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Managing Visitor Experience in Museums: Aiming Towards Satisfaction Through Edutainment and Perceived Authenticity in Arts and Culture

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This paper demonstrates the value of edutainment and authenticity when managing the visitor experience and satisfaction with a service. The study concentrates on the specific type of services that are provided by museums. Drawing on the social cognitive theory, the paper explores the relationship between edutainment (defined as the combination of education and entertainment provided through interactive content) and the three components of the perceived authenticity of museum visitor experience, 1) the museum, 2) the visitor, 3) the materials. Including edutainment and hedonic expectations as antecedents, with satisfaction as an outcome, the paper proposes a new model of perceived authenticity of visitor experience. The model was tested on a sample of 313 museum visitors (in Croatia). The results revealed that edutainment (as a second-order construct) positively influences perceived authenticity. Also, hedonic expectations positively influence one out of three components of perceived authenticity of museum visitor experience, i.e. self-authenticity of the visitor, but there was no influence on the other two components – museum and materials. Finally, perceived authenticity positively influences visitor satisfaction. Our research provides useful insights to museum managers and service managers in general who should consider using edutainment as a strategic approach to managing the visitor experience and satisfaction.

Keywords: *Visitor Experience; Satisfaction; Perceived Authenticity; Edutainment; Museums; SEM.*

Introduction

Organizations in arts and culture, such as museums operate in highly dynamic and complex environment, which requires change in the way these organizations manage their services i.e., cultural offer (O'Reilly & Kerrigan, 2010). Although historically the emphasis was on the cultural product, in the last three decades museums among other cultural organizations have slowly started to adopt services marketing principles (Hill *et al.,* 2018) to offer services and experiences (Komarac, Ozretic-Dosen & Skare, 2017) adjusted to users' i.e., visitors' expectations.

The research on museum visitor experience has drawn increasing academic attention in recent years among scientists (see Antón, Camarero & Garrido, 2018; Bideci & Albayrak, 2018; Komarac & Ozretic Dosen, 2022; Trunfio *et al.,* 2022) who try to understand this complex construct which is difficult to define and measure (Packer & Ballantyne, 2016).

Furthermore, as pointed out in the literature, one of the biggest museum management challenges for decades was managing the visitors' perception of authenticity (Varutti, 2018), and its relationship with visitor experience (Thyne & Hede, 2016). A recent study shows that managing authenticity still represents a challenge for some museum professionals when designing museum visitor experience (Komarac *et al.,* 2020). Visitor experience is defined as "an individual's immediate or ongoing, subjective and personal response to an activity, setting or event outside of their usual environment" (Packer & Ballantyne, 2016). Specifically, in the museum setting museum visitor experience is determined by the perception of authenticity (Thyne & Hede, 2016).

Simultaneously, museums, as providers of education and entertainment experiences, are also catching up with changes in the technological landscape and adopting technological solutions to attract visitors (Camarero, Garrido & Vicente, 2019). So, they use various interactive technologies (like apps) and their applications (gamification) (Bonacini & Giaccone, 2022) to create interactive services and experiences in a form of edutainment, which is combination of education, entertainment, and interactivity (e.g., interactive museum games). Creating these interactive experiences is putting additional pressure on museum management to modernize (Wang & Lin, 2018).

Museum managers aim to develop museums' technological abilities for various reasons, such as to stay relevant and to enhance engagement (Wang & Lin, 2018), but also to preserve the heritage (Recuero Virto & Blasco Lopez, 2019). Furthermore, museums need to provide entertainment to visitors while remaining faithful to their educational role (Balloffet, Courvoisier & Lagier, 2014). Therefore, they need to understand the expectations of museum visitors, shaped by new technologies and entertainment content available on other media and devices, to provide memorable experiences and learning. Also, they need to understand and use technologies that are part of ambient intelligence

tourism (Buhalis, 2019) and smart tourism (Mehraliyev *et al.*, 2020) without losing sight of the perception of an authentic experience of museum visitors.

To the authors' knowledge, there is no prior research of the impact of edutainment (education, entertainment, and interactivity) on the perceived authenticity of museum visitor experience. So, to close the research gap between edutainment (a combination of education, entertainment, and interactivity) (Mencarelli, Marteaux & Pulh, 2010; Balloffet *et al.*, 2014; Komarac *et al.*, 2020) and dimensions of the perceived authenticity of the museum visitors' experience (the perceived authenticity of the museum, its visitors, and the materials displayed) (Hede *et al.*, 2014), a conceptual model is proposed based on conducted literature review and empirically tested on a sample of museum visitors in different museums.

This paper aims to advance knowledge on creating the authentic museum visitor experience by revealing the roles that edutainment and hedonic expectations have in shaping such experience, as well as offer possible new directions for future research. In that vein the purpose of the paper is: 1) to verify proposed dimensions from the literature on edutainment (education, entertainment, and interactivity), 2) to discover the relationship between edutainment and the perceived authenticity of the museum visitors' experience and its dimensions: a) the perceived authenticity of the museum, b) its visitors, and c) the materials displayed) and, consequently, the impact of authenticity on visitor satisfaction.

The paper opens with a literature review on two focal constructs – perceived authenticity of museum visitor experience (in its dimensions) and edutainment – to provide insights into their conceptualizations and definitions in the marketing and marketing management literature. Referencing to the papers that approached both constructs from the aspect of social cognitive theory (Bandura, 2001; Moyer-Guse, 2008) is included and followed by the proposed research hypotheses. Subsequently, the results of their testing through PLS-SEM on museum visitors' survey data are presented. Findings and analysis are summarized. Conclusions highlight the important implications of the study, its limitations, and potential future research streams.

