or stickers that contain information, (2) memory banks to store all the user identification, and (3) the receiver to read the signals from the user and send it to the memory bank for access processing (Cheng, 2013; Miller, 2007). Due to its efficiency in the access restriction, RFID and the smart card system are widely used to increase safety and security measures.

The International Islamic University Malaysia (IIUM) authority has decided to implement the Automatic Lane Barriers (ALB) system. The ALB system is installed at every entrance of IIUM Gombak Campus, restricting vehicles access within the campus vicinity. According to the report by the Office of Security Management (2017), there were 11 theft cases of motor vehicles in 2015 and 10 theft cases 2016. In April 2017, the motor vehicle theft at the parking areas has been 6 cases being reported. Based on the statistics provided, the trend of the motor vehicles theft is unlikely to decrease. Hence, the university authority has decided to implement the ALB system to increase the security and safety of IIUM campus community.

Students and staffs are part of the IIUM campus community. The communication process about the ALB system implementation to the campus community was done in stages. The first communication from the Office of Security Management (OSeM) to the students was done on 23rd December 2016. The staffs received a notification in January 2017 through the IIUM official e-mail. Eligible students and staffs had to activate their cards in order to access the ALB system. The staff could also request for the RFID car stickers. After the actual implementation of the ALB system, the authority received many complaints from users.

Statement of the Problem

On the first day of the ALB system implementation, many motor vehicle users were unhappy with it. The traffic jam occurred inside and outside IIUM campus because all motor vehicle users needed to verify their identities by swiping their cards to the card reader. The waiting time for users to enter and exit IIUM campus using the ALB system caused heavy traffic jams especially during peak hours. The students were dissatisfied as they felt that the ALB system was restricting their freedom in accessing into IIUM campus. Students claimed that IIUM authority did not communicate clearly about the implementation of the ALB system and the study about it was not properly done. They voiced out their concerns in the social media and demanded a formal session with the IIUM authority. A Dialogue Session between the Office of Security Management (OSeM) and students was held on 5th April 2017, chaired by the Honourable Rector. After the session, the ALB system implementation was put on hold for month for further study. On the same night, the students gathered at the Human Sciences Canteen to voice out their dissatisfaction on the implementation of the ALB system. This prompts us to conduct a study on the evaluation of the ALB system implementation especially regarding campus community attitude, behaviour, perceived usefulness and perceived ease of use of the ALB system.

This study focuses on the evaluation of their usage of the Automatic Lane Barrier (ALB) system among the IIUM community: staffs and students. The ALB system recently introduced in January 2017 affected staffs and students on campus. They had different experiences with the ALB system implementation. The analysis is to find out whether there are differences between staff and student in their attitude, behaviour, perceived usefulness and perceived ease of use of the ALB system implementation.

Objectives of the Study

The objectives of the study are:

- 1) To identify the differences between male and female on their attitude, behaviour, perceived usefulness (PU), and perceived ease of use (PEU) towards the ALB system; and
- 2) To determine the differences between staff and student on their attitude, behaviour, perceived usefulness (PU), perceived ease of use (PEU), towards ALB system.

Significance of the Study

Upon identifying the required safety and security of the campus community, the IIUM authority has decided to invest in the ALB system. However, this implementation created confusion, especially among unregistered users: (1) parents visiting their children, (2) visitors and (3) unregistered motor vehicles such as delivery motor vehicle and public transport. The difficulty and confusion in entering the IIUM gate aroused anger from among the students as well. Their negative feedback was clearly seen in the social media postings and student gatherings. Besides confusion, full implementation of the ALB system also caused traffic congestion inside and outside IIUM campus. This study gives the view on the evaluations of the ALB system implementation with regards to new rules and regulations involving new technology. Even though the objective is to increase the safety and security of the community, users may perceive otherwise.

LITERATURE REVIEW

Attitude and Behaviour toward ALB

The tendency to respond to certain ideas, object, person or situation is called attitude. The attitude of the individuals with direct experience tends to have more influence as compared to those who have indirect experience. In the case of the ALB system implementation, the attitudes of users are different among those who own motor vehicles and those who do not have them. The attitude of an individual is influenced by motivation and persuasion. This study is trying to figure out whether there are differences between male and female, and between staff and student on their attitudes toward the ALB system implementation.

