

Analysis of visitor experience in Hungarian museum context using the PLS-SEM algorithm¹

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This article analyses the museum visitor experience through a quantitative questionnaire carried out at the Almásy Mansion Visitor's Centre in Gyula, Hungary, using the PLS-SEM (partial least squares structural equation modeling) algorithm. The authors analysed the escapism dimension of Pine and Gilmore's 4E model, suggesting refinement of the model in the context of museums. The aim of the research was to obtain a better understanding of the concepts of escapism, active involvement (as a key concept in the museum context), and how to set up a better measurement model of visitor experience. As a result this research, the authors were able to establish two valid models to examine the experience dimensions of the enhanced model and the components of the active involvement experience dimension.

Keywords: escapism, active involvement, museum visitor experience, 4E model

1. Introduction

The research presented in this article is the final stage of a larger study² based on a narrative and systematic literature review³ and in-depth interviews with experts, representing the qualitative aspects of the research.

¹ The article was supported by the Corvinus University of Budapest.

² BODNÁR, Dorottya. *Látogatói élmény a múzeumokban. Az eszképzizmus mint élménydimenzió elemzése a múzeumi látogatók kontextusában*. Doktori (PhD) értekezés, Budapesti Corvinus Egyetem, Gazdálkodástani Doktori Iskola. 2019a <https://doi.org/10.14267/phd.2020004>

³ BODNÁR, Dorottya. Escapism or active involvement: A dimension of museum visitor experience. In: *Vezetéstudomány - Budapest Management Review*, 50(11), 2019b, pp. 18–36. <https://doi.org/10.14267/VEZTUD.2019.11.02>

The aims of this study are to better understand the concepts of escapism and active involvement and to refine Pine and Gilmore's 4E model⁴ to better fit the museum context. The article focuses on the results of the quantitative research conducted in the Almásy Mansion Visitor's Centre in Gyula, Hungary.

Transformation in museums and exhibition spaces proceeds slowly, a situation which is tackled by the paradigm of new museology, which focuses on shifting the view from objects to people, while broadening the audience, expanding the range of topics covered by exhibitions and changing the functions of institutions. In order to create financial sustainability for their institutions, museum professionals must expand the target audience, increase visitor numbers, and introduce entertainment and leisure elements in order to meet visitors' needs as closely as possible. These needs can best be seen through the development of experience economy, suggesting that people desire a memorable experience when they visit a museum. Memorable experiences have an impact on visitors' subsequent behaviour and intentions (e.g., sharing their enthusiasm by word of mouth, willingness to return), according to several studies⁵, therefore creating such experiences is important from a management point of view. "Visitor experience" has been examined by a number of researchers who have defined the various factors and dimensions that influence it during each phase of a museum visit.⁶

⁴ PINE, Joseph B. II. and GILMORE, James H. Welcome to the experience economy. In: *Harvard Business Review*, 76(4), 1998, pp. 97–105.

⁵ PINE, Joseph B. II. and GILMORE, James H. *The experience economy: Work is Theatre & Every Business a Stage*. Boston: Harvard Business Press. 1999, ISBN 9780875848198; TUNG, Vincent W. S. and RITCHIE, Brent J. R. Investigating the memorable experiences of the senior travel market: an examination of the reminiscence bump. In: *Journal of Travel and Tourism Marketing*, 28(3), 2011, pp. 331–343. <https://doi.org/10.1080/10548408.2011.563168>; DIRSEHAN, Taskin. Analyzing museum visitor experiences and post experience dimensions using SEM. In: *Bogazici Journal: Review of Social, Economic & Administrative Studies*, 26(1), 2012, pp. 103–125. <https://doi.org/10.21773/boun.26.1.6>; MANTHIOU, Aikaterini, LEE, Seonjeong A., TANG, Liang R. and CHIANG, Lanlung. The experience economy approach to festival marketing: vivid memory and attendee loyalty. In: *Journal of Services Marketing*, 28(1), 2014, pp. 22–35. <https://doi.org/10.1108/JSM-06-2012-0105>

⁶ GOULDING, Christina. The museum environment and the visitor experience. In: *European Journal of Marketing*, 34(3–4), 2000, pp. 261–278. <https://doi.org/10.1108/03090560010311849>; ARNOULD, Eric J., PRICE, Linda and ZINKHAN, George M. *Consumers*. New York: McGraw-Hill. 2002, ISBN 978-0256133608; FALK, John H. *Identity and the museum visitor experience*. Walnut Creek: Left Coast Press. 2009, ISBN 9781315427034; JARRIER, Elodie and BOURGEON-RENAULT, Dominique. Impact of mediation devices on the museum visit experience and on visitors' behavioural intentions. In: *International Journal of Arts Management*, 15(1), 2012, pp. 18–29; PEKARIK, Andrew J., SCHREIBER, James B., HANEMANN, Nadine, RICHMOND, Kelly and MOGEL, Barbara. IPOP: A theory of experience preference. In: *Curator: The Museum Journal*, 57(1), 2014, pp. 5–27. <https://doi.org/10.1111/cura.12048>; PACKER, Jan and BALLANTYNE, Roy. Conceptualizing the visitor experience: A review of literature and development of a multifaceted model. In: *Visitor Studies*, 19(2), 2016, pp. 128–143. <https://doi.org/10.1080/10645578.2016.1144023>; RECUPERO, Annamaria, TALAMO, Alessandro, TRIBERTI, Stefano and MODESTI, Camilla. Bridging Museum Mission to Visitors' Experience: Activity, Meanings, Interactions, Technology. In: *Frontiers in Psychology*, 10, 2019. <https://doi.org/10.3389/fpsyg.2019.02092>; TRUNFIO, Mariapina, DELLA LUCIA, Maria, CAMPANA, Salvatore and MAGNELLI, Adele. Innovating the cultural heritage museum service model through virtual reality and augmented reality: The effects on the overall visitor experience and satisfaction. In: *Journal of Heritage Tourism*, 17(1), 2022, pp. 1–19. <https://doi.org/10.1080/1743873X.2020.1850742>; WANG, Yue-Ying, FENG, Yuan and FENG, B. The study on the significance of difference between demographics and tourist experiences in Macau Casino hotels. In: *Proceedings of 2013 International Symposium – International Marketing Science and Information Technology*, 2013.

The present study focuses primarily on the experience provided by exhibitions. Other studies have shown that visitor experience is influenced by methods of interpretation such as interactivity,⁷ multisensory devices⁸ and co-creation.⁹

1.1 Using the 4E model in museums

We focused on an experience model of our choice, intending to apply and develop this for museums. Pine and Gilmore's four-dimension experience (1998) is still popular and is often used in studies on tourism.¹⁰ According to the model, an experience should be standardized on the basis of two attributes: the type of participation (active, passive) and the type of relationship connecting the person with the event or attraction (absorption, immersion). Along these two features, the authors set up a four-dimensional model in which each segment displays one type of experience: entertainment, learning, aesthetics and escapism.

The escapism dimension of the 4E model is often misleading, based on the literature review; setting aside its original meaning, however, this dimension has a special importance in museum environment. In Pine and Gilmore's most cited book¹¹ and article¹² about the 4E model, instead of the original meaning of the dimension of escapism – defined in terms of active physical/virtual immersion in experience – they emphasise other meanings, in particular the transition to virtual reality (or abandoning reality through gambling) and escaping from everyday problems. In addition to the brief explanations, the denomination of the dimension also refers to the individual quitting or escaping from somewhere, often no matter where. The applied scales of

⁷ FALK, John H., SCOTT, Carol, DIERKING, Lynn, RENNIE, Leonie and COHEN-JONES, Mika. Interactives and visitor learning. In: *Curator: The Museum Journal*, 47(2), 2004, pp. 171–198. <https://doi.org/10.1111/j.2151-6952.2004.tb00116.x>

⁸ LAI, Mei-Kei. Universal scent blackbox: engaging visitors communication through creating olfactory experience at art museum. In: *Proceedings of the 33rd Annual International Conference on the Design of Communication*. Limerick, Ireland. ACM, 2015, pp. 1–6. Accessed 1 September 2018. <https://doi.org/10.1145/2775441.2775483>

⁹ THYNE, Maree and HEDE, Anne-Marie. Approaches to managing co-production for the co-creation of value in a museum setting: when authenticity matters. In: *Journal of Marketing Management*, 32(15–16), 2016, pp. 1478–1493. <https://doi.org/10.1080/0267257X.2016.1198824>

