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FULL LENGTH ARTICLE

Social Media Effectiveness in Museum Marketing: Evidence from Major Museums in Uzbekistan

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ABSTRACT

Although research on digital marketing with social media is extensive, few studies have focused on the effectiveness of museum marketing through the application of PLS-SEM. This study opens broad opportunities for the integration of social media analytics in museum studies, including the role of audience engagement and content quality and their impact on visitor intention in responding to digital campaigns. The purpose of this study is to examine the role of social media engagement and perceived value in achieving marketing effectiveness in responding to the museum audience. Collected survey data were subjected to a detailed PLS-SEM analysis to estimate the conditional probability that a latent construct has a significant effect, given the values of one or more of its observed indicators. To analyze user perceptions and behavioral responses while also including platform-related factors, certain constructs and indicators were combined with the measurement set defined by prior literature, resulting in the structural equation model. The results show that visitors' favorable perceptions of the museum and their online interactions indicate that content quality positively influences behavioral intention through the mediating effect of social media engagement toward brand awareness, visitor satisfaction, and revisit intention. Understanding the effectiveness of social media for museum marketing in relation to the structural model of user behavior contributes to the literature and may help future researchers achieve faster empirical validation. This study can also benefit museum managers by providing practical insights, such as content optimization strategies, to improve the use of the social media model. It also contributes to the literature on digital marketing and cultural promotion.

Keywords: Social media marketing ▪ Museum marketing ▪ PLS-SEM ▪ Visitor engagement ▪ Content quality ▪ Marketing effectiveness ▪ Digital interaction

1. INTRODUCTION

Some scholars have based their research into behavioral intentions on the Theory of Planned Behavior conceptual model, which explains an individual's attempt to start a new behavior through three determinants: attitude toward its performance, intention to act, and perceived control [1].

According to prior research, high levels of social media engagement and information quality are significant predictors of marketing effectiveness when users interact with digital content. Research on the digital museum suggests that a museum platform should create value through (1) information sharing, (2) audience interaction, and (3) easy access to a wide variety of digital content.

Arias [2] offers a broad overview of the existing literature on museum communication by comparing it with related concepts, such as digital engagement and online branding. A recurring problem occurs when different constructs are combined without accounting for differences in context and measurement or ensuring alignment with theory and data [3].

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Although social media marketing and digital interaction are accepted as contributors to a strong marketing framework, empirical evidence concerning the relationship between these constructs and PLS-SEM remains limited, especially in post-pandemic contexts. These approaches are difficult to apply in practice and may not directly measure museum marketing effectiveness [4, 5, 6].

Some studies attribute an organization's lack of a structured plan to founders being too occupied with daily operations to think about strategic planning, or assuming that there will be enough time to develop a succession plan before their departure. Many studies have found evidence of the influence of content quality, social media engagement, and digital experience on visitor behavior [7, 8, 9, 10, 11, 1, 12, 13].

Social media is described as a dynamic and interactive environment, and digital tools and platforms can play important roles in participation; engagement helps facilitate communication and knowledge sharing [6]. Many researchers have developed analytical frameworks, and prior studies have identified and examined dimensions of social media marketing focused on digital campaign performance.

A review of the literature reveals extensive efforts to understand social-media-based marketing and the impact of the digital environment on visitor behavior. This approach demands extensive data collection and advanced analytical methods, making it impractical for evaluating large samples [11]. Studies typically include longitudinal datasets spanning only a few years, with only a minority of panel studies exceeding ten years. Despite these contributions, a gap remains in how social media effectiveness can be measured and validated in practice.

This study seeks to fill the existing gap concerning social media use in museum marketing, its theoretical and empirical implementation, and methodological approaches for systematically introducing PLS-SEM and bootstrapping. Drawing on experiences across museums, it aims to clarify how social media affects museum marketing and, in particular, visitor engagement. The study presents a conceptual model suitable for empirical applications, including structural and comparative statistical analyses, and evaluates how the variables influence marketing effectiveness in addressing digital communication challenges.

The following sections discuss the study design, variables, and analytical method. The methodology focuses on a three-stage model for PLS-SEM analysis [1]. Based on prior applications of PLS-SEM, this research proposes hypotheses to examine the validity of the model in this context. Findings are then analyzed through the adapted structural model to support the discussion.

