

# Instrument for Measuring the Influencing of iTV Advertising Design Model toward Impulse Purchase Tendency

Azizah Che Omar

**Abstract:** *Conceptual design model of Interactive Television Advertising Toward Influencing Impulse Purchase Tendency (iTVAdIP) is proposed to provide guideline for advertising designers to develop iTV advertisements which embed elements that are perceived could influence impulse purchase tendency. Previous literature studied on the factors of impulse purchase in different advertising mediums like website, mobile, traditional retail store and traditional television. However, none of the impulse purchase model is dedicated towards influencing impulse purchase tendency for interactive TV advertising. Therefore, this study focuses on the influencing measurement of iTVAdIP design model through reliable constructs. These constructs are collected and formed based on literature study and content analysis. An influencing instrument was developed based on these constructs and a pilot study was conducted to assess the research feasibility and adequacy of the instrument. The methods and results of the pilot study are also presented in this paper, indicating that these constructs are valid, reliable, and practical to be used for measurement of the proposed model.*

**Keywords:** *advertising, interactive television, impulse purchase, influencing, measurement.*

## I. INTRODUCTION

Television advertising is an important medium for marketers around the world and it brings new opportunities for the advertisers to reach more consumers [1]. In addition, most of the countries show that the advertising on television is an effective way to market products and bring effective strategies for marketing. According to Forecast Advertising [2], the advertising on television had grown by 6.0% globally in 2011 and generated \$169 billion. Over the following five years, the industry should grow at an average rate of 7.5% to the total of \$243 billion by 2016 [2]. According to Nielsen [3] the number of televisions in households has shown the largest ownership. It shows that the TV has succeeded in attracting the biggest possible audience and, as a consequence, to be appealing to advertisers. Therefore, a comprehensive study on interactive television (iTV) advertising is much needed in order to make television advertising more effective.

In addition, based on the previous research which was published [4,5,6], there was a clear need of iTV advertising design model to be developed.

Also, previous studies [6] related to comparative studies indicate that there is lack of impulse purchase elements being focus on iTV advertising. Therefore, the main objective of this study is to develop the influencing instrument in order to evaluate the conceptual design model of iTV advertising towards influencing impulse purchase tendency as published [7,8].

## II. METHODOLOGY

As shown in Figure 1, this study implemented three phases. Firstly, the proposition of the dimensions was elicited from many previous works of various conceptual design model. A total of 16 evaluation works were reviewed particularly on the attributes used in the study. Secondly, the comparative analysis of 16 evaluation works were done in order to find attributes for influence. In this study, eight attributes, which are perceived ease of use, perceived usefulness, clarity, flexibility, visibility, applicability, satisfaction, and motivation have been proposed as constructs to measure overall perceived influence. Finally, all identified attribute of influencing being evaluated through pilot test.

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Azizah Che Omar, School of Multimedia Technology and Communication, Universiti Utara Malaysia,