¹⁰ WILLARD, Paul, FROST, Warwick and LADE, Clara. Battlefield tourism and the tourism experience: the case of Culloden. In: *Cauthe 2012: The new golden age of tourism and hospitality*. Book 2. Proceedings of the 22nd Annual Conference. 2012, pp. 665–670. La Trobe University, Melbourne; QUADRI-FELITTI, Donna and FIORE, Ann M. Experience economy constructs as a framework for understanding wine tourism. In: *Journal of Vacation Marketing*, 18(1), 2012, pp. 3–15. <https://doi.org/10.1177/1356766711432222>; WANG, The study on...; RADDER, Laetitia and HAN, Xiliang (2015). An examination of the museum experience based on Pine and Gilmore's experience economy realms. In: *Journal of Applied Business Research*, 31(2), pp. 455–470. <https://doi.org/10.19030/jabr.v31i2.9129>; ÁSVÁNYI, Katalin, JÁSZBERÉNYI, Melinda and BODNÁR, Dorottya. Egy budapesti múzeum az élményvágó kulturális turista szemében. In: Bányai, Edit, Lányi, Beatrix and Törőcsik, Mária (eds.). *Tűkrögzítés, társtudományok, trendek, fogyasztás*. EMOK XXIII. országos konferencia tanulmánykötete. 2017, pp. 5–13. Pécs: Pécsi Tudományegyetem Közgazdaságtudományi Kar.; LAN, Feiya, HUANG, Qijun, ZENG, Lijin, GUAN, Xiuming, XING, Dan and CHENG, Ziyang. Tourism Experience and Construction of Personalized Smart Tourism Program Under Tourist Psychology. In: *Frontiers in Psychology*, 12, 2021, pp. 1–13. <https://doi.org/10.3389/fpsyg.2021.691183>; GÜZEL, Fatma Ö. and SAHIN, Ilker. Experiential Aspects of Balloon Tourism within the Context of Destination Marketing. In: *Eskisehir Osmangazi University Journal of Economics and Administrative Sciences*, 14(3), 2019, pp. 793–810. <https://doi.org/10.17153/oguüibf.511003>

¹¹ PINE, Welcome to the

¹² PINE, *The experience economy*...

escapism and other almost equivalent experience dimensions¹³ are described by items such as “escaping from everyday routine” and “immersing ourselves in another reality”. The concept also appears in other experience models in which no scales were developed, but the explanation of the dimensions or components refers to the same meaning (e.g., “quitting boredom”¹⁴ or the “feeling of liberation caused by escape”¹⁵). We review the emergence of escapism as a general motivation for travel in tourism literature, where it is usually defined by a central meaning of escaping from everyday problems.¹⁶ According to this definition, from time to time people need to get away from their regular environment, to leave their sometimes unhappy lives,¹⁷ or to escape anxiety related to work/study¹⁸, and a trip can provide perfect way to do this. The study of this concept was supported by a systematic literature review of 44 studies¹⁹ which confirmed the concerns listed above. In summary, three applied meanings of escapism emerge from the analysed literature:

1. active physical immersion according to the original categorisation of the 4E model;
2. escaping to a virtual world,²⁰ and

¹³ OH, Haemoo, FIORE, Ann M. and JEOUNG, Miyoung. Measuring experience economy concepts: Tourism applications. In: *Journal of Travel Research*, 46(2), 2007, pp. 119–132. <https://doi.org/10.1177/0047287507304039>; MEHMETOGLU, Mehmet and ENGEN, Marit. Pine and Gilmore’s concept of experience economy and its dimensions: An empirical examination in tourism. In: *Journal of Quality Assurance in Hospitality & Tourism*, 12(4), 2011, pp. 237–255. <https://doi.org/10.1080/1528008X.2011.541847>; KANG, Myunghwa, GRETZEL, Ulrike. Effects of podcast tours on tourist experiences in a national park. In: *Tourism Management*, 33(2), 2012, pp. 440–455. <https://doi.org/10.1016/j.tourman.2011.05.005>; RADDER, An examination of ... pp. 455–470; SHIH, Tsui-Yü. Attribute design and marketing strategy of branding experience museums. In: *International Journal of Electronic Business Management*, 13, 2015, pp. 85–96; SEMRAD, Kelly J. and RIVERA, Manuel. Advancing the 5E’s in festival experience for the Gen Y framework in the context of eWOM. In: *Journal of Destination Marketing & Management*, 7(March), 2016, pp. 58–67. <https://doi.org/10.1016/j.jdmm.2016.08.003>; SUNTIKUL, Wantanee and JACHNA, Timothy. Profiling the heritage experience in Macao’s historic center. In: *International Journal of Tourism Research*, 18(4), 2016, pp. 308–318. <https://doi.org/10.1002/jtr.2050>; SIPE, Lori J. and TESTA, Mark R. From satisfied to memorable: An empirical study of service and experience dimensions on guest outcomes in the hospitality industry. In: *Journal of Hospitality Marketing & Management*, 27(2), 2018, pp. 178–195. <https://doi.org/10.1080/19368623.2017.1306820>

¹⁴ COHEN, Erik. A phenomenology of tourism experiences. In: *Sociology*, 13(2), 1979, pp. 179–201. <https://doi.org/10.1177/003803857901300203>

¹⁵ KIM, Jong-Hyeong, RITCHIE, Brent J. R. Cross-cultural validation of a Memorable Tourism Experience Scale (MTES). In: *Journal of Travel Research*, 53(3), 2014, pp. 323–335. <https://doi.org/10.1177/0047287513496468>

¹⁶ GROSS, Edward. A functional approach to leisure analysis. In: *Social Problems*, 9(1), 1961, pp. 2–8. <https://doi.org/10.2307/799417>; BOORSTIN, Daniel. *The Image: A Guide to Pseudo-Events in America*. New York: Harper. 1964. ISBN 978-0679741800; MacCannell, D. (1973). Staged authenticity: Arrangements of social space in tourist settings. *American Journal of Sociology*. 79(3), 589–603. <https://doi.org/10.1086/225585>; OH, Measuring experience economy... pp. 119–132; MEHMETOGLU, Pine and Gilmore’s... pp. 237–255; KULCSÁR, N. (2015). A fogyasztói érték és az élmény kontextusa a turisztikai szakirodalomban [The context of consumer value an experience in tourism literature]. *Vezetéstudomány – Budapest Management Review*. 46(3), 18–25. <https://doi.org/10.14267/VEZTUD.2015.03.02>; RADDER, An examination of ... pp. 455–470; SEMRAD, Advancing the 5E’s... pp. 58–67; ALSAWAFI, Abdulaziz M.. Sport tourism: an exploration of the travel motivations and constraints of Omani tourists. In: *Anatolia*, 28(2), 2017, pp. 239–249. <https://doi.org/10.1080/13032917.2017.1308388>; SIPE. From satisfied to... pp. 178–195; ÁSVÁNYI, Katalin, FEHÉR, Zsuzsa and JÁSZBERÉNYI, Melinda. The Family-Friendly Museum: Museums through the eyes of families. In: *Muzeológia a Kulturne Dedicstvo*, 9(1), 2021 pp. 21–40. <https://doi.org/10.46284/mkd.2021.9.1.2>

¹⁷ BOORSTIN, The Image: A...; MACCANNELL, Dean. Staged authenticity: Arrangements of social space in tourist settings. In: *American Journal of Sociology*, 79(3), 1973, pp. 589–603. <https://doi.org/10.1086/225585>

¹⁸ ALSAWAFI, Sport tourism: an... pp. 239–249.

¹⁹ BODNÁR, Escapism or active... pp. 18–36.

²⁰ PINE, *The experience economy...*

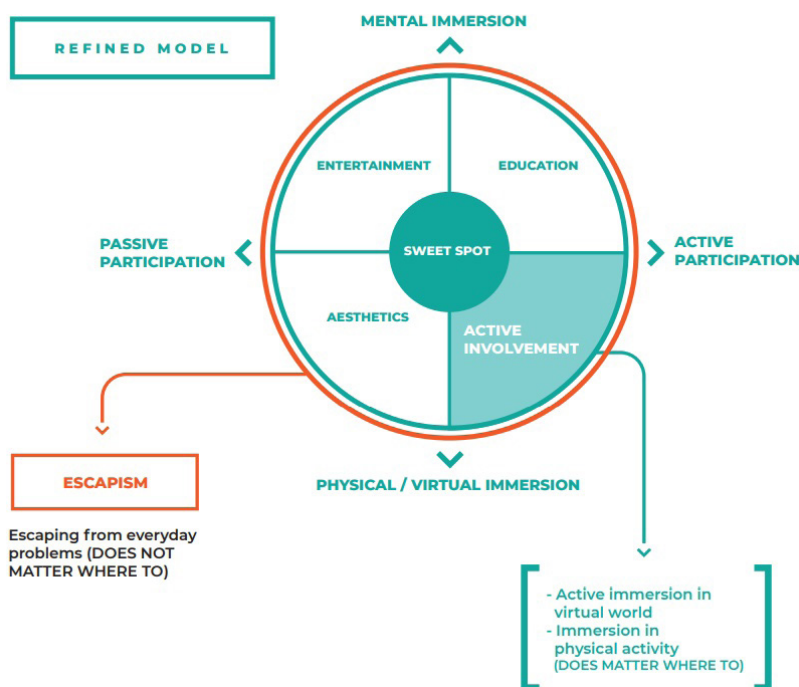
3. escaping from everyday problems²¹ (as a general travel motivation).

