



IJEAST

INTERNATIONAL JOURNAL
OF ENGINEERING APPLIED SCIENCE
AND TECHNOLOGY



VOLUME : 1 ISSUE : 9 Print / Issue Publication Date: 09-Oct-2016



ISSN : 2455-2143



Indexed In



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AN EVALUATION OF INFORMATION POINTS FOR CIVILIANS BASED ON TELEMATICS AND AUTOMATED DATA TRANSFER

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Abstract— Aim of this paper is to investigate the user satisfaction and degree of acceptance of Info-kiosk. The research methodology follows the positivist philosophical approach with productive research approach and uses the quantitative method using questionnaires. Sample numbers, 109 individuals. The research model of this thesis is based on two famous information systems evaluation models: the TAM model for technology acceptance and the IS success model for user satisfaction. From research findings it appears that the overall satisfaction of using Info-kiosk for those who had experience of such use (Info-kiosk) is very positive, and respectively for respondents who have not used Info-kiosk their opinion was also very positive. Specifically, the attitude toward using is affected more by the perceived usefulness, but less than the ease of use. Additionally, user experience will not affect attitude towards using the user info-kiosk, apart from the sex most affected by the overall satisfaction, where female have a higher overall satisfaction than male. Finally, this research can help the design and promotion of info-kiosks.

Keywords— info-kiosk, TAM model, IS SUCCES model, information system, evaluation

I. INTRODUCTION

The Info-kiosk is an information portal, a geographically distributed system, automated information, easy to use for citizens and businesses. This paper has proposed and used a framework (research model) of information kiosk evaluation. It is a combination two models: TAM & IS SUCCESS. It examines various info-kiosks in the light of an integrated evaluation framework that includes the user satisfaction and acceptance of technology. The findings provided to fill the conceptual gap between user satisfaction and technology acceptance of information system for info-kiosk [1, 2].

The Information System (IS) is a system composed of people and computers that processes or interprets information. The term is also sometimes used in more restricted senses to refer to only the software used to run a database or to refer only to a computer system [3, 4].

Mainly, the IS contains [5, 6]:

- Hardware (CPU, Memory, I/O devices etc.)
- Software (programs, applications, operating system)
- Data (useful elements for processing).
- Procedures (operations)
- People (human resources)
- Feedback

The evaluation of the IS uses two basic approaches that have been developed [7, 8]:

- (a) **Technology Acceptance**: Davis (1989) proposed the Technology Acceptance Model (TAM) to investigate the impact of technology on user behavior (Fig.1). The model focuses on the process of using technology, where “Perceived Usefulness” and “Perceived Ease of Use” are the two key factors that affect an individual’s intention to use a technology. Perceived Usefulness means that the user believes the technology will improve his/ her performance, while Perceived Ease of Use refers to the belief that using the technology will be free of effort [9]. Venkatesh and Davis (1996) suggested that Perceived Usefulness and Perceived Ease of Use could be affected by external variables. For example, they found that computer self-efficacy is an important variable and assumed that a positive relationship exists between higher computer self-efficacy on the one hand and Perceived Usefulness and Perceived Ease of Use on the

other [10]. The studies of Venkatesh (2001) confirmed the hypotheses about positive causal relationships posited in previous research [11].

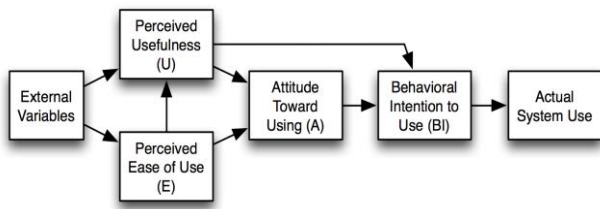


Fig. 1. TAM model

(b) *User Satisfaction*: To measure the success of Information systems Delone and McLean reviewed the research published in the period between 1981 to 1987. Based upon their research they identified six variables of IS success- system quality, information quality, use, user satisfaction, individual impact and organizational impact. These are interdependent variables. D&M model states that the amount of system use can affect the degree of user satisfaction (Fig.2). No empirical validation of the model was proposed by them [12].

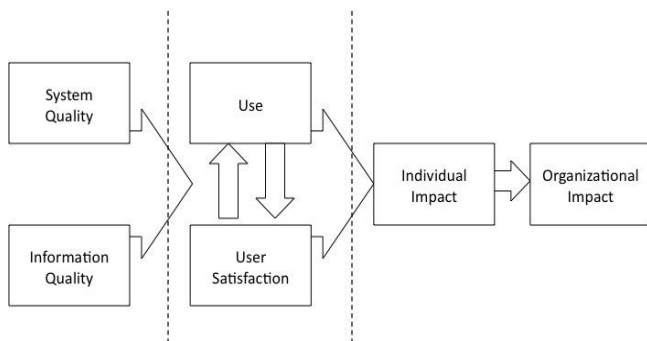


Fig. 2. IS SUCCESS model

Information kiosks, or public access kiosks, are located in public thoroughfares, shopping malls, airports, railways stations and other locations as a substitute for, or to complement customer service through a human service agent. In contrast to the other public access information arena, the Web accessed in the home or office, kiosks have received little media, professional or academic attention [13].