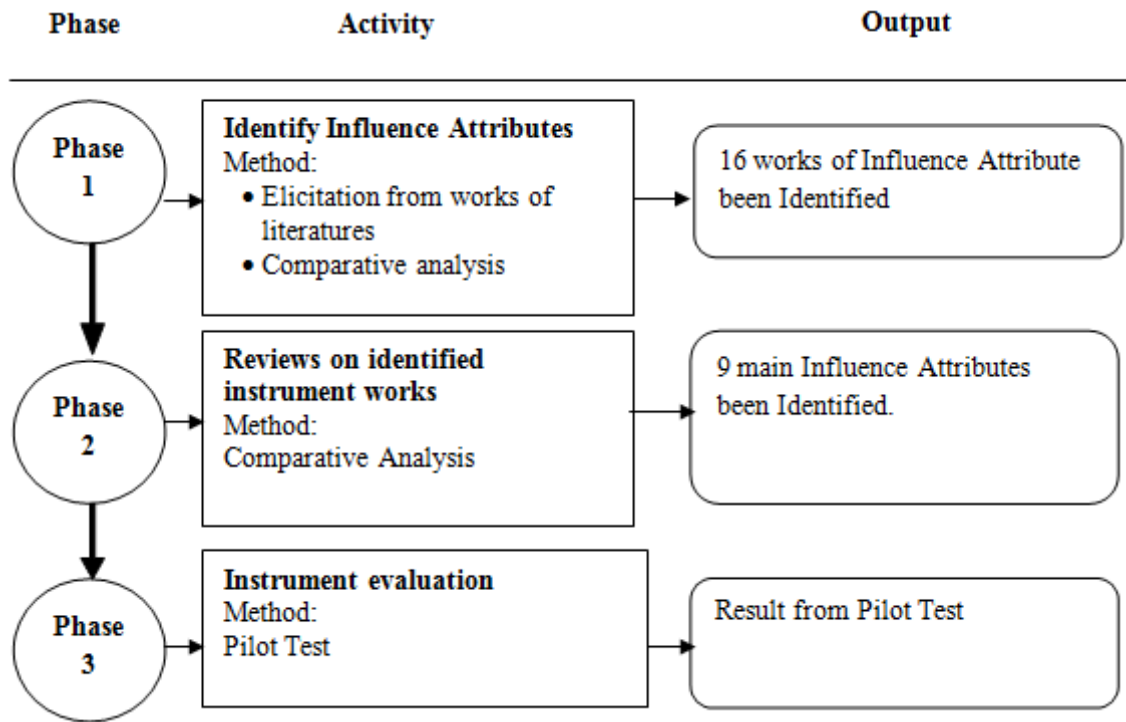


Fig. 1 Methodology

III. INFLUENCING INSTRUMENT

In validating the proposed model, some evaluation dimensions are studied for the model validation. A number of evaluation dimensions have been proposed by other researchers to evaluate models which come in different fields such as advertising, general software development,

multimedia applications, and project management. In line with this, all items of the questions are evidenced from number of sources of literature. Studies from [9-24] are selected as their relevancy to this study. These attributes are compared and composed as illustrated in Table 1.

Table. 1 Evaluation Attributes for Various Supports Design System & Technologies

No	Dimensions	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Total
1.	Social Influence						/											1
2.	Evolutionary						/	/										2
3.	Perceive Ease of Use/ Simplicity/ Perceive ease of Understanding	/	/	/	/	/				/	/	/	/		/			10
4.	Perceive Usefulness/ Usability/ Relative Advantage	/		/	/	/	/			/			/					7
5.	Effectiveness							/					/					2
6.	Process Agility						/											1
7.	Intention to use		/														/	2
8.	Clarity/Readability						/	/		/	/	/			/			6
9.	Flexibility		/				/	/	/				/		/			6
10.	Result Demonstrability/ Ability to produce result				/					/	/							3
11.	Competence						/		/									2
12.	Relatedness		/				/											2
13.	Visibility/ Comprehensive/ Manageability				/		/	/					/	/	/			6
14.	Perceive Semantic Quality/ Information Quality/ System Quality	/	/	/		/					/						/	6
15.	Complexity/ perceive difficult						/	/					/					3
16.	Behavioral Intention				/													1
17.	Voluntariness/ Evolutionary				/			/					/					3
18.	User Satisfaction	/	/	/	/	/				/							/	7



19.	Motivation /Affective					/				/	/	/						5
20.	Commitment					/												1
21.	Job fit/Attitude					/												1
22.	Compatibility				/			/					/					3
23.	Autonomy							/										1

Note. / means attribute is utilized in the source

- |          |          |          |          |
|----------|----------|----------|----------|
| A – [9]  | E – [13] | I – [17] | M – [21] |
| B – [10] | F – [14] | J – [18] | N – [22] |
| C – [11] | G – [15] | K – [19] | O – [23] |
| D – [12] | H – [16] | L – [20] | P – [24] |

As displayed in Table 1, the names of the attributes were overlapped, however, nine dimensions are proposed and some of the dimensions that share similar connotation are stated as a single dimension. For instance, “perceive of understanding/ perceive ease of use/ simplicity” is stated as

perceive ease of use. The choices of the term selected are based on the most appropriate to describe the dimensions that are under evaluation. Table 2 defines the chosen dimension for evaluating the iTVAdIP design model.