Literature Review and Hypotheses Development

The authenticity construct has gained increasing academic attention in different disciplines, despite its elusiveness (Newman & Smith, 2016) and complexity (Hede *et al.*, 2014). While several attempts have been made to define this construct (Newman, & Smith, 2016), there is still no common agreement on its definition. The term "authentic" is associated with genuineness, reality, and truth, although these words can mean different things to different consumers in different contexts (Grayson & Martinec, 2004). As pointed out by Carroll (2015), authenticity has many roles in modern social life. Rivera et al. (2019) argue that, despite difficulties, it is essential to study subjective feelings of authenticity because they contribute to well-being. In other words, perceived authenticity has "an important role in healthy human functioning" and can be understood from the aspect of social cognitive lay theory as "a working theory that people hold to help them make sense of the natural and social worlds" (Rivera *et al.*, 2019, p. 113). This theory, labeled by these authors as "true-self-as-guide", suggests that people use "feelings of authenticity as a cue to evaluate whether they are living up to the shared cultural value of what it means to live a good life."

In the literature, different authors have investigated authenticity in the context of theaters (Aykol, Aksatan & İpek, 2017; Walmsley, 2013), music festivals (Szmigin *et al.*, 2017), museums (Brida, Disegna & Scuderi, 2014; Jin, Xiao & Shen, 2020), cultural heritage (Kolar & Zabkar, 2010; Rasoolimanesh, Seyfi, Hall & Hatamifar, 2021), and in creative tourism (Wang *et al.*, 2020). The main challenge presented by existing research (Hede *et al.*, 2014) lies in the fact that the conceptualizations of the authenticity construct diverge and that empirical results are mixed.

Since the beginning of research on museum visitor experience (Graburn, 1997), scholars have tried to define visitor experience in a museum (Bigne, Mattila & Andreu, 2008; Del Chiappa, Andreu & Gallarza, 2014), answer the questions concerning the value of the experience and the role of marketing in creating additional value to visitors (McLean, 1993). In a museum context, Hede et al. (2014, p. 1396) define the perceived authenticity of the museum visitors' experience as "an overall perception that museum visitors have of the integrity and trustworthiness of their experience." They propose three components of the construct: (1) the perceived authenticity of the museum; (2) the perceived authenticity of the visitor; (3) and the perceived authenticity of the materials.

Edutainment consumption "refers to an experience containing both entertainment and education content with which consumers interact and from which they derive subjective responses" (Addis, 2005 according to Chan, 2019, p. 1). In addition, the application of technology to edutainment experience enriches and transforms the consumer experience (Addis, 2005). In the marketing management literature, edutainment is studied in the context of museums (Balloffet *et al.*, 2014), theme parks (Chan, 2019), edutainment heritage tourist attractions (Hertzman, Anderson, & Rowley, 2008), and wildlife tourism (Pratt, & Suntikul, 2016). Edutainment has been increasingly used in education, media, and entertainment (Hertzman et al., 2008), and in business in general since the 1990s' (Von Krogh & Roos, 1995).

The term "entertainment-education" as the core of edutainment refers to "prosocial messages that are embedded into popular entertainment media content" (Moyer-Guse, 2008, p. 408). It is grounded in social cognitive theory which claims that "in addition to direct, experiential learning, people learn vicariously by observing models" (Bandura, 2002 in Moyer-Guse, 2008, p. 412). The museum environment is suitable for providing experiential learning to achieve managerial as well as academic museum goals (Das, 2015). Nowadays, museums depend on their technological capabilities and marketing knowledge (Wang & Lin, 2018) to provide experiential learning such as edutainment to their visitors. Thereby, they also maintain the perception of authenticity (Pallud, 2017).

So far, three studies have investigated edutainment in museums from the supply side, relying on qualitative methodology and the insights of museum professionals (Mencarelli, Marteaux & Pulh, 2010; Balloffet *et al.*, 2014; Komarac *et al.*, 2020). All these studies explored edutainment as a combination of education, entertainment, and interactivity in museums. Furthermore, in all of them, somewhat positive opinions of museum professionals about edutainment were discovered. However, there is an apparent lack of edutainment research from the visitor perspective (the demand side). The reasons are related to the fact that education and entertainment have been seen as two distinct constructs throughout the history of museums, although they can be considered elements of the same construct (Packer & Ballantyne, 2004). Creating the "right combination" of entertainment and education using interactive multimedia technologies can have a synergistic effect and enhance educational value (Hertzman *et al.*, 2008). Edutainment is a combination of education and entertainment which needs interactive technologies to engage visitors (Pallud, 2017). Therefore, we posit the following hypothesis: **H1: Edutainment is a second-order construct consisting of education, entertainment, and interactivity.**

Edutainment is particularly relevant to the museum context and can influence museum visitor experience. However, the nature and direction of that influence have not yet been discovered. In a museum, different messages (in the form of edutainment content) are delivered to the visitors. A museum is perceived to be authentic if it "…undertakes research diligently, skillfully and thoughtfully and accurately presents exhibitions that encourage all visitors to want to enjoy themselves and to learn more about themselves and others when they visit a museum" (Hede *et al.*, 2014, p. 1401). Museums increasingly rely on technologies for mixing play with knowledge (Mencarelli et al., 2010). In that way, they "desire to transform the museum into a more playful and interactive place" (Balloffet *et al.*, 2014, p. 11) for visitors and provide interactive authenticity "which is produced by modern technologies" (Jin *et al.*, 2020, p. 5). So, managing perceived authenticity depends on museum curators, i.e., on their knowledge and on the presentation of the authenticity of the objects on display. Also, it depends on the level and implementation of edutainment into the museum story and theme. When edutainment is implemented properly, it can help increase the perceived authenticity of a museum (Komarac *et al.*, 2020). Consequently, **H2a** is proposed**: Edutainment positively influences the perceived authenticity of visitor experience of a museum.**

