

A Study of Mobile Augmented Reality Advertising app

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ABSTRACT: There are several typical marketing and promotional tools that have been used by most printed media Microenterprises in Malaysia to spread their services and information about their products such as brochures and banners. However, there are some weaknesses of these approaches that include; the product information consisting only text and images, and also non-interactive. The aim of this paper is to provide interactive information beyond that of conventional advertising approaches. This paper introduces the mobile Augmented Reality Advertising (MARA) app for the printed media Microenterprises. A study was carried out among a sample of 60 mobile users. Descriptive statistical analysis was employed to determine the perceptions of users towards the use of the MARA app in terms of Perceived Ease of Use, Perceived Usefulness, Attitude toward Use, Informativeness and Advertising Value. The results indicated that the users highly agreed on all the measurements.

INTRODUCTION

The role of microenterprise in developing countries is now undeniable. Microenterprise contributes a lot to the national economy especially in providing the employment opportunities to the community (Rogerson 2004; Servon 1999), economic development, income generation and poverty alleviation (ILO, 2007, Wasihun and Paul, 2010). Microenterprise is an organization that employs between 1 to 5 workers, has small amount of capital and provides goods and services in their local areas (Adeya, 2003). Meanwhile in Malaysia, according to Bank Negara Malaysia (2005), the microenterprise is a company with annual sales turnover of less than RM250,000 or full-time employees of less than 5 for manufacturing or agro-based industry or annual sales turnover of less than RM200,000 or full-time employees of less than 5 for others. However, microenterprise faces problems in terms of financing mainly and the lack of skills (Jakic, 2011; Pharr & Weinrauch, 2007) that cause marketing and promotion activities cannot be executed (Roberts & Wood, 2005). It is costly to advertise through

the traditional advertising channels such as television and magazines (Downing, Mohammadi, & Sreberny, 1995). Meanwhile the use of banners and streamers for advertising is also less effective since they only attract attention of those passersby only. Thus an alternative approach of advertising which is affordable, effective and trendy is required for the microenterprise.

Nowadays, the use of mobile technology has becoming more important in our daily lives. Furthermore, the utilization of mobile devices has been more popular and among the most widely advertising medium is the smartphone. Mobile advertising continues to expand while paper advertising is declining. With that in mind, this paper introduces Mobile Augmented Reality (MAR) as an alternative technology to achieve the objectives of advertising. Many companies have implemented AR in their business for advertising such as Coca Cola, McDonald, Kellogg and others (Siltanen, Aikala, Järvinen, & Valjus, 2017). A Mobile Augmented Reality Advertising (MARA) app

for printed media microenterprise has been designed and developed for this purpose.

UNDERPINNING THEORIES

A. Technology Acceptance Model (TAM)

TAM is one of the most widely used models in the evaluation process developed by Davis (1989). According to Lee et al. (2003), TAM is a model that has a great success in evaluating applications related to information technology. The model is simple and easy to be applied in an evaluation phase (Nasution, 2004). It is a theory that models, explains and predicts users' behaviour of information technology (Park, 2009). Besides, TAM is considered an influential extension from the theory of reasoned action.

B. Theory of Reasoned Action (TRA)

TRA is derived from the social psychology area, which asserts the study of behavior and attitudes of human. It suggests that a person's behavioral intention relies on the person's attitude about the behavior. If a person intends to do behavior, then it is likely that the person will do it. By adapting TRA, TAM provides the basis of predicting the behavior or attitudes towards the information technology. Figure X shows the original TAM model. It shows how the external variables influence belief, attitude and intention to use of a user to a system. As stated by Lee et al. (2003) and Park (2009), referring to TAM, one's actual use of information technology is affected directly or indirectly by the user's behavioral intentions, attitude, perceived usefulness and perceived ease of the system.

The following sections elaborate on a study that was carried out among a sample of mobile users. Descriptive statistics analysis was employed to determine the users' perceptions when using the MARA app in terms of perceived ease of use, perceived usefulness, and attitude toward use, informativeness, advertising value and intention to use.