**Table. 2 Construct Description**

Construct	Description
Perceived Ease of Use	<ul style="list-style-type: none"> <li>Perceived ease of use is the degree to which a model is perceived as easy to use. The more simple the model, the more easier to use,</li> <li>The model is clear, understandable, easily to interpret and can be implemented easily.</li> </ul>
Perceived Usefulness	<ul style="list-style-type: none"> <li>The proposed model is useful for understanding the development of iTV advertising.</li> </ul>
Clarity	<ul style="list-style-type: none"> <li>The proposed model is organized and structured well. The layer of technology and the development process in the model are easily followed.</li> <li>The impulse purchase elements included in the model are easy to apply.</li> </ul>
Flexibility	<ul style="list-style-type: none"> <li>The model is flexible and capable to being managed and controlled.</li> <li>The model is adaptable for future use.</li> </ul>
Visibility	<ul style="list-style-type: none"> <li>The proposed model is visible to assist the advertising designers to develop iTV advertising.</li> <li>The model also provides specific guide upon the development of iTV advertising.</li> </ul>
Applicability	<ul style="list-style-type: none"> <li>In general the model provides complete and detail information for iTV advertising development.</li> <li>All the elements in proposed model are relevant and give a complete representation of the iTV advertising.</li> </ul>
Satisfaction	<ul style="list-style-type: none"> <li>The model provided adequate information that gives benefit to advertising designers.</li> <li>The model is effective in providing the information.</li> </ul>
Motivation	<ul style="list-style-type: none"> <li>The proposed model is good, interesting, informative and valuable.</li> <li>The proposed model could produce results that will increase the impulse purchase level for iTV advertising.</li> </ul>
Overall Perceived Influence	<ul style="list-style-type: none"> <li>The proposed model gives a complete representation of iTVAdIP advertisements that are perceived could influence impulse purchase tendency.</li> <li>The model also provides specific guide for the development of iTV advertisements that are perceived could influence impulse purchase tendency.</li> </ul>

A set of the evaluation form with items was developed based on the 9 dimensions (as described in Table 2). The 7-point semantic scale was formed for each item with 1 is the lowest score and 7 are the highest. Each score represents the level of agreement for each item. Before conducted the pilot test, the instrument been validated through expert review face validity [25].

**IV. PILOT TEST**

A pilot study was conducted to investigate the wellness and feasibility of the instrument [26]. Once piloted the instrument would be appropriate for the main research data collection.



The pilot study was involved 157 samples which obtained among potential advertising designers in advertising undergraduate courses (see Table 3). Before the data were collected, they were given an explanation about iTVAdIP design model. The number of respondents who completed the pilot study is enough to attain a reliable result in statistical tests as suggested by [27] who suggests employing at least 30 datasets for obtaining reliable results in statistical tests. Reliability test of the instrument was conducted and produced the results as described in the next sub-section.

The reliability of an instrument reflects the consistency and stability of the instrument. The value of Cronbach’s alpha coefficient was computed and should indicate alpha [28] to be accepted as reliable. From the test, all dimensions were found to be significant which compellingly exceeded the cut off value of 0.70. (refer to Table 4). These results demonstrate that the instrument were consistent, thus, the reliability of the instrument was established. Therefore this instrument can be used for data collection of the main study. It implies that there is consistency among the items that constitute each of the dimensions.