From the social cognitive theory standpoint, individuals are self-organizing, proactive, self-reflective, and self-regulating organisms with the ability to work on their self-development and to adapt and change (Bandura, 2001). Museums play an important role in providing an environment for self-reflection and self-development (Tzibazi, 2013). From the previous research, it is known that museum visitors expect to be actively engaged in a museum (Mencarelli *et al.*, 2010) and also expect interactive technology to induce their emotional reactions (Pallud, 2017). The perceived self-authenticity of the visitor refers to a "positive disposition to their museum visit" of a person "who is curious, willing to learn and is accepting of new ideas" (Hede *et al.*, 2014, p. 1401). So, museums are places for emotional authenticity which enables visitors "to recollect their true selves and gain sense of enjoyment (Jin *et al.*, 2020, p. 5). Edutainment can help visitors to be more active and interactive with museum exhibits, and learn more about the museum (Komarac *et al.*, 2020), thus also enhancing their self-authenticity. Therefore, **H2b** states: **Edutainment positively influences the perceived self-authenticity of the visitor.**

The perceived authenticity of the materials is defined in terms of the "materials [that] have relevance and importance for the exhibition and make a valid and accurate contribution to the story being told" (Hede *et al.*, 2014, p. 1401). Children, as museum visitors, value authentic objects (e.g., the real fossils) more than replicas; however, they do not always perceive originals to be more interesting than replicas (van Gerven, Land-Zandstra & Damsma, 2018). It is rooted in original authenticity and "visitors' feelings about the historical and cultural origins of the displayed objects and performance" (Jin *et al.*, 2020, p. 5). Open communication about the authenticity of museum materials (Hede & Thyne, 2010) can contribute to a higher perception of authenticity among adult visitors. Edutainment contributes to creating an authentic environment through different resources, e.g., through multimedia content (Shadiev *et al.*, 2018). Therefore, as museum material, edutainment could help communicate the authenticity of the museum exhibit (Komarac *et al.*, 2020). The **H2c** supposes**: Edutainment positively influences the perceived authenticity of the materials.**

Because of the nature of museum services, visitors have hedonic expectations (Petkus, 2004). Museums, that is, their curators create and present stories which can encourage enjoyment and learning, but at the same time, they need to carefully manage edutainment to achieve museum authenticity (Komarac *et al.*, 2020). Visitors expect authenticity (Pallud, 2017) or at least honest communication about authenticity (Hede & Thyne, 2016) to adjust their expectations. Although Hede et al. (2014) confirm the positive influence of hedonic expectations on the museum visitor experience, their impact on the three components of perceived authenticity has to be revealed. Thus, the study hypothesizes that: **H3: Hedonic expectations positively influence the perceived authenticity of the museum visitor experience: (a) the perceived authenticity of the museum, (b) the perceived self-authenticity of the visitor, and (c) the perceived authenticity of the materials.**

Visitors seek authentic experiences (Hede & Thyne, 2010) and, ultimately, satisfaction from their museum visit (Harrison & Shaw, 2004). Perceived authenticity is a predictor of visitor satisfaction (Hede *et al.*, 2014). However, the impact of three components of perceived authenticity on satisfaction has not been determined yet, and its influence can differ. Therefore, **H4** predict**s: The perceived authenticity of the museum visitor experience, i.e. (a) the perceived authenticity of the museum, (b) the perceived self-authenticity of the visitor and (c) the perceived authenticity of the materials, are positively related to visitor satisfaction.** All hypothesized relationships between the constructs are shown in Figure 1.

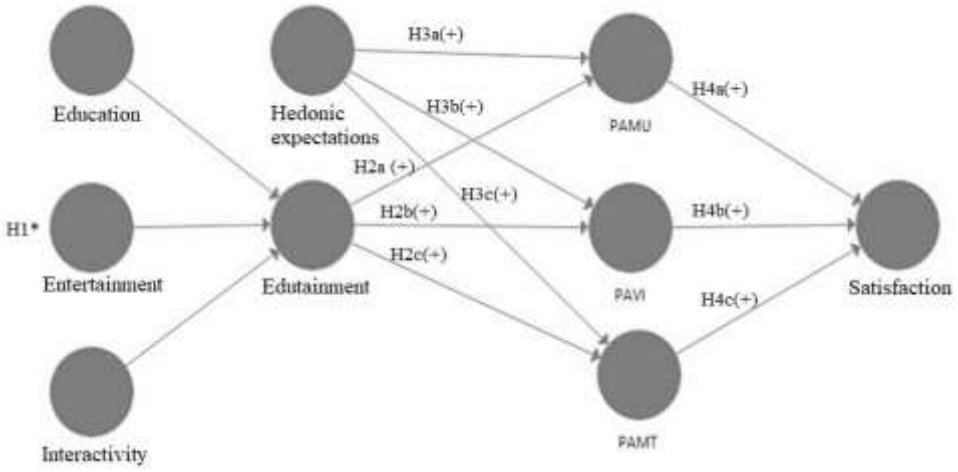

Figure 1. Conceptual Model of the Perceived Authenticity of the Museum Visitor Experience (with antecedents and outcomes)

*Note: Edutainment is a second-order construct consisting of education, entertainment, and interactivity.
Legend: PAMU – perceived authenticity of the museum, PAVI – perceived authenticity of the visitor, PAMT – perceived authenticity of the materials.