2. METHODS

Data were collected using a structured questionnaire comprising survey items from prior literature and adapted measurement scales covering social media engagement in museum marketing in Uzbekistan. Uzbekistan became one of the first countries in the region to ease restrictions against the COVID-19 outbreak. The sample population consisted of undergraduate students pursuing degrees in management and marketing. All respondents had prior social media experience, including active use and participation in one or more of the digital platform projects that provided the context for this study.

Overall, 245 responses were received. After screening and filtering incomplete and inconsistent entries, 210 valid responses were obtained, yielding an effective response rate of 85.7%. To provide sufficient statistical power for the planned analyses, the minimum sample size for a model of this complexity was determined to be 150 observations. The sample included women and men at undergraduate and postgraduate levels from various regions across the country. The main limitation is that the surveys were conducted only with students, although respondents were active digital users.

A purposive sampling method was used to ensure data quality and avoid bias. Cases were selected based on the availability and relevance of data, including completeness and consistency of questionnaire responses. Data were collected through online survey distribution, using a quantitative approach intended to provide reliability and validity [4, 6]. Despite these limitations, the study uses three constructs as a basis for its model because it focuses specifically on user behavior in digital environments.

The Theory of Planned Behavior distinguishes behavioral intention from other psychological constructs [2]. Measurement items for the structural model were adapted from prior studies [3, 4]. The measurement instruments included multiple indicators derived from the literature, and students evaluated themselves using survey measures based on Likert scales. The study uses PLS-SEM in two steps: first, the fit of the measurement model (outer model) is assessed; then, the relationships of the structural model (inner model) are examined using bootstrapping. Prior work has developed this approach by introducing additional validation procedures, resulting in more robust results and analytical guidelines [1].

Goodness-of-fit values approached the relevant threshold. Although these techniques were originally applied to large datasets, the present approach was adapted to analyze smaller samples. Standardized factor loadings above 0.7 were considered acceptable. Reliability and validity values for the constructs were within acceptable ranges, supporting internal consistency. The study also reports that composite reliability should exceed its threshold and that the results provided evidence addressing the research objectives [1].

Marketing effectiveness is the dependent variable. Perceived value creation was measured using four dimensions of the conceptual model: information quality, social media engagement, brand awareness, and visitor satisfaction [3]. The measurement instrument was adapted from earlier studies [3, 1]; constructs consisted of multiple items measured on a five-point Likert scale. The measurement model specifies which indicators must be included for the constructs to meet the conditions of the analysis [1].

Information quality, social media engagement, and perceived value were measured on five-point Likert scales ranging from strongly disagree (1) to strongly agree (5). This empirical study formed variables from indicators and addressed the relationships among constructs in the conceptual framework. The analysis focused on identifying recurring patterns in the data and relationships that reflected user behavior in digital

interaction.

Data screening and analysis were conducted using SmartPLS. The model was evaluated using bootstrapping to estimate path coefficients in structural equation modeling, an alternative to covariance-based methods [1]. Bootstrapping is based on Efron's resampling technique and its statistical applications [4, 1]. The analysis focused on relationships that occurred consistently in the model and paths illustrating the influence of variables on marketing effectiveness.

Reliability evaluation considered Cronbach's alpha, composite reliability, standardized factor loadings, and average variance extracted (AVE); AVE values greater than 0.5 were considered acceptable. Discriminant validity, including convergent and discriminant validity, was complemented by cross-loadings and the HTMT ratio. Cronbach's alpha can be conservative, while composite reliability is also used to assess construct consistency [6, 1]. PLS-SEM nevertheless has limitations, including dependence on sample size.

3. RESULTS

These findings support the validity of the proposed conceptual model and provide an empirical method, based on structural equation modeling, for analyzing and developing digital marketing strategies. The results indicate that the structural relationships are sufficiently strong to yield consistent and sometimes robust findings.

Among the three core constructs, social media engagement appears to be the most significant factor contributing to the conditional probability of marketing effectiveness. Respondents reporting high levels of engagement fall into the positive-influence category of the structural model, pointing to a relationship between engagement and behavioral intention.

Most respondents' content quality and social media engagement fall into this category, although many reported positive indirect effects through mediation in the structural path. Nearly half of both brand awareness (0.524) and visit intention (0.320) fall within a moderate effect range, appearing to have a low probability of developing independently and consequently a low chance of influence within this structural framework.

In this model, construct measurability was important, and indicator numbers were introduced to describe each latent variable more effectively. The results indicate that content quality and social media engagement have a strong positive effect on visitor behavioral intention in the digital environment.

The structural relationships can be applied to analyze constructs separately and in combination, making it easier to distinguish them from other types of variables.

