

Examining The Validity and Reliability of Online Visitor Behavior in Indonesia's Museum Industry



Arta Moro Sundjaja, Sri Bramantoro Abdinagoro, Ford Lumban Gaol, Bahtiar S. Abbas

Abstract: *The purpose of this study is to test the validity and reliability of user motivation, user expectation, the Facebook Fan Page usage experience, and intention to use a museum's Facebook Fan Page. Most museum managers in Indonesia have used Facebook as a medium for promotion and education, but no research has been done to observe the impact of this implementation. This study applied descriptive statistical analysis (descriptive statistics) and confirmatory factor analysis using AMOS. The sample comprised 270 respondents. The questionnaire was developed and distributed through museum or cultural Facebook groups. This paper analyzed respondent demographics and the validity and reliability of user motivation, user expectation, the Facebook Fan Page usage experience, and the intention to use a museum's Facebook Fan Page.*

Index Terms: *confirmatory factor analysis, user motivation, user expectation, Facebook Fan Page Usage Experience, Intention to use Museum Facebook Fan Page.*

I. INTRODUCTION

Indonesia is a country that has a diverse culture and a very long history. Domestic and foreign tourists want to understand the diversity of culture and history in cities spread across Indonesia. Historical and cultural exhibits can be found in museums, where domestic visitors and those from abroad can observe and feel these representations directly. The management of most museums in Indonesia is still limited to displaying and maintaining historical heritage objects. The government's role in designing and implementing museum revitalization programs has increased the number of museum visitors in Indonesia [1]. Through the program, museum managers can improve the architecture of their buildings,

including storage space and exhibition space. This program provides more memorable impressions to attract visitors to the museums [2]–[5]. However, only a small number of museum managers have reorganized their museums through the revitalization program to develop them into destinations that are in demand by tourists. The government, through the National Movement of Love Museum from 2010 to 2014, has managed to attract people to visit museums through mandatory museum visitation programs, museum ambassadors, and museum publications through the mass media. Cooperation between the community of culture lovers and museum managers in designing educational activities and recreation that meet the needs and desires of the community has also managed to attract public interest in visiting museums.

Reference [6] stated that the development of mobile technology has encouraged cultural organizations to think strategically about how to exploit these technologies to connect with visitors effectively. Some factors that influence the efficiency of marketing communication strategies are museum managers' understanding of the needs and motivation of visitors, collection management, and improvements to the museum's infrastructure [6], [7]. A current trend involves enabling people to learn about the museum's activities and collections through social media managed by the museum [8]. This study, required by museum managers, can reveal whether the activities, exhibitions, and arrangement of the collection have met the desires of visitors so that people obtain information through the virtual world that triggers intention to visit the museum in the future. Social media technology has been adopted by a small portion of museum managers as a marketing and educational medium for the public, but most managers who already have social media do not manage it well. This can lead to the impression that managers are just following trends without having a clear purpose. Research on user motivation, user expectations, the experience of using museums' social media, and user intentions to visit museums both physically and through the internet has been conducted on museums abroad. In general, these studies were each conducted at one museum; thus, the findings of the studies are very difficult to generalize to a group of museums in a particular region. Research on the pattern of behavior of museum visitors in Indonesia has only been conducted at the Museum Sanglu Ancient Man [9].

Revised Manuscript Received on 30 July 2019.

* Correspondence Author

Arta Moro Sundjaja*, Information Systems Department, School of Information Systems, Bina Nusantara University, Jakarta, Indonesia, 11480

Sri Bramantoro Abdinagoro, Management Department, BINUS Business School Doctor of Research in Management, Bina Nusantara University, Jakarta, Indonesia, 11480

Ford Lumban Gaol, Computer Science Department, BINUS Graduate Program – Doctor of Computer Science, Bina Nusantara University, Jakarta, Indonesia, 11480

Bahtiar Saleh Abbas, Management Department, BINUS Business School Doctor of Research in Management, Bina Nusantara University, Jakarta, Indonesia, 11480

© The Authors. Published by Blue Eyes Intelligence Engineering and Sciences Publication (BEIESP). This is an [open access](https://creativecommons.org/licenses/by-nc-nd/4.0/) article under the CC-BY-NC-ND license <http://creativecommons.org/licenses/by-nc-nd/4.0/>

Exploring visitors' perception of bunk art museum is an essential factor in understanding visitors' motivation and behavior, which is needed to develop museum management in the future. Tourists visit the museum for recreation and to learn about the history of Albania, but the results of factor analysis in a study revealed that there is no significant relationship between motivation and entertainment factor [10]. The influence of the expectation and needs of travelers creates demand for exciting tours and services and affects tourists' decision to visit museums [11]

The development of social media technology influences visitor behavior when visiting museums. Visitors can use social media to share their experiences while visiting the museum so that individuals who know the visitor through social media can find, know, and even enjoy the museum-visiting experience through the internet.