METHOD

A. Participants

The participants for this evaluation were mobile users who were categorized as youngsters

between the ages of 19 to 39 years old based on based on Erikson's stages of psychosocial development. Convenience sampling technique was applied in the selection of the samples. According to Coakes and Steed (2003), the minimum number for sample size must be at least 30 whereby 30 is an ideal number of respondents in order to avoid any shortage of information.

B. Instrument

The instrument that was used in the evaluation consists of a set of questionnaires which includes measurements that were taken from previously validated instruments and modified based on the context of this study. The instrument includes measurements such as Perceived Ease of Use, Perceived Usefulness, Attitude toward Use, Informativeness, Advertising Value and Intention to Use. The questionnaires adapted all of the measurements and items from several previous studies. Perceived ease of use is the degree to which a person believes that using a system would be free of effort (Davis, 1989). Meanwhile, according to Nasution (2004), perceived ease of use refers to the system whether it is easier to be used, save energy and has the intention to be used repeatedly. Perceived usefulness is the degree to which the user believes that using the technology will improve his/her performance (Davis, 1989) and it measures whether the system increase the work performance or not. Attitude toward use is an individual's positive or negative feelings about performing the targeted behavior (Davis, 1989; Fishbein & Ajzen, 1975; Taylor & Todd, 1995a, 1995b). Attitude toward using the technology determines the behavioral intention to use that technology. Intention to use is the degree to which a person has formulated conscious plans to perform or not to perform some specified future behaviors (Davis, 1989; Chatzoglou et al., 2009). The four measurements mentioned above namely; perceived ease of use, perceived usefulness, attitude toward use and intention to use are from the same theory which is the Technology Acceptance Model. Meanwhile informativeness is the ability of business to inform consumers about products and services to achieve greatest possible

satisfaction. (Gao & Koufaris, 2006; Wong & Tang, 2008). Lastly, advertising value is a subjective evaluation of the relative worth or utility advertising to consumers (Ducoffe,1995). For both measurements, informativeness and advertising value are from the same theory which is the Advertising Value Model by Ducoffe (1995).

The instrument that was used in the evaluation consists of two sections namely; User’s demographic data and Users’s Perception towards the use of the mobile Augmented Reality Advertising (MARA) app. A 5- point likert scale anchored by “Strongly Disagree” (1) and Strongly Agree (5) was used.

C. Procedure

Prior to the evaluation, a brief explanation regarding the functions and the user interfaces of the MARA app was given to the respondents. They were given ample time to use and be familiar with the functions and interfaces of the app. A set of questionnaire was handed to each of the respondents for them to evaluate the MARA app.

RESULTS

A. Demographic characteristic

The user evaluation was conducted among 60 respondents of both genders whereby 30 of the respondents were male and 30 were female. This satisfies the minimum number for sample size as suggested by Coakes and Steed (2003). The range of the respondents’ ages was 19 to 39 years old and they are categorized as youngsters based on Erikson’s stages of psychosocial development.

B. Reliability Analysis

In assessing the degree of error presents in the user evaluation questionnaires, reliability analysis was conducted. The reliability of a questionnaire is the ability of the questionnaire to give the same results when filled out by like-minded people in similar circumstances (Kirakowski, 2000). Cronbach alpha scores for all the measurements were calculated using the SPSS version 22.0 software in order to establish the data inter-item reliability which assesses the

degree of internal consistency between multiple measurements of a measurement. Table 1 shows the Cronbach alpha value for all the measurements. The results indicated that Intention to use has a Cronbach alpha of 0.789, Perceived ease of use has a score of 0.716, Perceived usefulness has a score 0.713, Attitude toward use has Cronbach alpha of 0.718, Informativeness has a Cronbach alpha of 0.714 and lastly Advertising value has a Cronbach alpha of 0.711. Since all the measurements have Cronbach alpha values of greater than 0.7, then all the measurements are reliable (Van Raaij & Schepers, 2008).