To probe the indirect effect from content quality to visit intention through social media engagement, the study analyzed mediation and the possibility of partial mediation. However, some combinations of variables could not be estimated [7, 8]. In Model 2, brand awareness had no significant direct impact on actual visit behavior [11, 1, 12]. Based on the model's definitions, a direct behavioral response cannot be considered a strong or consistent pathway; the influence of awareness alone is limited.

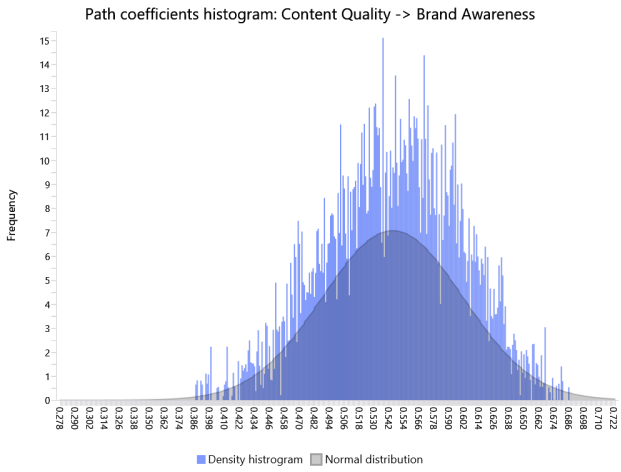


Figure 3. Histogram of the normal distribution of content quality and brand awareness.

No direct effect was found from brand awareness to actual behavior, but a significant indirect effect was found from content quality to visitor behavior through social media engagement, indicating mediated influence. One indicator was excluded from the measurement model because of a low loading, one structural path because of an insignificant t-value, and one latent construct because of a cross-loading issue.

4. DISCUSSION

This paper proposes the term "social media effectiveness" to define marketing performance in digital museum contexts. It integrates different dimensions of social media engagement and information quality, which are classified as key constructs even though some measurement conditions are not fully met or are exceeded.

The conceptual framework is an empirical contribution. The analysis is an approximation and depends on the measurement model and structural assumptions [2, 4, 6, 1]. The results show that improving digital content has a strong, positive effect on engagement, brand awareness, and behavioral intention. Social media engagement has a significant role in achieving marketing effectiveness for museum audiences. Digital platforms increase visitor interaction because they provide systems that allow communication and participation through online media [7, 8]. The results also reveal a direct positive influence of information quality on visitor behavior in the digital environment.

This paper introduces perceived value, representing user benefits or experience, as an indicator for evaluating or measuring a marketing system, particularly in digital environments [9, 10]. This example demonstrates that digital marketing success is not only connected to high engagement and a reduction in uncertainty. Users may also face information overload and structural limitations that prevent improvement through simple adjustments.

Digital interaction is a dynamic process: outcomes may improve when strategies addressing communication issues focus on platforms that provide different types of interaction [11, 1]. This finding confirms the applicability of the structural model and aligns with prior research [12]. Integrating constructs through modeling can provide insights into user behavior and

Table 1. Summary statistics

Name	No.	Type	Missings	Mean	Median	Scale min	Scale max	Observed min	Observed max	Standard deviation	Excess kurtosis	Skewness	Cramér–von Mises p
Content quality: visual appeal	1	MET	0	-0.042	-0.038	-2.709	2.822	-2.709	2.822	0.968	0.018	0.142	0.659
Content quality: information relevance	2	MET	0	-0.057	-0.109	-2.709	2.325	-2.709	2.325	0.970	-0.279	0.128	0.686
Social media user engagement: likes	3	MET	0	-0.008	0.042	-2.306	2.992	-2.306	2.992	0.871	0.481	0.080	0.924
Social media user engagement: comments and shares	4	MET	0	-0.019	0.008	-2.117	2.598	-2.117	2.598	0.826	0.222	0.098	0.524
Museum brand awareness: recognition	5	MET	0	0.048	0.111	-1.999	2.034	-1.999	2.034	0.739	0.017	-0.046	0.424
Museum brand awareness: recall	6	MET	0	0.016	0.023	-1.902	2.001	-1.902	2.001	0.723	0.050	-0.001	0.304
Visitor visit intention: planning	7	MET	0	-0.024	-0.078	-1.736	1.725	-1.736	1.725	0.687	-0.086	0.037	0.271
Visitor visit intention: recommendation	8	MET	0	-0.043	-0.018	-1.439	1.831	-1.439	1.831	0.667	-0.213	0.205	0.633
Actual museum visit: frequency	9	MET	0	-0.047	-0.065	-2.162	1.619	-2.162	1.619	0.668	0.124	0.062	0.430
Actual museum visit: ticket purchase	10	MET	0	-0.041	-0.049	-2.477	1.781	-2.477	1.781	0.694	0.453	-0.037	0.552