We suggest that the most important criterion for interpreting escapism as applied to museums is that the visitor not only hopes to escape from somewhere but also to arrive somewhere (such as another era or another world). This aim is highly likely to be complemented by active physical or virtual participatory activities.

1.2 Refined 4E model

We propose to refine the 4E model for the context of museums (Figure 1) by treating the existing experience dimension of escapism (with the central meaning of escaping from everyday problems, as stated in the tourism literature) as a comprehensive factor of four dimensions. The fourth dimension is renamed “active involvement” (meaning active physical/virtual immersion in the experience). Many interpretation methods that stimulate the museum visitor experience appear in this dimension.

Fig. 1: *Refined model.*



Source: Own compilation, with graphical support based on Pine and Gilmore.²²

The abstract denomination of the two extremes of the vertical dimension of the model (absorption, immersion) often makes it difficult to interpret parts of the model and also makes the placement of each type of experience problematic. For the sake of better understanding, the authors suggest using mental immersion instead of absorption, and physical/virtual

²¹ PINE, Welcome to the ... pp. 97–105.

²² Ibidem

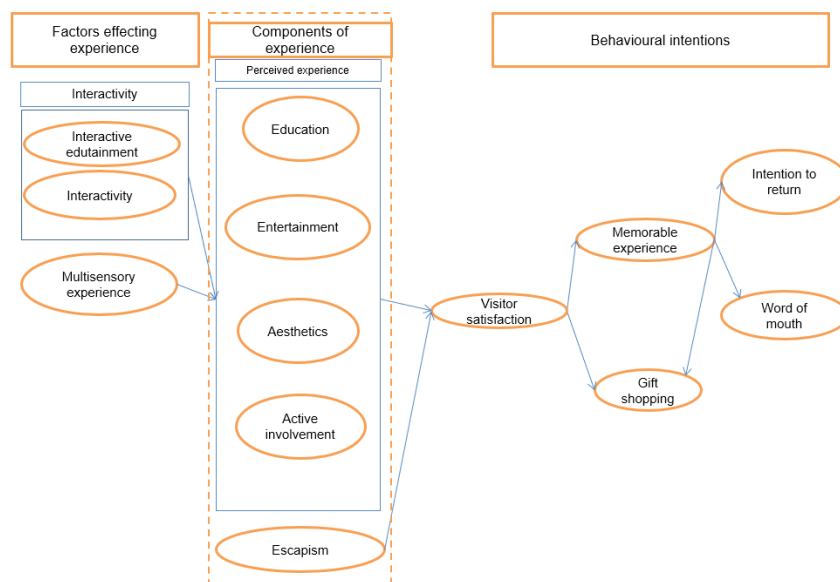
immersion instead of immersion. These categorisations accurately reflect the original idea, but instead of “absorbing the experience into the individual” and “immersing the individual in the experience”, they simplify the two extremes.

The refined model was examined first through qualitative research, via in-depth interviews with museum experts.²³ The interviews were conducted with museum leaders in institutions with diverse backgrounds and characteristics across the country. The research was exploratory and its aim was to examine practical aspects of the relationships established from the literature review. Important conclusions were drawn from the interviews which influenced the creation of the refined model presented here.

The quantitative research on which the present article focuses – the final stage of the broader study – took the form of a questionnaire for visitors. Its aim was to examine the previously defined hypotheses and to test the validity of the model.

The relationships are illustrated in the conceptual framework shown in Figure 2. In museums, the experience dimension of active involvement is influenced by factors such as multisensory experience, interactivity and interactive edutainment. The perceived experience consists of four components (learning, active involvement, entertainment, aesthetics) which in turn influence visitor behaviour (word of mouth, satisfaction, memorable experience, loyalty – intention to return). The experience of escapism (a break from everyday life) can be a potential output of all four types of experience.

Fig. 2: *Conceptual framework of the research.*



The model presented to support the conceptual framework in this article is new to the literature, highlighting the novelty of this study. Several relationships between constructs have, however, already been investigated by other authors, as presented in the section on the creation of our hypotheses. The conceptual framework does not include all potential factors that might influence visitor experience but focuses the most important ones to the topic of this study. The

²³ BODNÁR, Látogatói élmény a ...

sample size did not allow us to test the whole model, therefore it had to be narrowed. For this reason, we separated it into two structural models, each analysing the relationships between six constructs

2. Hypothesis creation

The following section introduces the hypotheses we wished to examine in the course of our research. An important basis for the formulation of the hypotheses was the narrative literature analysis, as well as the results of the previous qualitative research. Results pertaining to relations from both these analyses are briefly highlighted.

2.1 Hypotheses of model no. 1.

The first structural model focuses on the refined 4E model, especially the relationship between the experience dimensions and factors of a memorable experience and the willingness to return. We suggest that the experience dimensions support each other. Although the connections between concepts were not clear from the literature and previous research, the following statements might be applied to the relationships between the concepts.

According to Crozier, in a heritage environment, aesthetics derives from heritage infrastructure, location, and elusive factors that capture the visitor's imagination through sensory impressions.²⁴ Sensory impressions (based on our positioning of passive multisensory experiences in the 4E model) are located in the entertainment experience dimension, where the visitor wants to "sense".

Hypothesis H1: The aesthetic experience has a positive effect on the entertainment experience.

The most fundamental message of the concept of edutainment is that learning is most effective when it is enjoyed,²⁵ so edutainment creates a successful and stimulating environment for learning.²⁶ Although edutainment is at the border of several experience dimensions, it is assumed that the entertainment experience is positively related to learning.

Hypothesis H2: The entertainment experience has a positive effect on the learning experience.

A significant part of the museum profession supports interactive devices (such as interpretation methods that are part of the experiential dimension of active involvement) that promote different types of learning.²⁷ Museums are increasingly using ICT-based devices (active virtual involvement) to improve the comprehensibility of a given topic and, in addition, increase its attractiveness and accessibility.²⁸

Hypothesis H3: The experience of active involvement has a positive effect on the learning experience.

²⁴ CROZIER J. M. Innovation at heritage tourist attractions. Unpublished PhD thesis. Tasmania: University of Tasmania. 2012. Accessed 1 March 2018, <https://eprints.utas.edu.au/14750/>

²⁵ HOOPER-GREENHILL, E. *Museums and their visitors*. London: Routledge. 1994. ISBN 9780415513326

²⁶ JEGERS, Kalle and WIBERG Charlotte. FunTain: Design implications for edutainment games. In: *Ed-Media'03: World Conference on Educational Multimedia, Hypermedia and Telecommunications (Ed-Media)*, Chesapeake, VA, AACE, 2003. Accessed 1 March 2018, <http://www8.informatik.umu.se/~colsson/shortjegwib.doc.pdf>

²⁷ FALK, Interactives and visitor... pp. 171–198.

²⁸ HJALAGER, Anne-Mette. A review of innovation research in tourism. In: *Tourism Management*, 31(1), 2010, pp. 1–12. <https://doi.org/10.1016/j.tourman.2009.08.012>

The interactive experience environment contributes to involvement, and involvement has a positive effect on memorability, according to Zátóri's survey of alternative city tour operators.²⁹ The importance of multi-sensory effects is also emphasised by Dolcos and Cabeza, who suggest that sensory experiences can enhance memory, as events with such effects tend to become more embedded in people's memory.³⁰ The same conclusion was reached by Eardley et al.,³¹ who found evidence of a positive relationship between multisensory design and the memorability of the visitor experience. Given that the active involvement appears as an experience dimension for the first time in this paper, it is understandable that no previous research is available on its impact on memorable experiences; however, the relationship can be inferred from the components of the experience dimension.

Hypothesis H4: The experience of active involvement has a positive effect on the memorable experience.

Museum consumer experience has a positive impact on the intention to return, according to a study by Dirsehan in a sample of 460 visitors to museums in Istanbul.³² Pine and Gilmore also highlight that service providers should strive to provide a memorable experience³³ based on previous research findings showing that consumers' past memories and experiences connection with positive feedback and repeat visits.³⁴

Hypothesis H5: Memorable experiences positively influence visitors' intention to return.

2.2 Hypotheses of model no. 2.

Structural model no. 2. analyses the methods of interpretation that influence the dimensions of active involvement and entertainment, examines them in relation to the intention to return.