Table 1. Cronbach Alpha Values for All Measurements

Measurement	Number Of Items	Cronbach Alpha α
Intention to use	4	0.789
Perceived ease of use	4	0.716
Perceived usefulness	3	0.713
Attitude toward use	3	0.718
Informativeness	5	0.714
Advertising value	3	0.711

C. Descriptive Statistics Analysis

Evaluation from users’ perspective is important in obtaining the users’ perception towards the use of the the mobile Augmented Reality Advertising (MARA). The descriptive statistics for all the measurements are presented in Table 2.

Table 2. Descriptive Statistics

Measurements and Items	Mean	SD
Intention to use	4.62	
I intend to use MARA when it is implemented.	4.72	0.454
I intend to use MARA on a regular basis.	4.52	0.567
Given the circumstances, in would use MARA.	4.60	0.527
I would strongly recommend my friend to use MARA.	4.65	0.515

Perceived ease of use	4.71	
MARA is easy to use.	4.67	0.510
MARA is suitable to use in advertising.	4.68	0.537
Augmented Reality is easy to use even you are alone.	4.72	0.490
Step in using MARA is easy to remember.	4.77	0.500
Perceived usefulness	4.83	
Using MARA can save my time.	4.83	0.376
Overall, I find MARA is useful in my job.	4.80	0.480
Using MARA makes it easier to do my job.	4.87	0.343
Attitude toward use	4.70	
I like to use MARA.	4.67	0.510
I intend to use MARA.	4.68	0.537
Using MARA is a good idea of advertising.	4.75	0.474
Informativeness	4.71	
MARA provides useful information and service on product.	4.67	0.510
MARA provides timely information on product.	4.72	0.454
MARA supply information and service.	4.68	0.469
MARA supply relevant information and service on products.	4.73	0.446
MARA provides complete information on products.	4.75	0.474
Advertising value	4.70	
MARA is valuable.	4.68	0.504
MARA is useful.	4.70	0.530
MARA is important.	4.73	0.482

The results of the descriptive statistics analysis indicated that the mean scores for Intention to Use is 4.62, Perceived ease of use is 4.71, Perceived usefulness is 4.83, Attitude toward use is 4.70, Informativeness is 4.71 and lastly Advertising value is 4.70. All the measurements have mean scores of greater than 4.5 which show that the respondents highly agreed on all the items. Perceived usefulness has the highest mean score of 4.83 while Intention to use has the lowest mean score of 4.62.

CONCLUSION

This paper has looked into the possibility of introducing the mobile Augmented Reality Advertising (MARA) app to be used as a marketing and promotional tool for the printed media microenterprises in Malaysia. Nowadays, smartphone users requires app that is straight forward, easy to use, interactive, trendy and easily available anywhere and anytime. The MARA app is able to provide the users with comprehensive information about the product and services which is not available via conventional advertising. This paper started with brief explanations on the issues faced by the microenterprises pertaining to the marketing and promotion of their products and services, the importance of mobile advertising and the underpinning theories of this study that include; the Technology Acceptance Model and the Theory of Reasoned Action. Then it elaborates on the user evaluation that was carried out among a sample of mobile users by explaining about the participants, instrument and procedures. The main purpose of the user evaluation is to determine the users' perceptions towards the use of the MARA app as a marketing and promotional tool for the printed media microenterprises. The results of the user evaluation indicated that the users highly agreed on all the measurements which include perceived ease of use, perceived usefulness, and attitude toward use, informativeness and advertising value. From the results, the following key strengths are apparent. The users think that the step in using MARA is easy to remember, MARA makes it easier to do their job, MARA is a good idea for advertising, MARA provides complete information on products and MARA is important. Finally, they also intend to use MARA when it is implemented.

It is hoped that the findings of this study will encourage the printed media microenterprises in Malaysia to utilize the Mobile Augmented Reality app in promoting and marketing of their products and services.