The likelihood of an individual to perform a certain idea or action is called behaviour. Usage is the likelihood of an individual to perform certain action or behaviour (Fishbein & Ajzen, 1975). Such likelihood leads the users to like, support and to accept a new technology and it normally happens as part of a change process in an organization (Frame & White, 2015; Semitiel-Garcia & Noguera-Mendez, 2012). The support from users is important as it can create a harmonious relationship within the organization (Wok & Hashim, 2015). A positive environment creates positive effects on the employees work performance (Alvi, Hanif, Adil, Raheem Ahmed, & Vveinhardt, 2014). LaPeire (1934) proves that behaviour is not influenced by attitude; however, Wicker (1969) says otherwise, that is, attitude is influenced by behaviour. Therefore, this study tries to determine whether there are differences between male and female, and between staff and student on their behaviour towards the ALB system implementation.

Perceived Usefulness

When users believe that the newly introduced technology is contributing positively to the work performance, it is considered as useful. The RFID and smart card system is used to detect authorized motor vehicles in entering the premise (Rizzo et al., 2011). User perception on the new technology is important. The usefulness of the technology can be in terms of: (1) increasing safety and security (Hartono et al., 2014), (2) decreasing manpower (Bhosale & Wavhal, 2013), (3) increasing reliability on technology (Rizzo et al., 2011), (4) saving time and money of users (Yang, Kit, Sing, Hadi, & Ikhwan, 2015), and (5) minimizing work stress (Bhosale & Wavhal, 2013). When the user's perception on the new technology is positive, it means that the system is useful. The main objective of the ALB system implementation by the university authority is to increase the safety and security of the community inside the campus. However, the perception between male and female and between staff and student may differ.

Perceived Ease of Use

An organization introduces a new technology in order to remain competitive. Users have no choice but to learn how to use it. When using the new technology is convenient (Nasir, Norman, Fauzi, & Azmi, 2011), effortless (Davis, Bagozzi, & Warshaw, 1989), comfortable (Nasir et al., 2011) and easy to use (Bhosale & Wavhal, 2013), it will be well accepted. In the case of the ALB system, students and staffs need to activate their cards in order to gain access. All staffs can request for extra access cards and the RFID car stickers for easy access. Students have different regulations compared to staff. Only fourth year students and post graduate students are allowed to bring their cars into the campus while there is no restriction for motorcycles. With the ALB system, the unregistered cars will not be able to enter the IIUM premises. In taking these considerations, the experience of the ease of use of the ALB system may be different between the staff and students. Therefore, this study tries to find out whether there are differences on perceived ease of use between male and female and between staff and student of the ALB system implementation.

Technology Acceptance Model (TAM)

The willingness of users to accept newly introduced technology is crucial for the organization. The model used to study about users' behaviour in accepting new technology is called the Technology Acceptance Model (TAM) by Davis (1989). Users' acceptance depends on: (1) perceived usefulness, (2) perceived ease of use, and (3) attitude of users. The basis of TAM is from the theory of reasoned action (Madden, 1986) and the theory of planned behaviour (Ajzen, 1985); where the study is about understanding the relationship between attitude and behaviour. If user perception on the outcome is positive, the attitude and behaviour are positive as well. The examples of outcomes are product performance (Edmunds, Thorpe, & Conole, 2012) and work performance (Teo & Noyes, 2011). A positive experience in using technology is influencing the attitude of the users (Pietro, Virgilio, & Pantano, 2012). Positive user attitude and behaviour are important because it is the basis of the organization to improve. This study is using the Technology Acceptance Model items, specifically perceived usefulness and the perceived ease of use to analyse the differences between male and female and between staff and student on attitude, behaviour, perceived usefulness, and perceived ease of use towards the ALB system implementation.

The application of the TAM was acceptable for the study on ALB system implementation (Abdul Kadir, Abdul Rahman & Wok, 2017) where attitude mediates the relationship between perceived usefulness and perceived ease of use towards the ALB system implementation.

Hypotheses of the Study

Basically, based on the literature discussed above, there are two general hypotheses (GH1 and GH2) of the study and four sub-hypotheses. They are:

GH1: Males tend to favour more on the ALB system implementation than females.

SH1.1: Males tend to have a more positive attitude on the ALB system implementation than females.

SH1.2: Males tend to have a better behavioural reaction on the ALB system implementation than females.

SH1.3: Males tend to have a higher level of perceived usefulness on the ALB system implementation than females.

SH1.4: Males tend to have a higher level of perceived ease of use on the ALB system implementation than females.

GH2: Staffs tend to favour more on the ALB system implementation than students.

SH1.1: Staffs tend to have a more positive attitude on the ALB system implementation than students.