Early kiosks, were typically uninteresting boxes with relatively simple interfaces, designed specifically to allow customers to conduct a simple transaction, such as placing an order, or locating a specific item of information, such as a recipe or a repayment rate for a mortgage. The modern information kiosk support multiple functions including most or all of: information provision, interaction between user and consumer to support the customization of information, transactions (such as ticket purchase), and relationship

building through loyalty schemes or other communication opportunities. There are four functions of modern kiosks [2]: information provision/promotion, interaction, transaction, and relationships.



Fig. 3. The information kiosk

II. METHODOLOGY

1) Research Model

The Research model, offered by the Wixom and Todd (2005), which incorporated both models (TAM, IS success) in theoretical and conceptual framework [14], contains three parts (Fig.4):

- TAM model (3 basic parameters & 1 external parameter)
- IS SUCCESS model (3 parameters)
- External factor: demographics elements

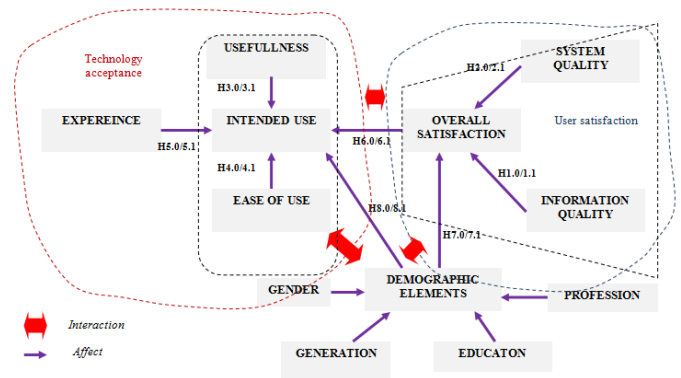


Fig. 4. The research model

2) Research Objectives

The Research Objectives are:

- Info-kiosk User satisfaction
- Technology acceptance

- Connection between user satisfaction and technology acceptance

- Profession
- State/city

3) Hypothesis

The Hypothesis of Research Model:

H1.0 Overall satisfaction is not influenced by information quality

H1.1 Overall satisfaction is influenced by information quality

H2.0 Overall satisfaction is not influenced by information system

H2.1 Overall satisfaction is influenced by information system

H3.0 The intended use of info-kiosk is not affected by the perceived usefulness

H3.1 The intended use of info-kiosk is affected by the perceived usefulness

H4.0 The intended use of info-kiosk is not affected by the perceived Ease of Use

H4.1 The intended use of info-kiosk is affected by the perceived Ease of Use

H5.0 The intended use of info-kiosk is not affected by the Experience

H5.1 The intended use of info-kiosk is affected by the Experience

H6.0 The intended use of info-kiosk is not affected by the Overall Satisfaction

H6.1 The intended use of info-kiosk is affected by the Overall Satisfaction

H7.0 The overall satisfaction is not affected by the demographic elements

H7.1 The overall satisfaction is affected by the demographic elements

H8.0 The intended use of info-kiosk is not affected by the demographic elements

H8.1 The intended use of info-kiosk is affected by the demographic elements

4) Survey Tool

This research uses a questionnaire for survey tool (Fig.5):

- 28 questions
- 3 sections
- User Profile

Specifically, the user profile contains:

- Gender
- Age
- Education
- Income
- Family

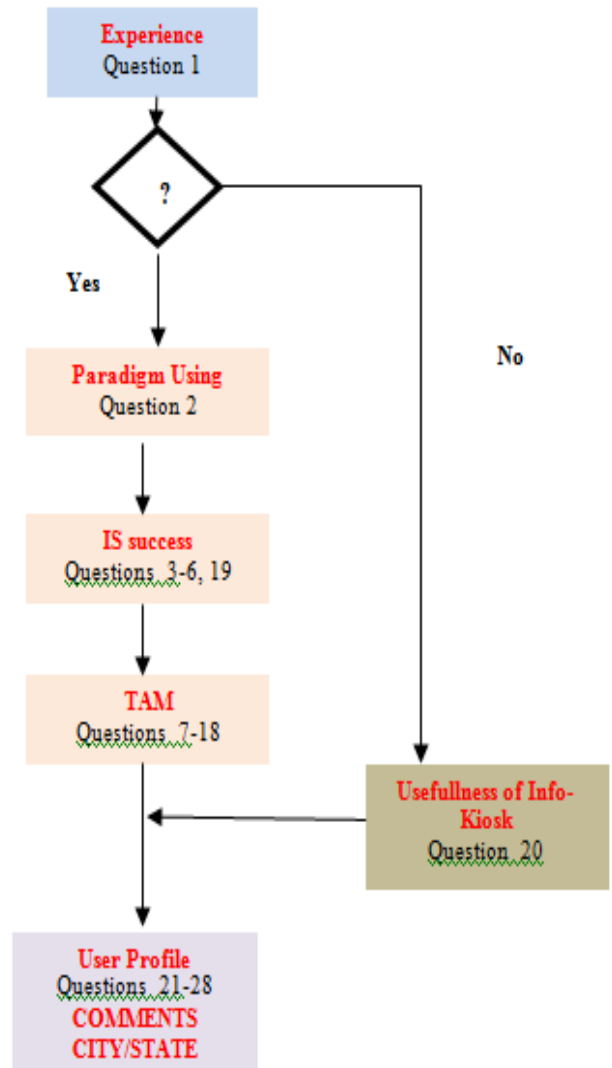


Fig. 5. Questionnaire Structure

5) Sample

The sample consisted of 109 persons from various regions of Greece, as shown in Table 1:

Table -1 Sample Regions

Regions	Frequency	Percent
Neo Hrakleio city	3	2,8
Athens city	62	56,9
Nea Ionia city	7	6,4
Chalandri city	4	3,7
Kallithea city	2	1,8
Kerkyra island	19	17,4
Nea Smirni city	1	,9

Peristeri city	2	1,8
Oropos city	1	,9
Galatsi city	1	,9
Glyfada city	1	,9
Naxos island	1	,9
Ilioupoli city	1	,9
Ilion city	1	,9
Neochori village	1	,9
Mykonos island	2	1,8
ΣΥΝΟΛΟ	109	100,0

(1)
 Where, n: total number of questions
 The next figure shows the data processing framework:

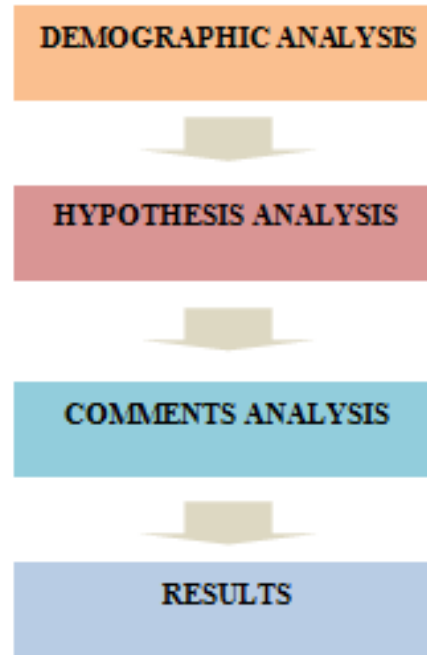


Fig. 6. Data Processing Framework

5) Data Analysis

This research uses some methods and techniques based in Descriptive & Inferential statistics.

III. RESULTS

This research uses Cronbach Alpha technique for reliability analysis, as provided in Table 2 and face validation for validation analysis, which can be seen in Table 3.

Table -2 Reliability Analysis

Models	Variables	Cronbach Alpha	Comments
IS Success	Information Quality	0,886	High reliability
	System Quality	0,792	Satisfactory reliability
TAM	Usefulness	0,657	Simple reliability
	Ease of Use	0,845	High reliability
	Intended Use	0,650	Simple reliability
	Experience	0,847	High reliability

Table - 3 Validation Analysis

Variables	Results (percent %)	Comments
Structure	100%	High satisfaction
Contents	70%	Important satisfaction
Research object	80%	Important satisfaction
Overall satisfaction	90%	High satisfaction

The data processing of this research uses SPSS software (version 20) and Excel 2013. Every complex variable uses the next format:

$$INDEX_{\text{complex variable}} = \left[\sum \text{question 1...question n} \right] / n$$

The results are:

- the majority of the sample (62.4%) has used Info-kiosk and from them, the majority (69%) has used in two or more types info-kiosk.
- the majority of the sample are Female (58.8%).
- the majority of the sample belonging to the X generation (1965-1980).
- the majority of the sample have university degree (undergraduate or postgraduate (~60%).
- the majority of the sample belonging to the middle income level (~ 46%).
- the majority of the sample consists of married with a child / a or just married.
- the majority of the sample is employed: in private sector with 36.7% and public sector with 30.3%.
- the overall satisfaction is very positive with 75% for users info-kiosk and 85.5% for no users info-kiosk.
- using *Kolmogorov-Smirnov (K-S) & Shapiro-Wilk (S-W)* Test (research variables): have no normal distribution (Sig <0,05), and
- using non-parametric tests (Kruskall-Wallis, Mann-Whitney).