REFERENCES

- Adeya, N. (2003). Potential Uses Of ICTs By Small And Micro Enterprises In Ghana And Kenya. Retrieved: 18th November 2015, From <http://www.iicd.org/articles/iicdnews.import2075>
- Bank Negara Malaysia (2005). Definitions for Small and Medium Enterprises in Malaysia. Available: http://www.smeinternational.org/wp-content/uploads/2011/01/sme_definitions_ENGLISH.pdf, 2005.
- Chatzoglou, P. D., Sarigiannidis, L., Vraimaki, E., & Diamantidis, A. (2009). Investigating Greek employees' intention to use web-based training. *Computers & Education*, 53(3), 877-889.
- Coakes, S., and Steed, L. 2003. SPSS: Analysis without anguish: Version 11.0 for Windows: John Wiley.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340.
- Davis, F.D., R.P. Bagozzi, and P.R. Warshaw (1989). "User Acceptance of Computer Technology: A Comparison of Two Theoretical Models." 35(8): 982-1003.
- Downing, J., Mohammadi, A., & Sreberny, A. (Eds.). (1995). *Questioning the media: A critical introduction*. Sage.
- Ducoffe, R. H. (1995). How consumers assess the value of advertising. *Journal of Current Issues & Research in Advertising*, 17(1), 1-18.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. Reading, MA, USA: Addison-Wesley.
- Gao, & Koufaris, M. (2006). Perceptual antecedents of users' attitude in electronic commerce. *The Database for Advances in Information Systems*, 37(273), 42-50.
- International Labor Organization (2007). Conclusions concerning the Promotion of Sustainable Enterprises. Presented at the International Labor Conference of the International Labor Office. Geneva.
- Jakic, V. (2011). Empirical Research Into Use Of Marketing By Small Businesses. *TemTechnics Technologies Education Management*, 6(4), 1204.
- Lee, Y., Kozar, K. A., & Larsen, K. R. T. (2003). The Technology Acceptance Model: Past, Present and Future. *Communications of the Association for Information Systems*, 12(50), 752-780.
- Nasution, F. N. (2004). *Penggunaan Teknologi Informasi Berdasarkan Aspek Perilaku (Behavioral Aspect)*. Retrieved September 13, 2016, from <http://repository.usu.ac.id/handle/123456789/1194>.
- Park, S. Y. (2009). An Analysis of the Technology Acceptance Model in Understanding University Students' Behavioral Intention to Use E-learning. *Educational Technology*, 12(3), 150-162.
- Pharr, J. M., & Weinrauch, J. D. (2007). Differentiators of Successful Small Business Advertising Strategy: Advice From Agencies Handling Both Large And Small Business Clients. *Society For Marketing Advances Proceedings*, 4.
- Roberts, M., & Wood, M. (2002). The Strategic Use Of Computerised Information Systems By A Micro Enterprise. *Logistics Information Management*, 15(2), 10
- Rogerson, C. M. (2004). The impact of the South African government's SMME programmes: a ten-year review (1994–2003). *Development South Africa*, 21(5), 765–784.
- Servon, L. J. (1999). *Bootstrap capital: Microenterprises and the American poor*. Washington, DC: Brookings Institution.
- Siltanen, S., Aikala, M., Järvinen, S., & Valjus, V. (2017). Augmented Reality Enriches Print Media and Revitalizes Media Business. *Computers in Entertainment (CIE)*, 15(3), 4.
- Van Raaij, E. M., & Schepers, J. J. (2008). The acceptance and use of a virtual learning environment in China. *Computers & Education*, 50(3), 838-852.

Wasihun, R. and Paul, I (2010) Growth Determinants of Women Operated Micro and Small Enterprises in Addis Ababa in *Journal of Sustainable Development in Africa*. 2(6), 2010.

Wong, M. M. T., & Tang, E. P. Y. (2008). Consumers' attitude towards mobile advertising: The role of permission. *Review of Business Research*, 8(3), 181-187.