Dirsehan's survey in museums (using SEM modelling) demonstrated the positive effect of multisensory experiences affecting the so-called sensory experience dimension.³⁵ This type of experience (e.g., touching and smelling a bucket of wheat in the cellar of a castle) is located in the active involvement dimension in the 4E model, therefore it has a positive effect on active involvement.

Lai examined how smells and scents influenced emotions and experiences. Analysing the effects of releasing five types of scents (grass, baby powder, whiskey and tobacco, black chocolate, and leather) on the visitor experience, he found that a correlation existed.³⁶ According to Crozier, the purpose of devices and activities is to allow visitors to actively participate in

²⁹ ZÁTORI, Anita. A turisztikai élményteremtés vizsgálata szolgáltatói szemszögből. Doktori (PhD) értekezés, Budapesti Corvinus Egyetem, Gazdálkodástani Doktori Iskola. 2013. <https://doi.org/10.14267/phd.2014055>

³⁰ DOLCOS, Florin and CABEZA, Roberto. Event-related potentials of emotional memory: Encoding pleasant, unpleasant, and neutral pictures, cognitive. In: *Affective & Behavioral Neuroscience*, 2(3), 2002, pp. 252–263. <https://doi.org/10.3758/CABN.2.3.252>

³¹ EARDLEY, Alison F., MINEIRO, Clara, NEVES, Joselia, and RIDE, Peter. Redefining access: Embracing multi-modality, memorability and shared experience in Museums. In: *Curator: The Museum Journal*, 59(3), 2016, pp. 263–286. <https://doi.org/10.1111/cura.12163>

³² DIRSEHAN, Taskin. Analyzing museum visitor experiences and post experience dimensions using SEM. In: *Bogazici Journal: Review of Social, Economic & Administrative Studies*, 26(1), 2012, pp. 103–125. <https://doi.org/10.21773/boun.26.1.6>

³³ PINE, The experience economy...

³⁴ TUNG, Investigating the memorable... pp. 331–343; MANTHIOU, The experience economy... pp. 22–35.

³⁵ DIRSEHAN, Analyzing museum visitor... pp. 103–125.

³⁶ LAI, Universal scent blackbox... pp. 1–6.

an escapist experience. Through proper interpretation, visitors can immerse themselves in the experience and the museum can, through physical, mental and sensory effects, influence visitors' perceptions and experiences.³⁷ This interpretation of escapism is identical to the one used in the present work and thus supports the following hypothesis.

H6: Multisensory experiences have a positive effect on active involvement.

White and others define three types of edutainment practice: interactive and participatory, non-interactive, and a combination of the two.³⁸ The interactive, participatory type of edutainment (e.g. drama play) can be described as a learning experience that physically involves (immerses) the person. This is located at the boarder of active involvement and education in the refined 4E model. Crozier's statement (above) is also relevant in this case, as he states that devices and physical influences can have an impact on active participation as well as perceived experience.³⁹ Zátori demonstrated a positive relationship between an interactive experience environment and involvement with the experience.⁴⁰

H7: Interactive edutainment has a positive effect on active involvement.

Dirsehan's survey in museums (with SEM modelling) demonstrated the positive effect of multisensory experiences on the so-called sensory experience dimension.⁴¹ A passive type of multisensory experience can enhance mental immersion but only leads to passive participation, therefore it is located in the entertainment dimension of the 4E model where, according to its original definition the visitor likes to "sense".

H8: Multisensory experiences have a positive effect on entertainment.

Although Dirsehan's research on museums in Istanbul with a sample of 460 visitors did not examine the relationship between each dimension and future behavioural intention, it did confirm a four-dimensional (sensory, affective, creative cognitive, behavioural) museum consumer experience model in the form of confirmative factor analysis. Dirsehan also concluded that the perceived experience had a positive effect on the visitor's intention to return.

Forgas-Coll et al., based on a study of 1,097 people in two museums in Barcelona, concluded that perceived experience had a positive effect on future behavioural intention (intention to return, word of mouth).⁴²

Radder and Han, based on a study of 267 people in two South African museums, showed that the edutainment experience dimension was the most decisive (followed by aesthetics and escapism, respectively) for future behavioural intentions (intention to return, word of mouth).⁴³

³⁷ CROZIER, Innovation at heritage...

³⁸ WHITE, Randy, HAYWARD, Mark and CHARTIER, Paul. Edutainment: The next big thing. Presented at IAA-PA 2004 Orlando Convetion. Orlando, USA, 2004. Accessed 1 March 2018, <https://www.whitehutchinson.com/news/downloads/IAAPAEdutainmentSeminar.pdf>

³⁹ CROZIER, Innovation at heritage...

⁴⁰ ZÁTORI, A turisztikai élményteremtés...

⁴¹ DIRSEHAN, Analyzing museum visitor... pp. 103–125.

⁴² FORGAS-COLL, Santiago, PALAU-SAUMELL, Ramon, MATUTE, Jorge and TÁRREGA, Salomé. How do service quality, experiences and enduring involvement influence tourists' behavior? An empirical study in the Picaso and Miró museums in Barcelona. In: *International Journal of Tourism Research*, 19(2), 2017, pp. 246–256. <https://doi.org/10.1002/jtr.2107>

⁴³ RADDER, An examination of... pp. 455–470.

Harrison and Shaw's study of 184 Australian museum visitors using SEM modelling focused on analysing the impact of experience, services, and facilities in terms of satisfaction, word of mouth, and willingness to return.⁴⁴ The results showed that the experience had a stronger positive effect on intention to return than it did on satisfaction.

H9: Entertainment has a positive effect on intention to return

Based on the literature related to the previous hypothesis, it can be assumed that other experience dimensions are also positively related to intention to return; this is also confirmed by further research on the active involvement dimension.

According to Radder and Han, the experience dimension of edutainment is the most decisive (followed by aesthetics and escapism, respectively) in terms of future behavioural intentions (satisfaction, intention to return, word of mouth).⁴⁵ Edutainment appears prominently in the active involvement dimension (interactive edutainment), so it can be assumed that the active involvement experience dimension has a positive effect on intention to return.

According to Lee and Chang's survey of wine tourists, involvement has a positive effect on loyalty, a concept closely related to intention to return in the literature.⁴⁶

A study by Forgas-Coll and others in Barcelona concluded that involvement has a positive effect on both visitor satisfaction and future behavioural intentions.⁴⁷

H10: Active involvement has a positive effect on the intention to return.

Summarising the two models, the following hypotheses have been set up:

H1: The aesthetic experience has a positive effect on the entertainment experience.

H2: The entertainment experience has a positive effect on the learning experience.

H3: The experience of active involvement has a positive impact on the learning experience.

H4: The experience of active involvement has a positive effect on the memorable experience.

H5: Memorable experience positively influences the intention to return.

H6: Multisensory experience has a positive effect on active involvement.

H7: Interactive edutainment has a positive effect on active involvement.

H8: Multisensory experience has a positive effect on entertainment.

H9: Entertainment has a positive effect on the intention to return.

H10: Active involvement has a positive effect on intention to return.

3 Methods

Based on the above, a model built on theoretical context and construction was investigated in the framework of the research. The scales used in the literature, their improved versions, and scales of our own development enabled modelling with the help of structural equation

⁴⁴ HARRISON, Paul and SHAW, Robin. Consumer satisfaction and post-purchase intentions: an exploratory study of museum visitors. In: *International Journal of Arts Management*. 6(2), 2004, pp. 23–32.

⁴⁵ RADDER, An examination of ... pp. 455–470.

⁴⁶ LEE, Tsung H. and CHANG, Yun S. The influence of experiential marketing and activity involvement on the loyalty intentions of wine tourists in Taiwan. In: *Leisure Studies*, 31(1), 2012, pp. 103–121. <https://doi.org/10.1080/02614367.2011.568067>

⁴⁷ FORGAS-COLL, How do service... pp. 246–256.

modelling (SEM). The conclusions of the previous stages of the broader study (literature analysis⁴⁸ and qualitative research⁴⁹) finalised the conceptual framework of the present research as an initial theoretical model.

The choice of research site, Almásy Castle Visitor Centre in Gyula, was justified by several considerations. First of all, the Visitor Centre has a unique exhibition in which all the interpretation methods representing each experience dimensions can be identified several times. The research is case study-based and its primary purpose is to test the refined model, so it does not explicitly draw conclusions about the institution or the target groups involved in the research. Cost and time constraints were also factors we had to consider, and in addition, this site was an effective choice for ensuring validity and continuous monitoring. The above considerations justified the single site research.

The survey was conducted partly by filling in the questionnaire on a tablet (CAPI), but in most cases in the classic paper-based (PAPI) format was used. The questionnaire was tested on 28 July 2019 by seven visitors to the exhibition, after which the wording of any statements that were not completely clear was modified. The date of sampling was 2–4 August 2019. As they left the exhibition, all visitors over the age of 18 were offered the opportunity to participate in the research if they had visited the permanent exhibition independently (i.e. without a tour guide). Completion of the questionnaires was aided by trained interviewers who volunteered for the research. The size of the sample was 195 people.