Method

Sampling and Data Collection

The purposive non-probability sampling method was used to select respondents for the survey. The sample consisted of 313 museum visitors. The data gathered was used for PLS-SEM (following the guidelines by Cohen 1988 in Hair, Hult, Ringle & Sarstedt, 2014) to achieve a statistical power of 80 % (significance level of 1 % and R^2 values of 0.10). The questionnaire was pre-tested on an expert sample consisting of eight marketing and tourism professors. Then, it was pre-tested on a convenience sample of 25 museum visitors in a single museum for five days. After the pre-test, the questionnaire was slightly modified to ensure the clarity of the three items. The data were collected as a part of the larger researcher project in different types of museums (general museum and specialized museums) in two cities in Croatia (Zagreb & Sisak) over a period of three months in 2018. Due to the lack of research, especially in the context of Non-Western countries (Jin *et al.*, 2020), the Croatian museums were considered as appropriate for conducting the study. Respondents were asked to participate in the survey at the end of their museum visit. The respondents were asked to rate the statements (items) on a 5-point Likert scale (1=strongly disagree to 5=strongly agree). On average, all respondents took 7 to 10 minutes to fill out the questionnaire.

Out of 335 questionnaires gathered, 22 were not included in the analysis because of missing data and outlier values. Finally, the 313 valid questionnaires were analyzed.

The descriptive analysis showed that 67.4 % of the sample were females, and 32.6 % were males. Also, all age groups were represented. Table 1 shows the sample profile of museum visitors.

Table 1

Sample Profile (N=313)

Demographic characteristics	Percentage
Gender	
Male	32.6 %
Female	67.4 %
Age	
16-24	52.4 %
25-34	18.5 %
35-44	14.4 %
45-54	7.3 %
55-64	4.2 %
65 and older	3.2 %
Occupation	
High-school student	18.2 %
Student	38.0 %
Employed	34.8 %
Unemployed	4.5 %
Retired	4.5 %
Household Monthly Income	
up to 332 EUR	10.2 %
333 EUR up to 666 EUR	11.8 %
667 EUR up to 999 EUR	19.8 %
1000 EUR up to 1332 EUR	8.0 %
1333 EUR up to 2000 EUR	9.3 %
more than 2001 EUR	4.8 %
does not wish to answer	36.1 %

Measurement

The quantitative empirical analysis was employed to test the hypotheses about the perceptions of museum visitors about edutainment and perceived authenticity. All the scales in the questionnaire were taken from the literature; for perceived authenticity of the museum visitor experience, i.e., perceived authenticity of visitor (three items), museum (four items), and materials (four items) from Hede et al., 2014. Scales regarding education (four items) and

entertainment (four items) were taken from Oh, Fiore & Jeoung, 2007, for interactivity (three items) from Pallud, 2017, for expectations (five-point semantic differential scale) and for satisfaction (three items) from Hede et al., 2014 (Appendix 1). The scales were tested for internal validity. Cronbach's alpha values ranged between 0.6 and 0.7 for three scales (which is not unusual in exploratory research, according to Hair, Black, Babin & Anderson, 2010) and were higher than 0.7 for five other scales. A detailed overview of the constructs and measurement scales is provided in Appendix 1.

First, primary data were checked for missing data, normality, and outliers (using the IBM SPSS tool). After dealing with missing data, transforming variables, and dealing with outliers, data was analyzed.

All hypotheses were tested by using partial least squares structural equation modeling (PLS-SEM) in SmartPLS (v. 3). The PLS-SEM method was used because it is appropriate for theory development and theory testing (Hair *et al.*, 2014). Also, it is increasingly used across different disciplines and fields such as marketing and management (Richter, Cepeda, Roldán & Ringle, 2016). It is a variance-based approach to SEM, the goal of which is to maximize the explained variance of the endogenous latent variable (Hair *et al.*, 2014). Also, it enables the exploration of "complex inter-relationships between observed and latent variables" (Sarstedt *et al.*, 2019, p. 532).

Results

Assessment of the Measurement Model

PLS-SEM was used to assess the strength and the significance of the path relationships between latent variables. First, the measurement model appropriateness was checked. As shown in Table 2, three internal consistency reliability measures were used. Cronbach's alpha scores for five scales (education, entertainment, hedonic expectations, interactivity, and satisfaction) stood above 0.7. For three scales (perceived authenticity of the materials (PAMT), perceived authenticity of the museum (PAMU), and perceived authenticity of the visitor (PAVI) scores were between 0.63 and 0.69, which is considered satisfactory because Cronbach's alpha is sensitive to the number of items on the scale and tends to underestimate the internal consistency reliability (Hair *et al.*, 2014, p. 101). Composite reliability as a more appropriate measure shows all values above the 0.7 threshold, indicating higher levels of reliability and demonstrating the internal consistency of the model (Hair *et al.*, 2014). As an additional measure, a rho_A reliability coefficient was calculated; for most constructs, values are above the 0.7 threshold (except for perceived authenticity of the materials (PAMT) and perceived authenticity of the visitor (PAVI), where the coefficient shows marginal values of 0.66 and 0.67, respectively). Regarding convergent validity, AVE values above 0.5 indicate that the construct explains more than a half of the variance of its indicators. Furthermore, outer loadings between 0.4 and 0.7 were tested, according to Hair et al., (2014) recommendation, to check their influence on composite reliability and AVE. Two items were deleted (entr_3 and pamt_2).