Since 2009, some museum managers in Indonesia have been aware of visitor behavior and have begun to adopt social media to provide information on the museum's activities, exhibitions, and collections so that people can learn about the existence of the museum. This phenomenon has been extensively researched by overseas researchers in social media applications at museums in the United States [12] and Instagram applications at the Museum of Natural History, Sweden [13]. However, there is no research on the application of social media at museums in Indonesia, and only one study was conducted on evaluating the museum e-wom [14]. From research design, research on the use of social media for marketing and education is designed to describe complex conditions qualitatively and can provide a holistic understanding.

II. LITERATURE REVIEW

Previous researchers have examined the effect that user motivation has on the experience of using social media [15]–[17]. Research on the influence that user expectations have on the experience of using social media also has been done by previous researchers [18], [19]. Research on the influence of social media users' expectations regarding intention to use the Facebook Fan Page has been done by some researchers. However, there are still gaps in understanding the desires of users [20]–[25]. The use of social media has never been studied by previous researchers [26]. The influence of the experience of using social media as a mediator in the formation of the intention to use Facebook Fan Pages has recently been done by international researchers [17], [27] but previous research has not been able to determine the form of experience developed when using social media. This research explains how the experience of using social media museums affects the intention to use social media museums and the intention to visit the museum. The previous research discussed the experience of using social media, such as reading and posting status updates on social media, and the frequency of social media use to examine other people's travel experiences [27]. Reference [17] discussed the degree of user engagement by adjusting the measurement scale of fourteen (14) questions about feelings when using social media.

The purpose of this study is to test the validity and reliability

of user motivation, user expectation, the Facebook Fan Page usage experience, and the intention to use museum Facebook Fan Pages. The experience of using Facebook Fan Pages is important in assisting museum managers in developing marketing and educational programs through social media that give a sense of emotion, curiosity, and belonging. This research is urgent because the measurements need to be aligned with the theoretical framework that guided its development, demonstrating acceptable model fit in adolescents with and without disabilities.

III. METHODS

Data analysis techniques used in this study consisted of descriptive statistical analysis (descriptive statistics) and confirmatory factor analysis using AMOS. According to reference [28], SEM is widely used in research in the fields of education, marketing, psychology, sociology, management, testing and measurement, medicine, demographics, organizational behavior, and biology. This study will use two kinds of analysis techniques: confirmatory factor analysis (Confirmatory Factor Analysis) in the SEM is used to confirm the factors that are most dominant in one group of variables.

The sample included 270 respondents. The minimum sample size required using the Structural Equation Model was 200, or 5 times the number of indicators [28]. Systematic sampling is a sampling technique used in this research. The authors created an electronic questionnaire using Google Forms and distributed it through Facebook groups managed by museums or communities.

There are four variables in this study, namely user motivation, user expectations, Facebook Fan Page user experience, and the intention to use the Facebook Fan Page. User motivation is the fundamental reason for acting and involves understanding the decision-making process and understanding the satisfaction of the Facebook usage experience. User motivation is explained as searching for information and seeking entertainment and social interaction [9], [10], [15], [23], [29]. User expectation is a variable that contains expectations for the experience of using social media managed by museum managers. User expectations include perceived usefulness, perceived ease of use, the Facebook features used, and quality of content [8], [19], [20], [22], [30]–[32]. Facebook Fan Page usage experience is a variable that contains responses from activities performed by Facebook users on Facebook pages managed by the museum. Facebook Fan Page usage experience is explained by feel experience, think experience, and relate experience [8], [19], [20], [33]. The intention to use a Facebook Fan Page is a variable that contains the attitude of Facebook users after accessing the content presented by the museum manager via Facebook. The intention to use Facebook Fan Pages is explained by revisiting the Facebook Fan Page, sharing the experience of visiting museums, considering other members' recommendations, and searching for information about museums.