The results of Hypothesis analysis are illustrated in Table 4:



Research Objectives	Questions of Questionnaire	Hypothesis	Results (after checking)
1 <i>User satisfaction</i>	3,4 - 19	H1.0-H1.1	H1.1
	5,6 - 19	H2.0-H2.1	H2.1
2 <i>Technology acceptance</i>	7..9 – 15,16	H3.0-H3.1	H3.1
	10..14 – 15,16	H4.0-H4.1	H4.1
	17,18 – 15,16	H5.0-H5.1	H5.0
3 <i>User satisfaction – technology acceptance</i>	19 – 15,16	H6.0-H6.1	H6.1
	19 – 21,22,23	H7.0-H7.1	H7.1.a H7.0.b H7.0.c
	15,16 – 21,22,23	H8.0-H8.1	H8.0.a H8.0.b H8.0.c

Table - 4 Hypothesis Results

In research, the results of comment analysis (question 27) are:

- increase the number of info-kiosk,
- have high ease of use, and
- more reliable the providing information.

IV. CONCLUSION

In this research work the conclusions can be summarized as follows.

- the overall satisfaction is influenced by the system & information quality,

- the intended use of info-kiosk is affected by the perceived usefulness and ease of use (less grade),
- the experience is not affects the intended use of info-kiosk,
- between user satisfaction and intended use showed small effect, and
- the gender affected the overall satisfaction (the female has high satisfaction), and
- the overall satisfaction is high for users and non-users info-kiosk.

The future relative research would be useful for the developers company to design better info-kiosks.

V. REFERENCE

- [1] Ahitur, N. And Neumann, S. Principles of information for management. C. Broun Publishers, Boston, USA, 1990.
- [2] Slack, F., Rowley, J. "Kiosks 21: a new role for information kiosks". International Journal of Information Management, [22], 2002, pp. 67-83.
- [3] D'Atri A., De Marco M., Casalino N. "Interdisciplinary Aspects of Information Systems Studies", Physica-Verlag, Springer, Germany, 2008, pp. 1-416, doi 10.1007/978-3-7908-2010-2.
- [4] Mathieson, K. Variations in user's definition of an information system. Information and Management, Vol.24, 1993, pp. 227-34.
- [5] Kroenke, D M. Experiencing MIS. Prentice-Hall, Upper Saddle River, NJ, 2008.
- [6] Avison, D. E., Fitzgerald, G. Information Systems Development: Methodologies, Techniques and Tools. London: McGraw-Hill, 1995.
- [7] Bailey, J. E., S. W. Pearson. Development of a tool for measuring and analyzing computer user satisfaction. Management Sci. 29(5), 1983, 530-545.
- [8] Hartwick, J., H. Barki. Explaining the role of user participation in information system use. Management Sci. 40(4) 440-465, 1994.
- [9] Davis, F. Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quart. 13(3), 1989, pp. 319-339.
- [10] Venkatesh, V., & Davis, F. D. A model of the antecedents of perceived ease of use: Development and test. Decision Sciences, 27, 1996, pp.451–481.
- [11] Venkatesh, V. Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. Information Systems Research, 11(4), 2001, pp. 342–365.
- [12] DeLone, W. H., McLean, E. R. Information systems success: The quest for the dependent variable. Information Systems Research, 3(1), 1992, pp. 60-95.
- [13] Rowley, J. Multimedia kiosks in retailing. International Journal of Retail & Distribution Management, 23 (5), 1995, pp. 32-40.
- [14] Wixom B.H., P. A. Todd, A Theoretical Integration of User Satisfaction and Technology Acceptance, Information systems research, Vol. 16 (1), 2005, pp. 85-102.



- [15] Cebecauer T., Šúri M., “Exporting geospatial data to web Tiled Map Services using GRASS GIS”, OSGeo Journal, vol. 5, 2008
- [16] <http://re.jrc.ec.europa.eu/pvgis/apps4/pvest.php>
- [17] (access date: 27 November 2013)
- [18] López A., I. Fernández, R. Martínez Farreres and I. Rodríguez Cabo, “Quality check protocol for control the losses of power on large associations of photovoltaic generators”, Proceedings of the International Conference on Renewable Energies and Power Quality (ICREPQ'07)", Sevilla, March 2007.
- [19] BCI, Failure Mode Study, 2010

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2455-2143