Table 2

Assessment of the Measurement Model

Construct	Cronbach's alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Education	0.871	0.872	0.911	0.720
Entertainment	0.702	0.780	0.829	0.624
Hedonic expectations	0.901	0.906	0.931	0.770
Interactivity	0.880	0.884	0.926	0.806
PAMT	0.658	0.660	0.814	0.593
PAMU	0.691	0.746	0.809	0.520
PAVI	0.628	0.675	0.801	0.579
Satisfaction	0.896	0.897	0.935	0.827

Note: PAMT – perceived authenticity of the materials, PAMU – perceived authenticity of the museum, PAVI – perceived authenticity of the visitor

To check discriminant validity, three measures (cross loadings, the Fornell-Larcker criterion, and the Heterotrait-Monotrait ratio) were used. The cross-loadings analysis shows higher loadings of each item for its own construct than for others.

Furthermore, according to the Fornell-Larcker criterion (data are shown in Table 3), discriminant validity was achieved. The square root of each construct's AVE is greater than its highest correlation with any other construct (Hair *et al.*, 2014). It is important to point out that the edutainment was a formatively measured construct, because of its nature. The repeated indicator approach was used (Becker, Klein & Wetzels, 2012), i.e., all indicators from lower-order constructs (LOCs) – education, entertainment, and interactivity – were used to measure edutainment as a second-order construct (Hair *et al.*, 2014).

Table 3

Fornell-Larcker Criterion and Heterotrait-Monotrait ratio (HTMT)

	Education	**Edutainment**	**Entertainment**	**Hedonic expectations**	**Interactivity**	**PAMT**	**PAMU**	**PAVI**	**Satisfaction**
Education	**0.849**		0.576	0.310	0.407	0.644	0.569	0.712	0.652
Edutainment	0.889	*							
Entertainment	0.471	0.716	**0.790**	0.292	0.594	0.492	0.530	0.641	0.518
Hedonic expectations	0.278	0.310	0.238	**0.878**	0.212	0.284	0.133	0.500	0.232
Interactivity	0.361	0.687	0.486	0.192	**0.898**	0.514	0.573	0.433	0.500
PAMT	0.492	0.558	0.365	0.217	0.389	**0.770**	0.605	0.711	0.646
PAMU	0.480	0.571	0.392	0.111	0.462	0.411	**0.721**	0.542	0.687
PAVI	0.538	0.594	0.457	0.370	0.320	0.450	0.377	**0.761**	0.658
Satisfaction	0.576	0.654	0.449	0.208	0.444	0.499	0.552	0.507	**0.910**

Note: * a grey area shows formatively measured construct Edutainment.
Note: Diagonal bolded data represent the square root of AVE; values under the diagonal represent correlations of latent variables.
Note: Values above the diagonal represent HTMT values.
Note: PAMT – perceived authenticity of the materials, PAMU – perceived authenticity of the museum, PAVI – perceived authenticity of the visitor

Additionally, as shown in Table 3 (above the diagonal), the Heterotrait-Monotrait (HTMT) ratio values are below 0.9, so they demonstrate the achieved discriminant validity between two reflectively measured constructs (Hair, Risher, Sarstedt & Ringle, 2019).

Furthermore, we checked all item loadings and their influence on composite reliability and AVE. Appendix 2 shows item loadings in the model of the perceived authenticity of the museum visitor experience after running PLS-Algorithm (after examining and deleting two items entr_03, pamt_02). These two items were examined because their values were between 0.4 and 0.7 and deleted because their removal led to increase in composite reliability and AVE (as suggested by Hair *et al.*, 2014). Furthermore, Table 3 shows item loadings of higher-order construct (HOC) edutainment. Edutainment is a measured formatively, with repeated indicators approach using reflective items of three constructs education, entertainment and interactivity. Outer loadings between 0.4 and 0.7 were tested and retained in the model.

Assessment of the Structural Model

After checking the measurement model appropriateness, SmartPLS 3.0 software was used to assess the structural model and to test the hypotheses.

Collinearity was assessed before the evaluation of the structural model. The variance inflation factor (VIF) was checked to corroborate the absence of collinearity. Hair et al. (2014) consider the variance inflation factor (VIF) above 5.00 to be an indication of collinearity. Because all VIF values were below 5.00, there was no paramount problem of collinearity in the model.

Table 4 shows path coefficient values in the structural model. A more detailed look into path coefficient values reveals how the values vary, from moderate to weak. Values in brackets represent t-values (two-tailed test, 5 % significance). All path coefficients are significant at 1 %, except between hedonic expectations – perceived authenticity of the museum (PAMU) and hedonic expectations – perceived authenticity of the materials (PAMT) which were found to be insignificant.

Table 4

Results of Model Testing

	Path coefficients	**t-value**	**Significance**	**p value**	**Results of hypothesis testing**
Education-> Edutainment	0.521	31.975	***	0.000	H1 confirmed
Entertainment -> Edutainment	0.344	23.923	***	0.000	
Interactivity -> Edutainment	0.398	20.438	***	0.000	
Edutainment -> PAMU	0.594	14.457	***	0.000	H2a confirmed
Edutainment -> PAVI	0.530	10.278	***	0.000	H2b confirmed
Edutainment -> PAMT	0.543	10.097	***	0.000	H2c confirmed
Hedonic expectations -> PAMU	-0.073	1.425	NS	0.154	H3a rejected
Hedonic expectations -> PAVI	0.206	2.808	***	0.005	H3b confirmed

	Path coefficients	t-value	Significance	p value	Results of hypothesis testing
Hedonic expectations -> PAMT	0.048	0.952	NS	0.341	H3c rejected
PAMU -> Satisfaction	0.355	6.632	***	0.000	H4a confirmed
PAVI -> Satisfaction	0.269	4.664	***	0.000	H4b confirmed
PAMT -> Sastisfaction	0.232	3.972	***	0.000	H4c confirmed

Note: Two-tailed test ***p<0.01, NS=not significant.
Note: PAMU – perceived authenticity of the museum, PAVI – perceived authenticity of the visitor, PAMT – perceived authenticity of the materials.