SH1.2: Staffs tend to have a better behavioural reaction on the ALB system implementation than students.

SH1.3: Staffs tend to have a higher level of perceived usefulness on the ALB system implementation than students.

SH1.4: Staffs tend to have a higher level of perceived ease of use on the ALB system implementation than students.

METHODOLOGY

This study uses the quantitative research design using a survey method with questionnaire as the instrument to collect data. The population of this study is the IIUM community at the Gombak Campus; the majority of them are students ($N=22,741$) and staffs ($N=2,443$). These are the two groups that are mostly affected by the ALB implementation as they need to enter and exit IIUM campus constantly.

The research instrument used is the self-administered survey questionnaire. The questionnaire consists of six sections: Section 1 - demographic characteristics with nine items, Section 2 - source of information consists of eight items, Section 3 - perceived usefulness consists of ten items and is measured using a Likert scale of 1-5 from strongly disagree to strongly agree, Section 4 - perceived ease of use consists of ten items and is measured using a Likert-like scale of 1-5 which range from very difficult to very easy, Section 5 - attitude consists of ten items and is measured using a Likert- scale of 1-5 with strongly disagree to strongly agree, and Section 6 - behavioural intention is also made up of ten items and is measured using a Likert-like scale of 1-5 from never to always.

The Cronbach's alpha is used to gauge the reliability of all variables on the implementation of the ALB system in the IIUM campus. All constructs are reliable with the alpha value more than 0.70 where attitude toward the ALB system ($\alpha=.959$), behaviour in using the ALB system ($\alpha=.933$), perceived usefulness of the ALB system ($\alpha=.949$), and perceived ease of use of the ALB system ($\alpha=.940$).

Data were collected from 6 March until 16 April 2017. The total number of respondents for this study is 271. Among them are 80 males and 191 females. In terms of designation, 125 of them are staffs and 146 are students.

The completed questionnaires were keyed-in into the Statistical Package for Social Sciences (SPSS) version 20 to obtain descriptive statistics and inferential statistics. The descriptive statistics used are frequency, percentage, mean and standard deviation. The inferential statistics used is the independent t-test to compare between male and female and between staff and students on attitude, behaviour, perceived usefulness, and perceived ease of use towards the ALB system.

RESULTS

Demographic Characteristics of the Study

From a total of 271 respondents, there are 80 male and 191 female respondents and they are either staffs ($n1=125$) or students ($n2=146$) who participated in the study. More than two-thirds of them are females (70.5%) and 29.5% of them are males. They are young, aged 30 years old and below (65.3%) and the rest aged 31 and older group (34.7%). Almost all of them are Malaysian (91.9%) with only 8.1% of them are the International respondents, either working or studying in the IIUM and they belong to the campus community.

Independent t-test on Favourableness of ALB System Implementation by Gender

To test the difference between male and female on their favourableness of the ALB system implementation on various attributes, an independent-sample t-test was used. The differences are compared based on (a) attitude, (b) behaviour, (c) perceived usefulness, and (d) perceived ease of use. Based on the results in Table 1, there is no significant difference between male ($M=2.856$, $SD=1.086$) and female ($M=2.827$, $SD=0.902$) regarding their attitude toward the implementation of the ALB system, with $t(269)=-.227$ ($p=.821$), despite the fact that males tend to have a higher mean value than the females. Hence, male and female respondents have similar attitude on the implementation of ALB system in the campus. Thus, hypothesis H1.1 is rejected.

With regards to behaviour, males ($M=2.988$, $SD=1.035$) tend to have a slightly a higher reaction than females ($M=2.911$, $SD=0.924$) towards the implementation of ALB system with $t(269)=.601$ ($p=.548$). This means that there is no difference between male and female behaviour towards the implementation of ALB system in the campus. Hence, hypothesis H1.2 is rejected.

Similar results are found regarding the perceived usefulness of the implementation of ALB system where males ($M=3.371$, $SD=1.033$) and females ($M=3.386$, $SD=0.962$) whereby there is no significant difference between male and female ($t=-0.112$, $p=.911$). This implies that even though both males and female perceived that ALB system as useful for them, their difference is not significant enough. Therefore, hypothesis H1.3 is rejected despite the fact that females' perception is higher than the males' perception.

The respondents, regardless of gender, perceived that it is not easy to use the ALB system where males ($M=2.591$, $SD=0.943$) and females ($M=2.464$, $SD=0.873$). This is reflected from the result where $t=1.066$ ($p=.911$) is not big enough to shed a difference. Therefore, hypothesis H1.4 is rejected.