**Results of the reliability test**

**Table. 3 Reliability Test (cases)**

		N	%
Cases	Valid	157	100.0
	Excluded	0	0
	Total	157	100.0

**Table. 4 Reliability Test (Cronbach’s Alpha)**

Dimensions	Cronbach’s Alpha	N of Items
Perceived ease of use	.892	6
Perceived Usefulness	.818	4
Clarity	.817	4
Flexibility	.807	5
Visibility	.787	4
Applicability	.844	4
Satisfaction	.818	5
Motivation	.823	5
Overall Perceived Influence	.842	5

Construct validity concerns with the relationship of the measure to the underlying attributes it is expected to assess. In conducting the construct validity test, factor analysis was run by utilizing Principal Components Analysis extraction method with Varimax rotation [29] procedure to assess the measurement scale. Three test indicators were used; Kaiser-Meyer-Olkin (KMO), Barlett’s test of sphericity, and factor loading.

Firstly, the KMO test ensured the overall measure of sampling adequacy which resulted in .892 for perceived ease of use, .818 for perceived usefulness, .817 for clarity, .807 for flexibility, .787 for visibility, .844 for applicability, .818 for satisfaction, .823 for motivation and .842 for overall perceived influence. KMO values over .60 are generally considered suitable and acceptable for the measures [29].

Secondly, the Barlett’s test of sphericity also gave the significance level of  $p < .000$  for all constructs.

Finally, factor loadings were also analyzed for validity as illustrated in Table 5. The main aim in running factor loadings test was to verify the dimensions of the measure that have been operationally defined, as well as indicating which of the items are most suitable for each dimension. The test was run by utilizing Principal Components Analysis extraction method with Varimax rotation [30]. The results explain that all items with above .50, which indicated that factor loadings with +.50 or greater are considered practically significant, whereas loadings exceeding +.70 are considered indicative of well-defined structure [30]. These values indicate that the data is valid, reliable, and practical to be used for measurement of the proposed model.

**Table 5. Factor Analysis and Loadings For Each Item**

Items	Loadings
<b>A. Perceived Ease of Use</b>	
1. The model is understandable.	.754
2. I can easily interpret the model.	.689
3. I find the model is easy to use.	.739
4. The model is easy for me.	.722
5. It is easy for me to become skillfull in development of iTV advertising when using the model.	.621



6. The model makes my job easier.	.755
<b>B. Perceived Usefulness</b>	
1. It is useful for me to understand the model.	.661
2. The model is useful for me as an advertising designers.	.641
3. The model improves my ability in developing iTV advertising.	.659
4. The model enables me to do my job.	.796
<b>C. Clarity</b>	
1. The model is well organized and structured.	.539
2. The layer of technology in the model is clear.	.693
3. The development process in the model is easy to follow.	.652
4. The impulse purchase elements in the model are clearly stated.	.647
<b>D. Flexibility</b>	
1. The model is flexible with minimal planning.	.527
2. The model is adaptable for future use.	.679
3. Changing requirements in the model over time is possible.	.511
4. The model allows self-monitoring to be followed.	.561
5. The model is manageable or controllable.	
<b>E. Visibility</b>	
1. The model is visible to me as a developer of iTV advertising.	.626
2. The model provides visible guidelines.	.640
3. The model is readable.	.561
4. The model as a whole is workable.	.641
<b>F. Applicability</b>	
1. The model correctly represents the iTV advertising.	.681
2. The model provides complete and detail information regarding iTV advertising development.	.655
3. The model improves the quality of my work.	.642
4. All elements in the model are relevant in representing the iTV advertising.	.618
<b>G. Satisfaction</b>	
1. The information provided in the model is adequate.	.750
2. The model is effective in providing the information.	.804
3. The model gives benefits to advertising designers.	.590
4. I am satisfied with the model for providing the needed information.	.631
5. The model produces output that can be used for future improvement of the iTV advertising.	.606
<b>H. Motivation</b>	
1. The model is interesting.	.560
2. The model is important for me.	.703
3. The model is valuable.	.710
4. The model is meaningful for me.	.575
5. The model provides rich information.	.642