Table 4

Validity and Reliability of the Intention to Use Facebook Fan Page

Indicators	Factor Loading	Variance Extracted	Construct Reliability
IF4	0.636		
IF3	0.586		
IF2	0.644		
IF1	0.665		
Total		0.401	0.728

Source: author data analysis, 2018

Table 4 shows that the intention to use the Facebook Fan Page consists of four indicators that have a factor value of ≥ 0.5 . This indicates that the indicators of intention to use Facebook Fan Pages are valid, and it can be concluded that convergence validity has been achieved. The construct reliability of intention to use Facebook Fan Pages is 0.728; this value indicates that the indicators of intention to use Facebook Fan Page are reliable. The value of the extracted variance for intention to use Facebook Fan Pages is 0.401; the value indicates that the indicator has a higher error rate. Based on the analysis of museum Facebook Fan Page implementation in Indonesia, respondents in this study followed the unofficial and official museum Facebook Fan Pages but not properly managed Facebook accounts or Facebook groups created by the museum manager.

Table 5 also contains values of the goodness of fit. The goodness of fit is used to evaluate how well the model matches the observed data. The goodness of fit of the research model developed may be determined by GFI, RMSEA, CMIN/DF, IFI, TLI, and Critical N. The overall fit of the measurement model, as expressed by the fit indices, confirms the validity of all factors.

Table 5

Model Fit Indices

Goodness of Fit Index	Suggested Value	Result	Criteria
CFI	≥ 0.9	0.867	Good
RMSEA	≤ 0.08	0.063	Good
CMIN/DF	2	2.429	Good
IFI	≥ 0.9	0.869	Good
GFI	≥ 0.9	0.846	Good
TLI	≥ 0.9	0.846	Good
Critical N	100-200	270	Good

Source: author data analysis, 2018

V. CONCLUSIONS

In this research, we discussed the respondent profile, the measurement model, and the structural model. Based on the descriptive analysis, most of the respondents are well educated, allocate a reasonable amount of money for traveling, and are active on social media. We suggest that museum managers should manage their social media for promotional and educational purposes. Using confirmatory factor analysis, we can conclude that all indicators in the variables are valid and reliable. This study can be considered as offering new research in this area. Some variables had average variance below the suggested value, and future studies should consider replicating the study; path analysis should be applied to examine the causal relationship between

variables.