On the whole, even though the males are higher than females on the account of attitude, perceived usefulness and perceived ease of use, their difference are not significant. The IIUM campus community, regardless of gender type, has only a favourable evaluation on the usefulness aspect of the ALB system implementation.

Table 1: Independent t-test for favourableness of ALB system by gender

Variable	Gender	N	M*	SD	t	df	p
Attitude	Male	80	2.856	1.086	0.227	269	.821
	Female	191	2.827	0.905			
	Total	271	2.836	0.960			
Behaviour	Male	80	2.988	1.035	0.601	269	.548
	Female	191	2.911	0.924			
	Total	271	2.934	0.957			
Perceived usefulness	Male	80	3.371	1.033	-0.112	269	.911
	Female	191	3.386	0.962			
	Total	271	3.382	0.981			
Perceived ease of use	Male	80	2.591	0.943	1.066	269	.287
	Female	191	2.464	0.873			
	Total	271	2.502	0.894			

*5-point scale whereby 1=strongly disagree, 2=disagree, 3=slightly agree, 4=agree, and 5=strongly agree

Independent t-test on Favourableness of ALB System Implementation by Designation

Table 2 presents an independent-sample t-test to compare attitude, behaviour, perceived usefulness, perceived ease of use, by designation (staff and student). Results show that attitude for staffs ($M=3.030$, $SD=1.024$) is significantly higher than for the students ($M=2.669$, $SD=0.872$) with $t(265)=3.137$ ($p=.002$). This means that there are differences between staff and student attitude towards ALB system implementation where the staffs have a more positive attitude than the students. Therefore, H2.1 is supported.

Table 2: Independent t-test for favourableness of ALB system by designation

Variables	Designation	N	M*	SD	t	df	p
Attitude	Staff	125	3.030	1.024	3.137	269	.002
	Student	146	2.669	0.872			
	Total	271	2.836	0.960			
Behaviour	Staff	125	3.225	0.941	4.819	269	.000
	Student	146	2.685	0.901			
	Total	271	2.934	0.957			
Perceived usefulness	Staff	125	3.576	0.972	3.065	269	.002
	Student	146	3.215	0.962			
	Total	271	3.382	0.981			
Perceived ease of use	Staff	125	2.753	0.931	4.417	269	.000
	Student	146	2.287	0.805			
	Total	271	2.502	0.894			

*5-point scale

Behaviour for staff ($M=3.225$, $SD=0.941$) for ALB system implementation is higher than for the students ($M=2.685$, $SD=0.901$) and the results support H2.2 where $t(265)=4.819$ ($p=.000$) is significant.

There is a significant difference in the perceived usefulness for staffs ($M=3.576$, $SD=0.972$) and for students ($M=3.215$, $SD=0.962$). Their difference is significant ($t(265)=3.065$, $p=.002$). The staffs perceived that the ALB system implementation is more useful compared to the students. Hence, hypothesis SH2.3 is supported.

Perceived ease of use for staffs ($M=2.753$, $SD=0.931$) is higher than for the students ($M=2.287$, $SD=0.805$). Such difference is significant with $t(265)=4.417$ ($p=.000$). Therefore, the results show that staffs perceived the ALB system is easy to use than do the students perceive it to be. Therefore, SH2.4 is supported.

On the whole, staffs have a more positive attitude, behave more favourably, perceive the usefulness and have experienced the ease of using the ALB system compared to the students. Therefore, in summary, all hypotheses are supported by the results. This is in line with the favourable rating for attitude, behaviour and perceived usefulness towards ALB system implementation. Hence, the general hypothesis of GH2 and the sub-hypotheses of SH2.1, SH2.2, SH2.3 and SH2.4 of the study are supported.

DISCUSSION

Based on the findings, gender differences do not occur in this study. This is because males and females tend to be similar on their attitude, behaviour, perceived usefulness and perceived ease of use of the ALB system. When come to new technology implementation, both male and female users are comparable in their insight for the betterment of the institution as a whole. Gender difference is not an issue here. Therefore, there is no need for a gender analysis study.

Nonetheless, differences occur based on the designation, that is, whether they are staffs or students. Possibly, the staffs are well informed about the implementation of the ALB system and they are prepared for it much earlier than the students know about it. Being students, they may be caught unaware of its implementation despite the fact that they agree that ALB system is useful for their safety for security purpose. They like to be complacent and do not want any hassle that takes their time especially during class time off. Further, students dislike changes that caught them unprepared for such changes. Anyway, in no time, the students will get used to it. It is just a matter of time. This study supports the related studies on reason action theory (Ajzen, 1985), planned behaviour (Fishbein & Ajzen, 1975) and technology acceptance model (Davis, 1989).