To test HOC edutainment, latent variable scores were calculated using the PLS Algorithm (factor weighting scheme) and used for the model test. Path coefficients are shown in Table 4 (and are results from two separate PLS analyses). As shown in Table 4, education, entertainment and interactivity predict edutainment. The results are also significant. According to the results, H1 is confirmed. **Edutainment is a second-order construct consisting of education, entertainment, and interactivity.** These results substantiate not only Packer and Ballantynes' (2004) finding that education and entertainment are complementary constructs, but also their suggestion that they form part of the same construct from the visitor's perspective. Furthermore, the existing scales for measuring these separate constructs can be used to measure edutainment.

To examine the statistical significance of the path coefficients of the whole model, a bootstrap procedure on 5000 bootstrap samples was conducted (Hair *et al.*, 2014). The size and the significance of path coefficient in the model have enabled the confirmation of seven out of nine hypotheses.

The results demonstrate that edutainment has a positive and medium influence on the perceived authenticity of the museum, supporting H2a. Edutainment was also found to have a positive, medium influence on the perceived self-authenticity of the visitor (H2b) and on the perceived authenticity of the materials (H2c). Hence, H2a, H2b, and H2c are confirmed.

Regarding hedonic expectations, the results show that hedonic expectations do not significantly influence either the perceived authenticity of the museum (H3a) or of the materials (H3c); however, their influence on the perceived self-authenticity of the visitor is weak and positive (H3b). A more in-depth insight into the results of the structural model testing (for the two rejected supportive hypotheses H3a and H3c) shows the size values of the f^2 effect to be too low (below 0.02) to contribute to the respective constructs.

Finally, the results show a positive and medium influence of the perceived authenticity on satisfaction, including the dimensions of the perceived authenticity of the museum (H4a), the perceived self-authenticity of the visitor (H4b), and a positive and weak influence of the perceived authenticity of the materials on satisfaction (H4c). In this respect, H4a, H4b, and H4c are confirmed.

Furthermore, the prediction power of the model was examined through R^2 values. The determination coefficients of endogenous latent variables (R^2) were between 0.3 and 0.5 (except for the edutainment construct because this construct was measured using the repeated indicator approach, which resulted in R^2 values closely around 1). The values of both R^2 and R^2 adjusted were almost the same. Considering the model complexity, the R^2 values obtained are moderate for perceived authenticity of the visitor (PAVI) and satisfaction, and slightly weaker for the PAMU. (perceived authenticity of the museum) and PAMT (perceived authenticity of the materials). All values are shown in Table 5.

Table 5

Coefficient of Determination of Endogenous Latent Variables

	R Square	R Square Adjusted
Edutainment	0.986	0.986
PAMT	0.314	0.309
PAMU	0.331	0.327
PAVI	0.391	0.388
Satisfaction	0.448	0.443

Note: PAMT – perceived authenticity of the materials, PAMU – perceived authenticity of the museum, PAVI – perceived authenticity of the visitor

After checking R^2, we checked effect size (f^2) values. The f^2 of 0.02, 0.15, and 0.35, respectively, indicate an exogenous construct's small, medium, or large effect on an endogenous construct (Cohen, 1988 in Hair *et al.*, 2014). The f^2 values of exogenous latent variables education (22.731), entertainment (2.860), and interactivity (5.724) have a large effect on edutainment. Furthermore, edutainment has a large effect on the three components of perceived authenticity of the materials (PAMT, 0.389), perceived authenticity of the museum (PAMU, 0.476), and perceived authenticity of the visitor (PAVI, 0.418). In contrast, hedonic expectations was not found to have an effect on perceived authenticity of the materials and perceived authenticity of the museum (values below 0.02), but to have a small effect on perceived authenticity of the visitor (0.06). Lastly, perceived authenticity of the materials (0.071), and perceived authenticity of the visitor (0.098) have a small effect on satisfaction, while perceived authenticity of the museum, has a medium effect on satisfaction (0.180). As a final step in the assessment of the structural model, a blindfolding procedure was undertaken to check predictive relevance Q^2. According to Hair et al. (2014), 0.02, 0.15, and 0.35 are the threshold

values of small, medium, and large predictive relevance for a certain endogenous construct. The results that exogenous constructs education, entertainment, and interactivity have a large predictive relevance for the endogenous construct edutainment (0.408). Also, perceived authenticity of the materials, perceived authenticity of the museum, and perceived authenticity of the visitor have a large predictive relevance for satisfaction (0.345). Endogenous constructs hedonic expectations and edutainment have a medium predictive relevance for perceived authenticity of the materials (0.172), perceived authenticity of the museum (0.155), and perceived authenticity of the visitor (0.206) as exogenous constructs in the model.

Discussion and Conclusions

The paper demonstrates the value of edutainment as a combination of educational, entertainment, and interactive experience in the specific type of service environment - museums. More precisely, it provides empirical evidence that, from the visitors' point of view, edutainment has a positive effect on the three components of the perceived authenticity (the museum, the visitor, the materials). Therefore, it shows that, instead of violating the perception of authenticity, edutainment will only increase it. This finding extends previous knowledge of edutainment and authenticity in a museum context (Hede *et al.,* 2014; Komarac *et al.,* 2020). Also, it corroborates the research by Gentile, Spiller and Noci (2007, 404) which discovered that no matter the context "customers, want to live positive consumption experiences".

Second, consistent with the results of a previous study conducted on museum professionals (Komarac *et al.,* 2020), this study confirms that visitors also have a positive perception of authenticity, which is reinforced by the museum edutainment offer. Furthermore, its results corroborate the findings of Mencarelli et al. (2010); a scenography that combines play and learning using interactive devices in a museum creates an environment in which visitors can enjoy themselves and learn simultaneously, contributing to the perceived authenticity of the museum.