To test the model, a type of variance-based structural equation model, PLS-SEM (partial least squares structural equation modelling) was used and the analysis was performed using SPSS and Adanco software packages.⁵⁰

3.1 Measuring instruments

The value of each concept was determined by the average value of the statements that represent the concepts. Most of the variables were rated by the respondents on a seven-point Likert scale, in addition to demographic questions and some museum/exhibition visitation questions.

Some of the measured concepts were taken from international scales; however, for concepts that did not appear in the international literature in the frame of scales, scales of our own development were used in the research (Table 1.). The scale development was based on previous phases of the research project (literature analysis⁵¹ and qualitative research⁵²).

⁴⁸ BODNÁR, Esapism or active... pp. 18–36.

⁴⁹ BODNÁR, Látogatói élmény a...

⁵⁰ DIJKSTRA, Theo K. and HENSELER, Jörg. Consistent partial least squares path modeling. In: *MIS Quarterly*, 39(2), 2015, pp. 297–316.

⁵¹ BODNÁR, Esapism or active... pp. 18–36.

⁵² BODNÁR, Látogatói élmény a...

Tab. 1: *Measurement and reliability of model constructions.*

Construction (Cronbach-alpha)	Statement	Average	Standard deviation	Standard factor weight
Learning ($\alpha = 0.754$)	Some parts of the exhibition stimulated my curiosity, therefore I read a lot of information.	6.00	1.121	0.673
	From this exhibition I got to know more about the world.	5.94	1.150	0.756
	In this exhibition one can learn a lot.	6.12	1.018	0.718
Active involvement ($\alpha = 0.798$)	I felt I was someone else for a while in the exhibition.	5.14	1.690	0.839
	I could imagine living in a different time and place.	5.83	1.454	0.8
Entertainment ($\alpha = 0.825$)	The enthusiasm of the exhibition is contagious, it picks me up.	6.10	1.096	0.769
	You can have a good time in this exhibition.	6.33	0.929	0.826
	They make an effort to entertain us in this exhibition.	6.26	1.013	0.76
Aesthetics ($\alpha = 0.852$)	Overall, this place is an attractive destination.	6.47	0.851	0.768
	The exhibition is aesthetically appealing.	6.32	1.041	0.824
	The exhibition setting provided pleasure to my senses	6.44	0.914	0.857
Multisensory experience ($\alpha = 0.804$)	This experience has stimulated more than 2 of my senses (e.g. smelling, hearing, seeing, touching).	6.07	1.101	0.824
	I liked the experience of touching/ smelling/ hearing things.	6.23	1.027	0.818

Interactive edutainment ($\alpha = 0.833$)	I could understand/learn more things through doing activities, than by just viewing the exhibits.	5.93	1.206	0.856
	I had a kind of “WOW” experience (that surprised and amazed me) while interacting with the exhibits.	5.75	1.340	0.837
Satisfaction ($\alpha = 0.856$)	I’m sure it was the right decision to visit this exhibition.	6.63	0.765	0.831
	It was not a waste of time to visit this exhibition.	6.50	0.887	0.91
Memorable experience ($\alpha = 0.895$)	I think I will not forget my experiences in the exhibition.	6.35	0.990	0.813
	I will remember many good things about this exhibition.	6.36	0.966	0.867
	I will have wonderful memories about this exhibition.	6.01	1.195	0.917
Intention to return ($\alpha = 0.933$)	I would revisit this exhibition in the future.	5.93	1.318	0.921
	If given the opportunity, I would return to this exhibition.	6.01	1.218	0.949
	I would like to return in the future to this exhibition space.	5.89	1.310	0.95

Note: All items were measured on a seven-point Likert scale where 1 = strongly disagree and 7 = strongly agree.

Multisensory experience is a two-item scale of our own development that measures how important trying out multiple sensory devices in the exhibition was to visitors. The reliability of the scale was found to be good (Cronbach $\alpha = 0.804$).

Interactive edutainment is a two-item scale of our own development that measures how much the visitor values learning through devices which they can interact with. The reliability of the scale was found to be good (Cronbach $\alpha = 0.833$).

Entertainment is a three-item scale adapted by Ásványi et al.⁵³ from Semrad and Rivera’s definition⁵⁴. It measures how important the entertainment experience was for the visitor (leisure

⁵³ ÁSVÁNYI, Katalin, MITEV, Ariel, JÁSZBERÉNYI, Melinda and METR, Mentés. Családok fesztiválélménye - két család barát fesztivál elemzése. In: *Turizmus Bulletin*, 19(3), 2019, pp. 30–37. <https://doi.org/10.14267/TURBULL.2019v19n3.4>

⁵⁴ SEMRAD, Advancing the 5E’s... pp. 58–67.

and relaxing experience). The reliability of the scale was good (Cronbach $\alpha = 0.825$).

Active involvement is a two-item scale based on Radder and Han⁵⁵ (their other statements about escapism were removed) that measures the visitor's experience of active physical/virtual involvement with the exhibition (physical or virtual participatory activity). The reliability of the scale was good (Cronbach $\alpha = 0.798$).

Aesthetic experience is a three-item scale adapted by Ásványi et al.⁵⁶ from the definition of Semrad and Rivera⁵⁷. It measures how significant the aesthetic experience was for the visitor (how much the visitor's experience was influenced by the sight and visual features of the environment and the exhibition). The reliability of the scale was good (Cronbach $\alpha = 0.852$).

Education is a three-item scale adapted by Ásványi et al.⁵⁸ from the definition of Semrad and Rivera⁵⁹. It measures how significant the educational experience was for the visitor (gaining interesting, new knowledge). The reliability of the scale was good (Cronbach $\alpha = 0.754$).

Memorable experience is a three-item scale adapted by Ásványi et al.⁶⁰ from the definition of Semrad and Rivera⁶¹. It measures how memorable visiting the exhibition was for the visitor. The reliability of the scale was good (Cronbach $\alpha = 0.895$).

Satisfaction is a two-item scale based on Dirsehan⁶² and our own development which measures how satisfied the visitor was overall with their visit to the exhibition. The reliability of the scale was good (Cronbach $\alpha = 0.856$).

Intention to return is a three-item scale adapted by Ásványi et al.⁶³ from the definition of Semrad and Rivera⁶⁴ and Bonn et al.⁶⁵. It measures whether the visitor would return to the exhibition space/museum in the future. The reliability of the scale was good (Cronbach $\alpha = 0.933$).

3.2 Measurement model

The convergence validity can be checked using standardised factor weights, which must be greater than 0.5 (0.4 for exploratory research), but it is better if they are greater than 0.7.⁶⁶ Table 1 also shows Cronbach's alpha values for the various concepts, which were all well above 0.7.⁶⁷

Table 2 presents the convergence and discriminant validity of the measured concepts in relation to structural models no. 1 and no. 2 presented in the analysis. The convergence validation indicator is the AVE (average variance extracted), where a value

⁵⁵ RADDER, An examination of ... pp. 455–470.

⁵⁶ ÁSVÁNYI, Családok fesztiválélménye - két ... pp. 30–37.

⁵⁷ SEMRAD, Advancing the 5E's ... pp. 58–67.

⁵⁸ ÁSVÁNYI, Családok fesztiválélménye - két ... pp. 30–37.

⁵⁹ SEMRAD, Advancing the 5E's ... pp. 58–67.

⁶⁰ ÁSVÁNYI, Családok fesztiválélménye - két ... pp. 30–37.

⁶¹ SEMRAD, Advancing the 5E's ... pp. 58–67.

⁶² DIRSEHAN, Analyzing museum visitor ... pp. 103–125.

⁶³ ÁSVÁNYI, Családok fesztiválélménye - két ... pp. 30–37.

⁶⁴ SEMRAD, Advancing the 5E's ... pp. 58–67.

⁶⁵ BONN, Mark A., JOSEPH-MATHEWS, Sacha, DAI, Mo, HAYES, Steve and CAVE, Jenny. Heritage/culture attraction atmospherics: Creating the right environment for the heritage/cultural visitor. In: *Journal of Travel Research*, 45(3), 2007, pp. 345–354. <https://doi.org/10.1177/0047287506295947>

⁶⁶ HAIR, Joe F., SARSTEDI, Marko, RINGLE, Christian M. and MENA, Jannette A. An assessment of the use of partial least squares structural equation modeling in marketing research. In: *Journal of the Academy of Marketing Science*, 40(3), 2012, pp. 414–433. <https://doi.org/10.1007/s11747-011-0261-6>

⁶⁷ Ibidem

of 0.5 must be exceeded for each concept.⁶⁸ AVE is also in the diagonal in the first and second parts of the table, showing that the data meets the required criteria. The discriminant validity – that is, whether two concepts differ sufficiently from each other – was measured using the Fornell and Larcker test,⁶⁹ according to which the AVE index must always be greater than the square of the correlation between the concepts. The first and second parts of the table show that this criterion was also obtained. Overall, there is sufficient statistical evidence for the existence of the concepts in both models and that the variables measured are appropriate indicators of their respective factors.