CONCLUSION

The results show that there is no significant difference between males and females on attitude, behaviour, perceived usefulness, and perceived ease of use towards the ALB system implementation, where both gender types (male and female) have the same experience with the system. Hence, GH1 on attitude, behaviour, perceived usefulness and perceived ease of use is rejected. Meanwhile, results for designation on attitude, behaviour, perceived usefulness, and perceived ease of use in using the ALB system are all significantly different where staffs are more favourable towards the ALB system compared to students in using the ALB system. Therefore, the objectives of the study are accomplished despite the fact that GH1 of the study is not accepted. However, GH2 is accepted for all its SH2.1, SH2.2, SH2.3, and SH2.4.

The findings are based on the evaluation of 125 staffs and 146 students. The implementation of the ALB system is acceptable for them. The staffs are positive towards ALB system implementation in terms of attitude, behaviour and usefulness, and perceived ease of use towards the ALB system implementation. The students, on the other hand, could perceive the usefulness of the ALB system, too, in the long run.

Only TAM model variables (perceived usefulness and perceived ease of use) are taken into consideration, but not its actual model itself. Nonetheless, ALB system should be implemented as it is good for the safety and security of the campus community.

LIMITATION AND STUDY FORWARD

This study has its own limitations. For example, a few respondents refused to answer the survey questionnaire because the issue of ALB system implementation is new to them and they lack the experience involving in it. In the future, the researchers can perhaps add more information and data through observation and feedback from the social media such as the Facebook regarding the effectiveness of ALB system implementation. Future research should do the interaction effect on gender and designation for each aspect of the TAM model variable. Publicity and promotional campaign should be carried out to gauge the acceptance of the new technology by the potential users of the system. A follow-up study should be conducted to chart the progress of the new technology acceptance.

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REFERENCES

1. Abdul Kadir, H., Abdul Rahman, M., & Wok, S. (2017). The Effects of the installation of the automatic lane barrier (ALB) implementation on the IIUM community, in *1st Melaka International Conference on Social Sciences 2017 Proceeding (1st MELICOSS'17)* (pp. 781-790). Melaka: University College of Islam Melaka.
2. Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In *Action control: From cognition to behavior* (pp. 11-39). New York: Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-69746-3_2
3. Alvi, H. A., Hanif, M., Adil, M. S., Raheem Ahmed, R., & Vveinhardt, J. (2014). Impact of organizational culture on organizational commitment and job satisfaction. *European Journal of Business and Management*, 6(27), 30-40. Retrieved from www.iiste.org
4. Beaver, M. (2016). The implications of RFID technology in university ID cards. *S&T's Peer to Peer: An Undergraduate Research Journal*, 1(1), 1-6. Retrieved from <http://scholarsmine.mst.edu/peer2peer/vol1/iss1/3>
5. Beltz, B. (2015). Crime at the top 100 colleges in the U.S. Retrieved July 10, 2017, from http://www.huffingtonpost.com/brian-beltz/crime-at-the-top-100-colleges-in-the-us_b_6432864.html
6. Bhosale, S., & Wavhal, D. N. (2013). Automated toll plaza system using RFID. *International Journal of Science, Engineering and Technology Research (IJSETR)*, 2(1), 455-460.