Third, the results also support the previous findings of Pallud (2017) on the role of edutainment as an incentive for active involvement in the museum experience, which triggers emotional reactions, consequently leading to the realization of self-authenticity. Furthermore, the implementation of edutainment can stimulate visitors to learn and enjoy themselves more, which is in line with the proposal by Addis (2005) that the consumption of cultural products is a type of edutainment and, as such, contributes to the visitors' perception of authenticity. The results of this research imply that museum visitors seek to attain their self-authenticity. Therefore, they are compatible with the social cognitive theory, which sees people as proactive, willing to work on their self-development (Bandura, 2001), especially in the environments such as museums that enable self-reflection (Tzibazi, 2013).

Fourth, these results show that edutainment in the form of an education-entertainment message delivered in an interactive way can help museums communicate the authenticity of materials. That is, when visitors encounter an original or a replica supported by the edutainment content, it will contribute to their perception that the material on display is authentic. This supports previous findings on the importance of open communication with visitors, supported by new technologies, as suggested by Hede and Thyne (2010). Fifth, a study conducted by Hede et al. (2014) demonstrated the influence of expectations on perceived authenticity. This study aimed to deepen prior knowledge and discover the influence of hedonic expectations on all three components of perceived authenticity. Only the positive influence of hedonic expectations on self-authenticity, but not on museum or material was revealed. This leads to the notion that visitors only expect to achieve their own self-authenticity.

Furthermore, the results of this study build on and advance those established by Hede et al. (2014) and Thyne and Hede (2016), demonstrating the positive influence of all three components of perceived authenticity on visitor satisfaction. The perceived authenticity of a museum has a positive influence on satisfaction because visitors seek and expect authenticity (Pine & Gilmore, 2007; Pallud, 2017). Besides, the findings sustain the assumption that the perceived self-authenticity of the visitor is a predictor of satisfaction, and that it has a positive influence on it. That is, as reported by Pallud (2017), by discovering his/her authentic self, the visitor will be more satisfied with the overall museum visit. Although the results failed to demonstrate the influence of hedonic expectations on the perceived authenticity of materials, the perceived authenticity of materials has a medium influence on visitor satisfaction. This is consistent with the findings of Varutti (2018), who advocates for the relevance of museum material, irrespective of whether the museum displays originals or replicas, and with those of Thyne and Hede (2016), who demonstrated that the materials serve to communicate an authentic experience and thus lead to greater satisfaction. Additionally, the results showed a positive influence of perceived self-authenticity on satisfaction. When visitors achieve self-authenticity, they will be more satisfied with the museum visit.

Theoretical Contributions

This paper contributes to the field of museum management by exploring the relationship between edutainment and perceived authenticity (its three components). It reveals and confirms the importance of edutainment and perceived authenticity by offering insights into the perspective of museum visitors. Edutainment has a positive, medium influence on the perceived authenticity of the museum, and, if used appropriately, it can help increase it.

The results contribute to services marketing management theory in three ways: first, by affirming that edutainment is a second-order construct that encompasses education, entertainment, and interactivity. In that vein, the results validate the definition of edutainment proposed in the literature (e.g., Addis, 2005; Balloffet *et al.,* 2014; Chan, 2019) and help further contextualize it in museums. Since edutainment has come to life in other service industries (education, tourism, media, entertainment) and business in general, evidence of edutainment as a second-order construct facilitates the development of future construct-related knowledge not only in arts and culture but also in other service industries and business contexts.

Second, by proposing and testing the new, improved, and expanded structural model of perceived authenticity with the edutainment construct, this study confirmed that edutainment has a positive and medium influence on the three components of perceived authenticity; expectations have a positive and medium influence on the perceived self-authenticity of the visitor, and perceived authenticity has a positive, weak influence on satisfaction. Thereby, this study substantiates and refines previous contributions by Fu, Kim, and Zhou (2014), Pallud (2017), Hede et al. (2014), and Thyne and Hede (2016). By using the partial least squares structural equation modeling approach that enables the development of theory in exploratory research (Hair *et al.*, 2014), this research sets a foundation for a future investigation of perceived authenticity and edutainment. The proposed model can be conceptually further developed with additional but also contextually different antecedents. Perceived authenticity is an area of growing interest for researchers, especially in industries rich in user experience, such as hospitality (Dropulic & Ozretic Dosen, 2021). Continuous improvement of the model and verification of its robustness is therefore intensifying.

Third, it proved that the existing measurement scales for measuring separate constructs – education, entertainment, and interactivity – can be used for measuring edutainment as a multidimensional construct.

Managerial Implications

The insights obtained can help museum managers to better understand museum visitors, especially the relationship between the perceived authenticity of museum visitor experience and edutainment. In other words, museum managers need to be aware that, through its contribution to achieving the better perception of authenticity, edutainment will probably lead to visitor satisfaction. Therefore, a museum which decides to implement edutainment into its offer can improve the visitor perception of authenticity and, consequently, have satisfied visitors.

Since visitors have a positive perception of edutainment, museums need to consider its introduction and plan it from the beginning of the exhibition-making. For example, edutainment can help communicate the story of a museum object and the museum itself. Overall, edutainment can help offer a unique and memorable experience. So, through edutainment, a museum can achieve its educational goals, while visitors can attain their self-authenticity.

While the implementation of edutainment requires additional financial and personnel resources, museum management needs to consider it as an investment into visitor satisfaction. Also, museums can use edutainment to attract visitors to both physical and e-museums. They need to monitor visitor expectations and satisfaction continuously to be able to adjust the museum's edutainment content in a timely manner.