I. Overall Perceived Influence	
1. The model is adequate and sufficient to assist the advertising designers in developing iTV advertisementst.	.601
2. The model provides specific guide for the development of iTV advertisements that are perceived could influence impulse purchase tendency.	.615
3. The model enables me to obtain accurate information regarding the development of iTV advertisements that are perceived could influence impulse purchase tendency.	.638
4. The model has ability to increase impulse purchase level for iTV advertising.	.695
5. Overall, the model gives a complete representation of the iTV advertisements that are perceived could influence impulse purchase tendency.	.679

V. CONCLUSION

This paper aims to provide evaluation constructs for measuring the proposed iTVAdIP design model in the aspects of Perceived ease of use, Perceived Usefulness, Clarity, Flexibility, Visibility, Applicability, Satisfaction, Motivation and Overall Perceived Influence. The constructs as provided in the developed instrument are found reliable and feasible as obtained from the pilot study. In this study, the term influencing refers to the ability of the iTVAdIP design model could influence impulse purchase tendency. In addition, the instrument is useful and could be used for other model measurement and evaluation. However, confirmatory factor analysis (CFA) not used to rigorously assess the instrument over a larger group of users and could be done in future study. Consequently, this implies that the proposed model could be implemented by potential advertising designer to develop iTVAdIP design model that could influencing impulse purchase tendency. In summary, from all the tests conducted, the dimensions and items used are feasible for the study. Therefore, the instrument is feasible to be used for validating the proposed model.

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REFERENCES

- Interactive Advertising Bureau, IAB. An Interactive Advertising Overview. Retrieved from <http://www.iab.net/media/file/iTVCommitteeWhitePaperv7.pdf>, 2011
- Advertising Forecast Advertising Forecast Magnaglobal. Retrieved from <http://www.neoadvertising.com/ch/wp-content/uploads/2011/06/2011-MAGNAGLOBAL-Advertising-Forecast-Abbreviated.pdf>, 2011
- The Nielsen Company. Global advertising: Consumers trust real friends and virtual strangers the most. Retrieved from <http://blog.nielsen.com/nielsenwire/consumer/global-advertising-consumers-trust-real-friends-and-virtual-strangers-the-most/>
- Azizah, C.O., Norshuhada, S., Siti Mahfuzah, S., Ariffin, A.M., and Sabrina, M.R. "Identification of Research Gap: T-Commerce Impulse Purchase for iTV advertising". International Conference on Informatics and Creative Multimedia 2013 (ICICM'13). Kuala Lumpur, Malaysia. 3-6 September 2013. 119-122. 2013.