7. Cheng, K. M. (2013). An evaluation of RFID door security system at Taipei Arena Ice Land based on technology acceptance model. *International Journal of Management & Information Systems - Second Quarter 2013*, 17(2). Retrieved from <http://www.cluteinstitute.com/>, <https://doi.org/10.19030/ijmis.v17i2.7716>
8. Dash, M., Mohanty, A. K., Pattnaik, S., & Mohapatra, R. C. (2011). Using the TAM Model to explain how attitudes determine adoption of internet banking. *European Journal of Economics, Finance and Administrative Sciences*, (36), 50-59.
9. Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8), 982-1003. <https://doi.org/10.1287/mnsc.35.8.982>
10. Edmunds, R., Thorpe, M., & Conole, G. (2012). Student attitudes towards and use of ICT in course study, work and social activity: A technology acceptance model approach. *British Journal of Educational Technology*, 43(1), 71-84. <https://doi.org/10.1111/j.1467-8535.2010.01142.x>
11. Farooq, U., Hasan, M. ul, Amar, M., Hanif, A., & Asad, M. U. (2014). RFID based security and access control system. *IACSIT International Journal of Engineering and Technology*, 6(4), 309-314. <https://doi.org/10.7763/IJET.2014.V6.718>
12. Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behaviour: An introduction to theory and research*, MA: Addison-Wesley.
13. Frame, W. S., & White, L. J. (2015). Technological change, financial innovation, and diffusion in banking. In A. N. Berger, P. Molyneux, & J. O. S. Wilson (Eds.), *The Oxford Handbook of Banking* (Second Edi, pp. 271-291). United Kingdom: Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199688500.001.0001>
14. Hartono, E., Holsapple, C. W., Kim, K.-Y., Na, K.-S., & Simpson, J. T. (2014). Measuring perceived security in B2C electronic commerce website usage: A respecification and validation. *Decision Support Systems*, 62(1), 11-21., <https://doi.org/10.1016/j.dss.2014.02.006>
15. Madden, T. J. (1986). Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control. *Journal of Experimental Social Psychology*, 22(5), 453-474., [https://doi.org/10.1016/0022-1031\(86\)90045-4](https://doi.org/10.1016/0022-1031(86)90045-4)
16. Martin, N. D. (2012). The privilege of ease: Social class and campus life at highly selective, private universities. *Research in Higher Education*, 53(4), 426-452., <https://doi.org/10.1007/s11162-011-9234-3>
17. Miller, R. B. (2007). What is RFID. Retrieved May 7, 2017, from http://pr-rla.org/pdfs/2005/bruce_miller.pdf
18. Nasir, M., Norman, A., Fauzi, S., & Azmi, M. (2011). An RFID-Based validation system for Halal food. *The International Arab Journal of Information Technology*, 8(2), 204-211.
19. Pietro, L. Di, Virgilio, F. Di, & Pantano, E. (2012). Social network for the choice of tourist destination: Attitude and behavioural intention. *Journal of Hospitality and Tourism Technology*, 3(1), 60-76. <https://doi.org/10.1108/17579881211206543>
20. Renny, Guritno, S., & Siringoringo, H. (2013). Perceived usefulness, ease of use, and attitude towards online shopping usefulness towards online airlines ticket purchase. *Procedia - Social and Behavioral Sciences*, 81, 212-216. <https://doi.org/10.1016/j.sbspro.2013.06.415>
21. Ripley, C., Yu, M., Wagner, L., & Chapla, S. (2010). *Reducing crimes on campus*: Purdue: Purdue University.
22. Rizzo, F., Barboni, M., Faggion, L., Azzalin, G., & Sironi, M. (2011). Improved security for commercial container transports using an innovative active RFID system. *Journal of Network and Computer Applications*, 34, 846-852. <https://doi.org/10.1016/j.jnca.2010.04.006>
23. Semitiel-Garcia, M., & Noguera-Mendez, P. (2012). The structure of inter-industry systems and the diffusion of innovations: The case of Spain. *Technological Forecasting and Social Change*, 79(8), 1548-1567. <https://doi.org/10.1016/j.techfore.2012.04.010>
24. Teo, T., & Noyes, J. (2011). An assessment of the influence of perceived enjoyment and attitude on the intention to use technology among pre-service teachers: A structural equation modeling approach. *Computers & Education*, 57(2), 1645-1653. <https://doi.org/10.1016/j.compedu.2011.03.002>
25. Tomsich, E. A., Gover, A. R., & Jennings, W. G. (2011). Examining the role of gender in the prevalence of campus victimization, perceptions of fear and risk of crime, and the use of constrained behaviors among college students attending a large urban university. *Journal of Criminal Justice Education*, 22(2), 1-22. <https://doi.org/10.1080/10511253.2010.517772>
26. Weiss, K. G. (2013). *Introducing party university*. In *Party school: Crime, campus, and community* (pp. 1-32). Boston: Northeastern University Press Boston.
27. Wok, S., & Hashim, J. (2015). The moderating effect of employee relations on networking towards workplace happiness among married women in Malaysia. *Social and Behavioral Sciences*, 211(November 2015), 306-312. <https://doi.org/10.1016/j.sbspro.2015.11.039>
28. Yang, F. C., Kit, S. M., Sing, L. K., Hadi, A., & Ikhwan, M. (2015). Design and development of low cost auto gate system for house: Mechanical system design, Part 2. In 2nd Integrated Design Project Conference (IDPC) 2015 (pp. 1-11).