Tab. 2: *Convergence and discriminant validity of the measured concepts (AVE, Fornell–Larcker criterion).*

Structural model no.1.						
Construct	Entertainment	Active involvement	Aesthetics	Education	Memorable experience	Intention to return
Entertainment	0.6184					
Active involvement	0.2844	0.8355				
Aesthetics	0.5925	0.1886	0.7766			
Education	0.4940	0.1937	0.3242	0.6743		
Memorable experience	0.5722	0.2329	0.5181	0.3418	0.8329	
Intention to return	0.4565	0.2607	0.3393	0.3435	0.4989	0.8840
Structural model no.2.						
Construct	Multisensory experience	Interactive edutainment	Entertainment	Active involvement	Intention to return	
Multisensory experience	0.6739					
Interactive edutainment	0.4356	0.8586				
Entertainment	0.4609	0.3292	0.7438			
Active involvement	0.3035	0.2713	0.2391	0.8354		
Intention to return	0.3561	0.3300	0.3832	0.2611	0.8840	

Note: *In diagonal AVE values, below diagonal square of the correlations between the concepts can be seen.*

3.3 Participants

The sample consisted of 195 people – 77 male (39.5%) and 118 female (60.5%) – who filled in the questionnaire. With regard to relationships, 56.9% were married and 22.1% were in a relationship. With regard to who visitors came with, 61.1% arrived with family (relatives, children) and 34.4% arrived with a spouse, partner or friend. With regard to education, 45.2% undertook school up to secondary education and 49.2% had a higher education qualification. Among all respondents, 85.1% were visiting the exhibition space for the first time. Almost all 94.9% of them were from Hungary; the remainder were from Romania, Slovakia, Poland and the UK. Table 3 gives an overview of the descriptive statistical features of the dataset.

⁶⁸ Ibidem

⁶⁹ FORNELL, Claes and LARCKER, David F. Evaluating Structural Equation Models with unobservable variables and measurement error. In: *Journal of Marketing Research*, 18(1), 1981, pp. 39–50. <https://doi.org/10.2307/3151312>

Tab. 3: *Descriptive statistics of the survey population (sample size 195 people).*

Variable	Category	Result	
Sex	Male	39.50%	
	Female	60.50%	
Family status	Married	56.92%	
	In relationship	22.05%	
	Single	13.85%	
	Divorced/widowed	7.18%	
from	Arriving	Hungary	94.87%
		Romania	1.54%
		Slovakia	1.03%
		Poland	1.03%
		UK	1.54%
with	Arriving	Alone	1.03%
		With spouse, partner or friend	34.36%
		With a group (3 or more)	3.59%
		With family (relatives, children)	61.03%
First visit	First visit in the exhibition space	85.13%	
	Already visited the exhibition space	14.87%	
Education background	Elementary education or lower	5.64%	
	Secondary education	45.13%	
	Higher education or higher	49.23%	
Age	Average	51	
	Median	41	
	48 years or older	25%	
	41–48 years old	25%	
	31–41 years old	25%	
	18–31 years old	25%	
How long did you travel today to get to the exhibition space (minutes)?	Average	74 mins	
	Median	20 mins	
How long time did you spend in the exhibition space? (hours)	Average	1.78 hours	
	Median	2 hours	

How many children (under the age of 14) did you arrive with?	0	47.2%
	1	24.6%
	2	14.4%
	3	7.7%
	Other	6.2%
In the last year how many times have you visited a museum or exhibition?	Average	4.96
	Median	3.00
	Standard deviation	6.58

4 Results

In the following sections two structural models are presented, one of them analysing the interrelations of the 4E model, the other examining the factors affecting active involvement.

4.1 Structural model no. 1 (4E model)

Only one model fit criterion, the standardised root mean square residual (SRMR), is applied in PLS modelling; its cut-off value is 0.08.⁷⁰ The model delineated in this study had an appropriate model fit, with SRMR = 0.051. The results demonstrated that most of the hypotheses can be accepted or, more precisely, cannot be rejected.

It was found that aesthetic experience has a positive impact on the entertainment experience dimension ($\beta = 0.66$), suggesting that the more harmonious and well-kept the environment, the stronger entertainment experience (H1 accepted), which confirms Crozier's⁷¹ statements. Aesthetic experience can refer to tidiness, how well-kept the environment inside and outside the exhibition is, whether the interior design or exhibition installation is harmonious, and also the beauty and uniqueness of the exhibited works. Entertainment can also take the form of uncomplicated entertainment which is not affected by anything from the point of view of aesthetics. Based on the examples mentioned in the in-depth interviews in the earlier qualitative research phase, it can also relate to the level of perfection of the installation, whether attention is paid to the smallest detail, or whether there is a visually undisturbed environment throughout the cultural attraction as a whole.

The experience of active involvement was also found to have significant positive impact on entertainment ($\beta = 0.25$), meaning that strengthening those elements which provide active physical or virtual participation is likely to result in better entertainment for visitors.

Entertainment was found to have a positive impact on education ($\beta = 0.61$), suggesting that the more entertaining the interpretation of a topic is, the more effective the educational experience (H2 accepted). This finding also confirms the concept of edutainment⁷² and supports using electronic devices and other methods that entertain while, at the same time, help to achieve the museum's educational goals.

⁷⁰ HU, Li-tze and BENTLER, Peter M. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. In: *Structural Equation Modeling*, 6(1), 1999, pp. 1–55. <https://doi.org/10.1080/10705519909540118>

⁷¹ CROZIER, Innovation at heritage...

⁷² HOOPER-GREENHILL, Museums and their...; JEGERS, FunTain: Design implications...

Active involvement was not found to have a direct impact on education (H3 rejected); however, through entertainment it had a significant total impact ($\beta = 0.24$; $t = 2.66$; $p = 0.004$). In the frame of the research, it was shown that if visitors engage in active physical/virtual participation in the exhibition or related activities, it will ultimately lead more easily to an educational experience through edutainment.

The results showed that active involvement did not have a direct positive impact on memorable experience (H4 rejected) although, through entertainment, its total impact was significant and positive ($\beta = 0.21$, $t = 3.44$; $p = 0.00$). Activities and exhibition designs which foster active involvement lead to entertainment – as explained above – which results in a more memorable experience.

It is important to mention that among the four experience dimensions, aesthetics ($\beta = 0.33$) and entertainment ($\beta = 0.40$) were found to have direct positive impact on memorable experience; the other two (education and active involvement) did not. Active involvement, on the other hand, had an indirect impact through experience on the formation of a memorable experience; education was not found to affect it either directly or indirectly.

The formation of memorable experiences was found to have a significant positive impact on intention to return ($\beta = 0.41$; H5 accepted), which confirms the research of Tung and Ritchie⁷³ and Manthiou et al.⁷⁴ The more memorable a visit is, the greater the chance the visitor will return to the institution in the future. Intention to return was found to be directly affected only by the active involvement dimension ($\beta = 0.15$) among the four experience dimensions. Entertainment ($\beta = 0.46$; $t = 3.44$; $p = 0.00$) and aesthetics ($\beta = 0.59$, $t = 8.73$; $p = 0.00$) only had an indirect impact on intention to return through memorable experience, and education ($\beta = 0.19$; $t = 1.54$; $p = 0.06$) was found to have no significant impact. This also reflects the research of Dirsehan, who found that museum learning does not have a significant impact on willingness to return.⁷⁵

The first model proves that educational experience is strengthened indirectly by active involvement and aesthetics ($\beta = 0.57$; $t = 8.66$; $p = 0.00$) experience. It can be stated that the other three dimensions have an impact on gaining knowledge, but it is not education that affects the behavioural intentions of visitors. This was confirmed in some of the in-depth interviews, in which museum professionals stated that learning is an indirect objective of visitors and that people decide for themselves how much new information they would like to amass.⁷⁶ Many visitors attend an exhibition only for recreational reasons and are not aware of learning anything while there. Exhibitions and curators have the challenging task of invisibly piquing interest in a topic.

At the same time, an important conclusion from the in-depth interviews was that the most memorable experiences derive from feeling some kind of emotion, be it nostalgia, pride, a thrill or other emotive experiences. Emotion can be fostered the most through personal interaction (e.g., with a tour guide), through an artefact, or with the aid of an interactive device.

The results of the model are illustrated by Table 4 and Figure 3.