- Siti Mahfuzah, S., Sabrina, M.R., Ariffin, A.M., and Azizah, C.O. Diffusion of iTV advertising in Malaysia: the industry players' perspectives. International Conference on Informatics and Creative Multimedia 2013 (ICICM'13). Kuala Lumpur, Malaysia. 3-6 September 2013. 99-103.
- Azizah, C.O., Norshuhada, S. and Siti Mahfuzah, S. "Impulse Purchase in iTV Advertising: a Conceptual Model of Gap Analysis". International Journal of Computer Application, 2014, 91(11), pp. 20-26.
- Azizah, C.O., Norshuhada, S. and Siti Mahfuzah, S. "Conceptual Design Model of Interactive Television Advertising Towards Impulse Purchase". ARPN Journal of Engineering and Applied Sciences. 2015, 10(3): 1427-1437.
- Azizah, C.O., Norshuhada, S. and Siti Mahfuzah, S. "Conceptual Design Model of Interactive Television Advertising: Experts Review on Impulse Purchase Tendency". International Journal of Conceptions on Management and Social Sciences. 2015, 3(2), pp. 40-45.
- Maes, A., & Poels, G. Evaluating quality of conceptual models based on user perceptions. In D.W.Embey, A. Olive, & S.Ram (Eds.), Conceptual Modeling ER 2006 (pp. 54-67).Verlag Berlin Heidelberg: Springer International Publishing. 2006, doi: 10.1007/11901181\_6
- Denise, W., Deirdre, R., & Seamus, H. Determining The Influence Of Information Quality And System Quality On The Success Of A Knowledge Management System Within A Large Multinational Software Organisation, 2009
- Barclay, C, & Osei B, Kwok M. An Exploratory Evaluation Of Three I.S. Project Performance Measurement Methods. ECIS 2009 Proceedings, 63 .<http://aisel.aisnet.org/ecis2009/>
- Riemenschneider, C. K., Hardgrave, B. C., & Davis F. D. Explaining software developer acceptance of methodologies: A comparison of five theoretical models. IEEE Transactions on Software Engineering, 2002, 28(12), 1135-1145. DOI:10.1109/TSE.2002.1158287
- Kuan, T, H. Conceptual model of digital storytelling. (Master dissertation, Universiti Utara Malaysia, 2013).
- Bonner, N. Acceptance of systems development methodologies: Testing a theoretically integrated model. (Doctoral dissertation, University of Texas Arlington, 2008)
- Syamsul Bahrin, Z., & Norshuhada, S. Instrument for Measuring the Applicability of Mobile Game-Based Learning Engineering Model, Journal of Convergence Information Technology (JCIT), 2014, 9(1), 108-116.
- Kunda, G. A social-technical approach to selecting software supporting COTS-Based Systems. (PhD dissertation, Universiti of York, 2011).
- Kitchenham B. Evaluating software engineering methods and tool, ACM SIGSOFT software engineering Notes, 1998, 23(5), 21-24.
- Garrity E. J. and Sanders L. G. Dimensions of Information Systems success In Garrity E. J. and Sanders L. G. (eds.), Information Systems Success Measurement ,1998, (pp. 13-45). Hershey: Idea Group Publishing (IGP)



19. Kashif, M., & Samira S.C. Evaluating the functionality of conceptual models. In C.A. Heuser & G.Pernul (Eds.), *Advances in Conceptual Modeling - Challenging Perspectives* (pp. 222-231). Berlin: Springer Berlin Heidelberg, 2009, doi: 10.1007/978-3-642-04947-7\_27
20. Veryard, R. What are methodologies good for data processing, 1985, 27(6), 9-12.
21. Moore, G. C. Benbasat, I. Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation. *Information Systems Research*, 1991, 2(3), 192–222
22. Lang, M., & Barry, C. Techniques and methodologies for multimedia systems development: a survey of industrial practice. In N. L. Russo, et al. (Eds.), *Realigning Research and Practice in Information Systems Development*, Proceedings of IFIP WG 8.2 Conference, 2001, (pp 77-86). Boston: Kluwer.
23. Guay, F., Vallerand, R.J., & Blanchard, C.M. On the assessment of state intrinsic and extrinsic motivation: The situational motivation scale (SIMS). *Motivation and Emotion*, 2000, 24,175–213.
24. Nguyen., Y. L. Factors that Contributing to the Success of DACUM Process Implementation in Technical Vocational School of Post Telecommunication and Informatics, Vietnam. (Master dissertation, Shu-Te University, 2011).
25. Azizah C O, Shuhada S, Sarif S M, and. Muin M A A. Instrument for measuring the influencing of conceptual design model of ITV advertising toward impulse purchase. *J. Fundam. Appl. Sci.*, 2018, 10(4S), 977-1002.
26. Sekaran, U., & Bougie, R. (2010). *Research Methods for Business: A Skill Building Approach* (5th ed). USA: John Wiley & Sons.
27. Sekaran, U. (1992). *Research methods for business: a skill-building approach* (2nd). USA: John Wiley & Sons.
28. U. Sekaran,(2003). *Research methods for business: a skills-building approach*, 4th ed, John Wiley & Sons, Inc. USA.
29. J. Pallant, “A step by step guide to data analysis using SPSS”. Open University Press, McGraw-Hill Education, Philadelphia, USA, 2001.
30. Hair, Jr., J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate Data Analysis* (6th ed). USA: Pearson-Prentice Hall.