Museum managers should consider using edutainment as a strategic approach to manage the perception of authenticity as one of their biggest marketing management challenges.

In conclusion, finding ways to achieve a unique user experience and satisfaction with service is a constant challenge for marketing managers in all service industries. Comparison and learning on the example of museum practice and the broader field of arts and culture may represent an exciting benchmark that provides solutions that can be applied with the necessary adjustments in other service organizations.

Limitations and Further Research

No research is without limitations. The limitations are related to the sample type (non-probability sampling) for the survey; however, the researchers put a lot of effort into obtaining answers from visitors in different types of museums and in different cities through a period of several months. Although the results cannot be generalized, they offer greater in-depth insight into edutainment and the perceived authenticity of the museum visitor experience. Furthermore, limitations can be related to PLS-SEM method that gained some controversy as a research method (Rigdon, 2016) in the past.

Future research in the area of edutainment needs to be directed towards the refinement of the proposed scale for edutainment, especially for measuring the entertainment construct (because of low factor loadings and a high covariance between two of the items). Testing the possible moderation (e.g., age, technical savviness, and cultural differences between visitors from different cultures) and a more in-depth examination of mediation effects (e.g., motives for visiting museums) between edutainment and perceived authenticity would contribute to a better understanding of these constructs.

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Appendix 1. Study Constructs

Constructs	Items	Cronbach'sα
Perceived authenticity of the visitor (Hede *et al.*, 2014) – Five-point Likert scale from strongly disagree (1) to strongly agree (5)	PAVI_01: (1) I was prepared to become more interested in the topic. PAVI_02: I was prepared to be challenged by the topic presented. PAVI_03: I was willing to have the stories presented to me in innovative ways.	0.628
Perceived authenticity of the museum (Hede *et al*., 2014) –Five-point Likert scale from strongly disagree (1) to strongly agree (5)	PAMU_01 This museum makes all visitors feel welcome. PAMU_02 This museum makes the stories feel real. PAMU_03 This museum presents the materials well. PAMU_04 This museum knows how to create a genuine learning enviroment.	0.691

Constructs	Items	Cronbach'sα
Perceived authenticity of the material (Hede *et al.*, 2014) –Five-point Likert scale from strongly disagree (1) to strongly agree (5)	PAMT_01 The materials at this museum/exhibition are important for the topic. PAMT_02 The materials at this museum/exhibition are relevant to the exhibition's topic. PAMT_03 The materials at this museum/exhibition come from a known time or place. PAMT_04 The materials at this museum/exhibition are worth looking after.	0.658
Education (Oh *et al.* 2007) –Five-point Likert scale from strongly disagree (1) to strongly agree (5)	EDUC_01 The experience has made me more knowledgeable. EDUC_02 I learned a lot. EDUC_03 It stimulated my curiosity to learn new things. EDUC_04 It was a real learning experience.	0.871
Entertainment (Oh *et al*. 2007) – Five-point Likert scale from strongly disagree (1) to strongly agree (5)	ENTR_01 Activities of others at the museum were amusing to watch. ENTR_02 Watching others perform at the museum was captivating. ENTR_03 I really enjoyed watching what others were doing at the museum. ENTR_04 Activities of others were fun to watch.	0.702
Interactivity (Pallud, 2017 modified from Skadberg and Kimmel) – Five-point Likert scale from strongly disagree (1) to strongly agree (5)	INTR_01 Using museum technologies provided me with an interactive experience. INTR_02 I felt I had control over my interaction with the museum technologies. INTR_03 Interactive technology at the museum responded to my actions.	0.880
Expectations (Hede *et al.*, 2014, modified from Neelamegham *et al.*, 1999) – Semantic differential scale	Before my visit, I expected it to be EXPE_01 Not fun at all…Fun EXPE_02 Boring…Interesting EXPE_03 Unexciting…Exciting EXPE_04 Dull…Fascinating	0.901
Satisfaction (Hede *et al.*, 2014, modified from Mimouni-Chaabane, 2010) – Five-point Likert scale from strongly disagree (1) to strongly agree (5)	SATS_01 I made a good choice when I decided to visit this museum. SATS_02 My evaluation of my visit was good. SATS_03 I was satisfied with my visit to this museum.	0.896

Appendix 2. Item Loadings in the Model of the Perceived Authenticity of the Museum Visitor Experience

	Education	Entertainment	Interactivity	Edutainment	Hedonic expectations	PAMT	PAMU	PAVI	Satisfaction
educ_01	**0.838**			**0.689**					
educ_02	**0.869**			**0.681**					
educ_03	**0.828**			**0.684**					
educ_04	**0.859**			**0.756**					
entr_01		**0.645**		**0.441**					
entr_02		**0.848**		**0.628**					
entr_04		**0.865**		**0.728**					
intr_01			**0.907**	**0.720**					
intr_02			**0.924**	**0.699**					
intr_03			**0.862**	**0.610**					
expe_01					**0.890**				
expe_02					**0.847**				
expe_03					**0.900**				
expe_04					**0.873**				
pamt_01						**0.807**			
pamt_03						**0.598**			
pamt_04						**0.791**			

	Education	Entertainment	Interactivity	Edutainment	Hedonic expectations	PAMT	PAMU	PAVI	Satisfaction
pamu_01							**0.626**		
pamu_02							**0.577**		
pamu_03							**0.831**		
pamu_04							**0.817**		
pavi_01								**0.845**	
pavi_02								**0.816**	
pavi_03								**0.598**	
sats_01									**0.892**
sats_02									**0.917**
sats_03									**0.919**

**Edutainment is measured formatively, with repeated indicators approach using reflective items of the three constructs education, entertainment and interactivity.*

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