⁷³ TUNG, Investigating the memorable ... pp. 331–343.

⁷⁴ MANTHIOU, The experience economy... pp. 22–35.

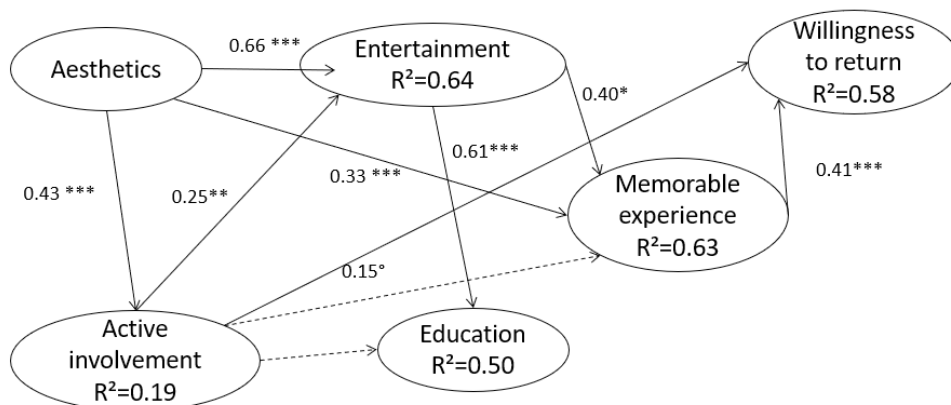
⁷⁵ DIRSEHAN, Analyzing museum visitor ... pp. 103–125.

⁷⁶ BODNÁR, Látogatói élmény a ...

Tab. 4: Direct impacts between concepts of structural model no. 1.

Direct impact	β	t-value	p-value
Entertainment → Education (H2+)	0.6058	4.0950	0.0000
Entertainment → Memorable experience	0.4030	2.3376	0.0098
Entertainment → Intention to return	0.1779	0.9106	0.1814
Active involvement → Entertainment	0.2454	2.9535	0.0016
Active involvement → Education (H3+)	0.0891	1.1161	0.1323
Active involvement → Memorable experience (H4+)	0.0930	1.3254	0.0927
Active involvement → Intention to return	0.1503	1.7486	0.0403
Aesthetics → Entertainment (H1+)	0.6632	9.9057	0.0000
Aesthetics → Active involvement	0.4342	5.8988	0.0000
Aesthetics → Education	0.0644	0.4257	0.3352
Aesthetics → Memorable experience	0.3269	2.7598	0.0029
Aesthetics → Intention to return	-0.0050	-0.0461	0.4816
Education → Memorable experience	0.0744	0.7309	0.2325
Education → Intention to return	0.1576	1.3194	0.0937
Memorable experience → Intention to return (H5+)	0.4107	3.7943	0.0001

Fig. 3: Structural model no.1 (4E model) and its results.



4.2 Structural model no. 2.

The SRMR model-fit criterion was also calculated regarding the second structural model. Based on this, it can be stated that the second model delineated in this study has an appropriate model fit, with SRMR = 0.068. The results demonstrate that most of the hypotheses can be accepted or, more precisely, cannot be rejected.

Multisensory experiences were found to have a positive impact on interactive edutainment ($\beta = 0.66$). This implies that the more senses an exhibition element stimulates, the more a visitor perceives they have learned something through activity and entertainment.

Multisensory experiences were found to have a significant impact on two experience dimensions, entertainment ($\beta = 0.49$) and active involvement ($\beta = 0.37$), which confirms and

adds nuance to the research results of Dirsehan⁷⁷, Crozier⁷⁸ and Lai⁷⁹. It can therefore be stated that an exhibition which has more multisensory elements has a greater chance of entertaining the visitor or involving them actively, be it physically or virtually (H6, H8 accepted). Given this, it is a fundamental recommendation to apply in the design and development phase of an exhibition as many elements as possible that engage the senses of seeing, listening, smelling, touching and tasting.

Interactive edutainment was found to positively affect active involvement ($\beta = 0.28$). According to this finding, if an exhibition possesses many edutainment devices that visitors can try out, they are more likely to feel actively involved in the experience through physical or virtual participation (H7 accepted). This finding reflects the statements of Crozier⁸⁰ and Zátóri⁸¹. The research of Falk et al.⁸² is also relevant in this regard: according to them, visitors for the most part do not expect interactivity in museums, although if they encounter it their perceptions of such institutes as “dusty” or “old” can change in the longterm.

Both entertainment ($\beta = 0.49$) and active involvement ($\beta = 0.27$) have a significant and direct influence on visitors’ intention to return (H9, H10 accepted). These are similar relations those investigated by Harrison-Shaw⁸³, Dirsehan⁸⁴, Lee and Chang⁸⁵, Radder-Han⁸⁶ and Forgas-Coll⁸⁷. These findings suggest that devices and methods which foster either of the two types of experience have a positive effect on visitors’ intention to return to the institution.

The detailed results are illustrated by Table 5 and Figure 4.

Tab. 5: *Direct effects between components of structural model no. 2.*

Direct effect	β	t-value	p-value
Multisensory experience → Interactive edutainment	0.6600	8.9291	0.0000
Multisensory experience → Entertainment (H8+)	0.4868	3.8282	0.0001
Multisensory experience → Active involvement (H6+)	0.3670	3.3412	0.0004
Interactive edutainment → Entertainment	0.1886	1.6946	0.0452
Interactive edutainment → Active involvement (H7+)	0.2786	2.3986	0.0083
Entertainment → Intention to return (H9+)	0.4851	6.8838	0.0000
Active involvement → Entertainment	0.1226	1.4436	0.0746
Active involvement → Intention to return (H10+)	0.2738	3.8030	0.0001

⁷⁷ DIRSEHAN, Analyzing museum visitor ... pp. 103–125.

⁷⁸ CROZIER, Innovation at heritage...

⁷⁹ LAI, Universal scent blackbox... pp. 1–6.

⁸⁰ CROZIER, Innovation at heritage...

⁸¹ ZÁTORI, A turisztikai élményteremtés...

⁸² FALK, Interactives and visitor ... pp. 171–198.

⁸³ HARRISON, Consumer satisfaction and ... pp. 23–32.

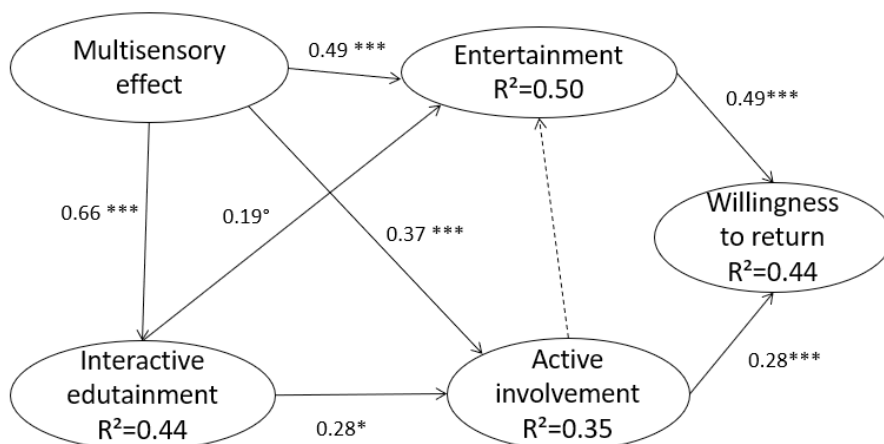
⁸⁴ DIRSEHAN, Analyzing museum visitor ... pp. 103–125.

⁸⁵ LEE, The influence of ... pp. 103–121.

⁸⁶ RADDER, An examination of... pp. 455–470.

⁸⁷ FORGAS-COLL, How do service... pp. 246–256.

Fig. 4: Structural model no. 2. (factors influencing active involvement) and its results.



5 Conclusions

The following section presents an overview of the results of the quantitative research, then summarises the overall results of the broader study of which this is one part. Finally, the academic and management benefits of the research discussed.

5.1 Quantitative research

As a result of quantitative research, the authors were able to set up two valid models.

The first model explored the experience dimensions of the enhanced 4E model, their interrelationships, and their impact on memorable experience and intention to return. No hierarchical relationship between the experience dimensions was observed, but it can be stated that both the aesthetic experience and active involvement had a positive effect on entertainment. However, they only indirectly affected the learning dimension through the experience of entertainment. Intention to return was directly influenced by active involvement and memorable experience. Moreover, indirectly through memorable experience the aesthetic and entertainment dimensions had a positive influence on intention to return but not on learning.