REFERENCES

- Kemdikbud, "Laporan Akuntabilitas Kinerja Instansi Pemerintah (LAKIP) Dirjen Kemendikbud 2012," Jakarta, 2012.
- A. J. Pekarik, Z. D. Doering, and D. A. Karns, "Exploring Satisfying Experiences in Museums," *Curator Museum ...*, vol. 1, no. 1, pp. 1-35, 1999.
- E. Shrapnel, "Engaging Young Adults in Museums: An Audience Research Study," 2012.
- R. T. Sulistiyana, D. Hamid, and D. F. Azizah, "Pengaruh Fasilitas Wisata dan Harga Terhadap Kepuasan Konsumen (Studi pada Museum Satwa)," *J. Adm. Bisnis*, vol. 25, no. 1, pp. 1-9, 2015.
- B. Widjajanta and G. I. W. Avrianti, "Keputusan Mengunjungi Museum Negeri Sri Baduga Bandung," *Strategic*, vol. 8, no. 15, pp. 1-16, 2009.
- C. Sexton, "Mobile Museums: Where Things Stand," in *Museums in the Digital Age: Museums and the Development of Active Citizenship*, 2013, vol. 1, no. 3, pp. 15-19.
- K. Thanyasunthornsakun, "An Evaluation of Cultural Heritage Tourism Destination Attributes for Delighting Visitors: A Case Study of the Ban Chiang Archaeological Site," *Pertanika J. Soc. Sci. Hum*, vol. 24, pp. 95-114, 2016.
- A. M. Sundjaja, F. L. Gaol, S. B. Abidinagoro, and B. S. Abbas, "The Behavior of Online Museum Visitors on Facebook Fan Page of the Museum in Indonesia," *Binus Bus. Rev. Vol 8, No 3 Binus Bus. Rev.*, 2017.
- M. M. Rohman, "Analisis Motivasi dan Perilaku Pengunjung di Museum Manusia Purba Sangiran Klaster Klikiran Dengan Metode Spatial Tracking Study," *J. Sangiran*, no. 3, pp. 188-203, 2014.
- M. Muka and N. Cinaj, "Motivation, Perception and Expectation of Visitors in Heritage Sites, Case: Bunk' Art," *Acad. J. Interdiscip. Stud.*, vol. 4, no. 3, pp. 697-705, 2015.
- C.-M. Hsieh, S. H. Park, and R. McNally, "Application of the Extended Theory of Planned Behavior to Intention to Travel to Japan Among Taiwanese Youth: Investigating the Moderating Effect of Past Visit Experience," *J. Travel Tour. Mark.*, vol. 33, no. 5, pp. 717-729, Jun. 2016.
- A. Fletcher and M. J. Lee, "Current Social Media Uses and Evaluations in American Museums," *Museum Manag. Curatorsh.*, vol. 27, no. 5, pp. 505-521, 2012.
- A. Weilenmann, T. Hillman, and B. Jungselius, "Instagram at the museum: Communicating the museum experience through social photo sharing," in *Conference on Human Factors in Computing Systems*, 2013, no. April 2013, pp. 1843-1852.
- A. M. Sundjaja, S. Candra, and A. Rusadi, "Evaluation of ewom application in museums in Jakarta," *J. Theor. Appl. Inf. Technol.*, vol. 96, no. 12, pp. 3951-3961, 2018.
- G. Chen, S. Yang, and S. Tang, "Sense of virtual community and knowledge contribution in a P3 virtual community: Motivation and experience," *Internet Res.*, vol. 23, no. 1, pp. 4-26, Jan. 2013.
- K. Heinonen, "Consumer Activity in Social Media: Managerial Approaches to Consumers' Social Media Behavior," *J. Consum. Behav.*, vol. 10, pp. 356-364, 2011.
- X. Y. Leung and B. Bai, "How Motivation, Opportunity, and Ability Impact Travelers' Social Media Involvement and Revisit Intention," *J. Travel Tour. Mark.*, vol. 30, no. February 2015, pp. 58-77, 2013.
- L. V. Casalo, C. Flavián, and M. Guinaliú, "Understanding the intention to follow the advice obtained in an online travel community," *Comput. Human Behav.*, vol. 27, no. 2, pp. 622-633, Mar. 2011.
- K. Sookhanaphibarn, U. Chatuporn, and K. N. Nakornphanom, "User Modeling on Social Media for Art Museums and Galleries," in *Social Computing and Social Media, 7th International Conference, SCSM 2015, Held as Part of HCI International 2015, Los Angeles, CA, USA, August 2-7, 2015, Proceedings, 1st ed.*, G. Meiselwitz, Ed. Springer International Publishing, 2015, pp. 89-95.
- H.-C. Chen, C.-C. Hsu, C.-H. Chang, and Y.-M. Huang, "Applying the Technology Acceptance Model to Evaluate the Learning Companion Recommendation System on Facebook," in *Proceedings - 2012 IEEE 4th International Conference on Technology for Education, T4E 2012, 2012, no. 1*, pp. 160-163.
- N. Chung and C. Koo, "The Use of Social Media in Travel Information Search," *Telemat. Informatics*, vol. 32, no. 2, pp. 215-229, May 2015.



22. R. Filieri and F. McLeay, "E-WOM and Accommodation: An Analysis of the Factors That Influence Travelers' Adoption of Information from Online Reviews," *J. Travel Res.*, vol. 53, no. 1, pp. 44–57, Jan. 2014.
23. M.-H. Hsu, S.-W. Tien, H.-C. Lin, and C.-M. Chang, "Understanding the Roles of Cultural Differences and Socio-Economic Status in Social Media Continuance Intention," *Inf. Technol. People*, vol. 28, no. 1, pp. 224–241, Mar. 2015.
24. O. Kwon and Y. Wen, "An Empirical Study of the Factors Affecting Social Network Service Use," *Comput. Human Behav.*, vol. 26, no. 2, pp. 254–263, Mar. 2010.
25. C. W. Sheng and M. C. Chen, "A Study of Experience Expectations of Museum Visitors," *Tour. Manag.*, vol. 33, no. 1, pp. 53–60, 2012.
26. X. Wang, C. Yu, and Y. Wei, "Social Media Peer Communication and Impacts on Purchase Intentions: A Consumer Socialization Framework," *J. Interact. Mark.*, vol. 26, no. 4, pp. 198–208, Nov. 2012.
27. M. Kang and M. a Schuett, "Determinants of Sharing Travel Experiences in Social Media," *J. Travel Tour. Mark.*, vol. 30, no. 1, p. 107, 2013.
28. J. F. J. Hair, G. T. M. Hult, C. Ringle, and M. Sarstedt, *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, vol. 46, no. 1–2, 2014.
29. A. M. Sundjaja, F. LumanGaol, T. Budiarti, B. S. Abbas, S. B. Abdinagoro, and H. Ongowarsito, "The Role of Social Media User Experience as a Mediator for Understanding Social Media User Behavior in Indonesia's Museum Industry: Literature Review," *J. Phys. Conf. Ser.*, vol. 801, no. 1, p. 012052, Mar. 2017.
30. A. Bilgihan, A. Barreda, F. Okumus, and K. Nusair, "Consumer perception of knowledge-sharing in travel-related Online Social Networks," *Tour. Manag.*, vol. 52, pp. 287–296, 2016.
31. H. Chen, A. Papazafeiopoulou, Y. Duan, and T.-K. Chen, "The Antecedents And Outcomes Of Brand Experience On The Social Networking Site," in *ECIS 2013 Proceedings*, 2013, p. Paper 10.
32. Y. Zheng, K. Zhao, and A. Stylianou, "The impacts of information quality and system quality on users' continuance intention in information-exchange virtual communities: An empirical investigation," *Decis. Support Syst.*, vol. 56, pp. 513–524, Dec. 2013.
33. J. Tang and Q. Chenyu, "Research on Motivation, Experience, Satisfaction and Behavioral Intention of Museum Tourism — A Case of Macau Museum," in *Tourism and Hospitality Development Between China and EU*, S. Guo, Ed. Springer Berlin Heidelberg, 2015, pp. 137–153.
34. S. Haryono and P. Wardoyo, *Structural Equation Modeling: Untuk Penelitian Manajemen Menggunakan AMOS 18.00*. Bekasi: Intermedia Personalia Utama, 2012.
35. R. J. Vidmar. (1992, August). On the use of atmospheric plasmas as electromagnetic reflectors. *IEEE Trans. Plasma Sci.* [Online]. 21(3). pp. 876–880. Available: <http://www.halcyon.com/pub/journals/21ps03-vidmar>

Management. Also, lecturing Entrepreneurship & Innovation, Marketing Management, Consumer Behavior and Theory of Advanced Management at BINUS University. In addition, as a practitioner / consultant for the field of policy and natural resource management, entrepreneurship & innovation, strategic management, marketing and marketing research. His Book of Road to Be Own Boss and 25 Steps of Running a Business are published by Republika Publishers (2003, 2004). Interest in research and areas of expertise in marketing management, consumer behavior, and strategic management.



Third Author Ford Lumban Gaol received his B.Sc. in Mathematics, Master of Computer Science and Doctor in Computer Science from the University of Indonesia in 1997, 2001 and 2009 respectively. He is currently Associate Professor of Informatics Engineering and Information System in Bina Nusantara University. He has more than 150 publications that indexed in SCOPUS in Journals and Proceedings and more than 8 books that published by Springer. His research interests are Psycho-Informatics and Social-Informatics that interrelated with Artificial Intelligence.



Forth Author Prof. Ir. Bahtiar Saleh Abbas, M.Sc., Ph.D is a Professor in Operational Research in Bina Nusantara University. He currently serves as the Head of Department in Doctor of Research in Management. He holds a PhD in Industrial Engineering from Iowa State University and a Master of Science in Statistics also from Iowa State University. Previously he joined Bina Nusantara University, he served as President Director of PT Apperindo Agro Konsul, Operational Director of PT Aneka Pionir Pertanian Indonesia, as well as researchers at the Indonesian Plantation Association. He has successfully published 50 joint papers indexed by Scopus.

AUTHORS PROFILE



First Author Arta M. Sundjaja is a senior faculty member and journal publication manager at Bina Nusantara University, Jakarta, Indonesia. He started teaching in Information System Department since 2008. His research interest are information system engineering, business process reengineering, and e-business strategy development. Since 2013, he has managed six journals in Bina Nusantara University and successfully accredited *Lingua Cultura* 2016 and internationalize *Binus Business Review*. Prior joining Bina Nusantara University, he held positions as Market Analyst at Bank Central Asia and Independent Business Consultant at PT. Karya Lestari. He earned S.E and S.Kom (Accounting and Information System) from Bina Nusantara University, MM (Applied Finance) from Binus Business School, and Dr. From Doctoral in Research of Management at Bina Nusantara University.



Second Author Currently a Head of Concentration in Entrepreneurship and Innovation - Doctoral Program in Management Research at Bina Nusantara University, Jakarta. Completed undergraduate program in Metallurgy Department Faculty of Engineering University of Indonesia, then proceed to Magister Management program at PPM School of Business. He completed Doctor of Management at Post-Graduate Program Faculty of Economics University of Indonesia. Experience lecturing at the Department of Metallurgy and Materials FTUI for Industrial Management and Project