The second model examined the components of active involvement, incorporating entertainment and the effect of these two selected experience dimensions on intention to return. According to the most important results, the multisensory experience had a positive effect on the experience dimension of both active involvement and entertainment, and on another component of active involvement: interactive edutainment. Interactive edutainment had a positive effect on the experience dimension of active involvement. Interactivity, as a scale of an independent concept, was not valid and could not be examined further. Both the experience dimensions of active involvement and entertainment were found to have a positive effect on the intention to return.

The scale of escapism was not valid and could not be investigated further.

Among the hypotheses tested in the quantitative research, H3 and H4 were rejected, but the others (H1, H2, H5, H6, H7, H8, H9, H10) were confirmed.

5.2 Overall findings

A review of the concept of escapism and the definition of the concept of active involvement⁸⁸ will contribute to the literature on the museum visitor experience, to a better understanding of the concept of the museum experience, and to its more effective measurement. By refining the fourth dimension of the chosen model, the usability of the model as a whole is advanced. As a result, a type of experience that is poorly explained in the literature and is often attributed to its general meaning thus becomes more identifiable.

In regard to the qualitative part of the greater study, a significant number of experts concluded that if an exhibition succeeds in evoking some kind of emotion in the visitor (e.g. nostalgia, pride, personal connection, a thrilling or other experience) then the most memorable experience will derive from that moment. Emotion can be most effectively fostered by an artefact, activities mediated by interactive devices, or a personal interaction with a museum employee. Memorable experiences are the cornerstone of the experience economy and such products⁸⁹ influence the visitor's future behavioural intentions (e.g. sharing experiences, returning).

The quantitative research described in this paper also confirmed that memorable experiences have a significant positive effect on willingness to return. These two factors are directly or indirectly influenced by three of the four experience dimensions – aesthetics, entertainment and active involvement – but education has no influence on any of them.

It should therefore be an important mission of curators, museum leaders and exhibition designers to evoke emotions in visitors. To do so, they need to connect audiences today with their past, tell stories that touch the soul (see the heart-touching, so-called “hearts-on” exhibition design by Bradburne⁹⁰), and make use of devices that can convey these thoughts efficiently and impress the visitors visually or evoke an “Aha!” experience.

The quantitative research confirmed that multisensory devices as well as interactive edutainment methods have a positive effect on some dimensions of the visitor experience, facilitating the abovementioned process through the indirect effect of other factors. The results of the questionnaire also showed that all three other types of experience (aesthetic, entertainment and active involvement) contribute directly or indirectly to the realisation of learning goals and knowledge transfer, but that education itself is not a factor that influences visitors' future behavioural intention.

Results from the literature review and the qualitative and quantitative studies improved our understanding the concept of escapism and active involvement in the context of domestic museums and testing the refined 4E model.

5.3 Benefits of the research

The results of this study can be utilised in many areas in the future, including theoretical examination of the museum visitor experience and on a practical level by practitioners working at different levels of the museum sphere, from management and marketing and publicity officers to designers and curators developing new exhibitions.

⁸⁸ BODNÁR, Escapism or active ... pp. 18–36.

⁸⁹ PINE, Welcome to the ... pp. 97–105; PACKER, Conceptualizing the visitor ... pp. 128–143.

⁹⁰ BRADBURNE, James M. Museums and their languages: Is interactivity different for fine art as opposed to design? Paper presented on Interactive Learning in Museums of Art and Design. 17–18 May 2002, London Accessed: 1 March 2019, http://media.vam.ac.uk/media/documents/legacy_documents/file_upload/5758_file.pdf

The theoretical contribution of the museum visitor experience to the literature is manifested in a better understanding of the concepts of escapism and active involvement, providing the outline of a possible measurement model, as well as clarifying the relationships analysed in the model. In the present research, identifying the experience dimension of active involvement contributes to a better understanding of visitors' experiences. The literature exposed a need to clarify Pine and Gilmore's dimension of escapism⁹¹ and explore the framework of its interpretation.⁹² The separated meanings improve the accuracy of measurements of potential future research based on the 4E model and also allows the appropriate placement of each type of experience. The original aim of the broader study was to draw attention to the methods of interpretation in the dimension of active involvement. Although the effect of interpretation methods on experience has been measured by several researchers,⁹³ these have not yet been included in a complex visitor experience model, which was done in the frame of the presented refined model.⁹⁴ The model tested and the scales confirmed or refuted as a result of the quantitative phase of this study can provide the basis for future research and have potential for further development.

One of the contributions of the research to museum, exhibition and other professionals is that it can help them to better serve the needs of museum visitors by applying appropriate interpretation methods and providing ideal physical conditions. Such actions can help expand audiences, improve visitors' willingness to return, optimise the use of resources, and thus enhance the competitiveness and cultural sustainability of museums.⁹⁵ Besides serving the purpose of learning and transferring knowledge, the aesthetic, entertainment and active involvement experience dimensions directly or indirectly affect the formation of memorable experiences and visitors' desire to return. The use of multisensory devices and interactive edutainment have a positive effect on several experience dimensions. Therefore, using these methods and strengthening the mentioned experience dimensions also influences management processes in a positive way.

5.4 Limitations

The present research was limited by time and financial constraints. These prevented the authors from carrying out, among other things, quantitative research on a larger number of samples. This would have allowed the construction of a more complex structural model which could have been expanded to explore the relationships between several additional concepts.

Although the purpose of the work – to test the refined model – was fulfilled, examples of its use in other locations would have broadened the scope for interpretation. Therefore, a

⁹¹ PINE, Welcome to the ... pp. 97–105.

⁹² OH, Measuring experience economy ... pp. 119–132.

⁹³ FALK, Interactives and visitor ... pp. 171–198; FORGAS-COLL, How do service ... pp. 246–256; PREBENSEN, Nina K., KIM, Hyelin and UYSAL, Muzaffer. Cocreation as moderator between the experience value and satisfaction relationship. In: *Journal of Travel Research*, 55(7), 2015, pp. 934–945 <https://doi.org/10.1177/0047287515583359>; THYNE, Approaches to managing ... pp. 1478–1493; LEIGH, Thomas, PETERS, Cara O. and SHELTON, Jeremy. The consumer quest for authenticity: The multiplicity of meanings within the MG subculture of consumption. In: *Journal of the Academy of Marketing Science*, 34(4), 2006, pp. 481–493. <https://doi.org/10.1177/0092070306288403> HJALAGER, A review of ... pp. 1–12.

⁹⁴ BODNÁR, Látogatói élmény a ...

⁹⁵ FEHÉR, Zsuzsanna, ÁSVÁNYI, Katalin, JÁSZBERÉNYI, Melinda. Fenntartható múzeumok az európai régiókban. In: *Észak-magyarországi Stratégiai Füzetek*, 18(3), 2021, pp. 92–102. <https://doi.org/10.32976/stratfuz.2021.44>

suggested area for further research would be to test the validity of the model in other museum contexts, such as art or history museums.

Future studies might find it worth including ethnographic research in the methodology, such as personal observation of exhibitions or ethnographic research, which could broaden the results by reviewing feedback published on social media and other online platforms.

A more detailed analysis of the other three dimensions of the 4E model could confirm their current position in the model, thus contributing to its refinement. A systematic analysis of visitor models focused on active involvement could also reveal the dimensions and concepts in which this meaning appears.

Pine and Gilmore⁹⁶ considered the richest experience to be the sweet spot at the intersection of the four dimensions of their model. This seems appropriate from the supply side, but we consider it likely that on the demand side its place is always dependent on the consumer, as argued by Gram⁹⁷ and Zátori⁹⁸.

Although the present work on the relationship between experience dimensions has produced important findings, it did not support our hypothesis of a possible existing hierarchy, which has already been examined by Suntikul and Jachna.⁹⁹ It may be worth investigating further whether this sort of sequence exists or not, depending on the target group or type of attraction being visited.

In the framework of this study, quantitative research was carried out in one place, given the nature of the case studies, which aimed to test the refined model. An additional opportunity for research to test the model, modified on the basis of present experiences as needed, in other domestic locations, taking into account the different characteristics of each institution.

There are also future research opportunities regarding which emotions are most often awakened by an exhibition or museum, and which methods trigger each type of emotion most easily. The importance of emotions has been highlighted in this study in many cases, so it is worth exploring this direction as well.

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⁹⁶ PINE, Welcome to the ... pp. 97–105.

⁹⁷ GRAM, Malene. Family holidays. A qualitative analysis of family holiday experiences. In: *Scandinavian Journal of Hospitality and Tourism*, 5(1), 2005, pp. 2–22. <https://doi.org/10.1080/15022250510014255>

⁹⁸ ZÁTORI, Anita. Az élménymenedzsment koncepcionális alapjai. In: *Vezetéstudomány - Budapest Management Review*, 45(9), 2014, pp. 57–66. <https://doi.org/10.14267/VEZTUD.2014.09.06>

⁹⁹ SUNTIKUL, Profiling the heritage ... pp. 308–318.

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