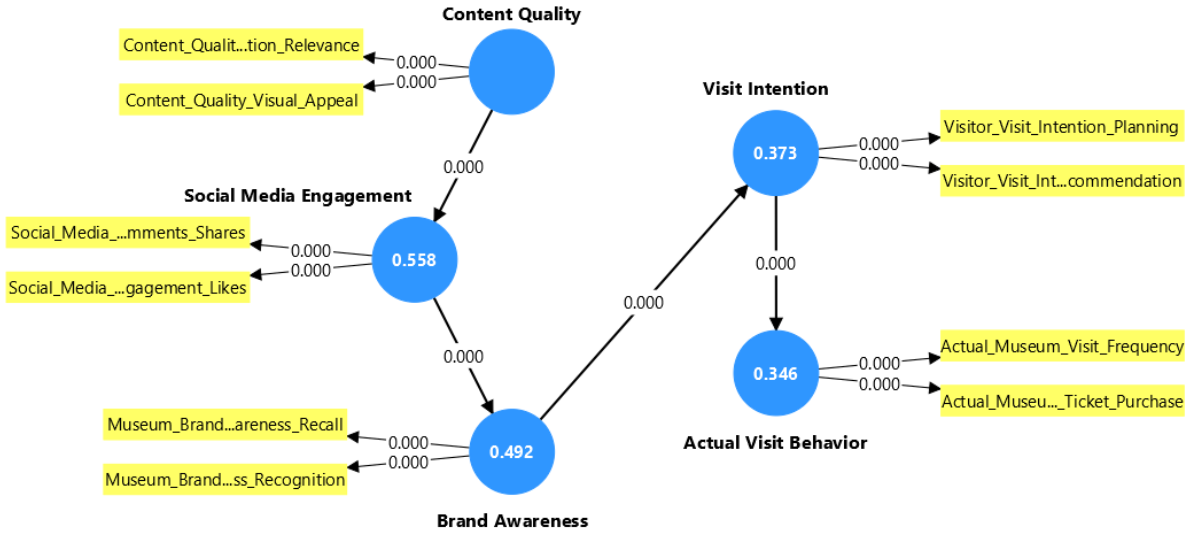


Figure 1. PLS model.

Table 2. Path coefficients

Relationship	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics ($\|O/\text{STDEV}\|$)	P values
Brand Awareness → Visit Intention	0.611	0.609	0.056	10.881	0.000
Content Quality → Social Media Engagement	0.747	0.747	0.037	19.925	0.000
Social Media Engagement → Brand Awareness	0.701	0.700	0.041	17.306	0.000
Visit Intention → Actual Visit Behavior	0.588	0.584	0.054	10.806	0.000

Table 3. Total effects

Relationship	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics ($\|O/\text{STDEV}\|$)	P values
Brand Awareness → Actual Visit Behavior	0.359	0.356	0.050	7.152	0.000
Brand Awareness → Visit Intention	0.611	0.609	0.056	10.881	0.000
Content Quality → Actual Visit Behavior	0.188	0.186	0.032	5.890	0.000
Content Quality → Brand Awareness	0.524	0.523	0.041	12.766	0.000
Content Quality → Social Media Engagement	0.747	0.747	0.037	19.925	0.000
Content Quality → Visit Intention	0.320	0.319	0.042	7.576	0.000
Social Media Engagement → Actual Visit Behavior	0.252	0.250	0.040	6.219	0.000
Social Media Engagement → Brand Awareness	0.701	0.700	0.041	17.306	0.000
Social Media Engagement → Visit Intention	0.428	0.427	0.051	8.335	0.000
Visit Intention → Actual Visit Behavior	0.588	0.584	0.054	10.806	0.000

responses in digital marketing, and some dimensions of engagement may be more influential than others. An outcome can be considered effective when it brings improvement and consequently has a positive impact on the system [13, 14].

When theoretical conditions are not fulfilled, an outcome is likely to be a limitation of the specific application. Consistent with prior research [15], this study found a strong and significant relationship between engagement, behavioral intention, and satisfaction. The results agree with previous findings [16],

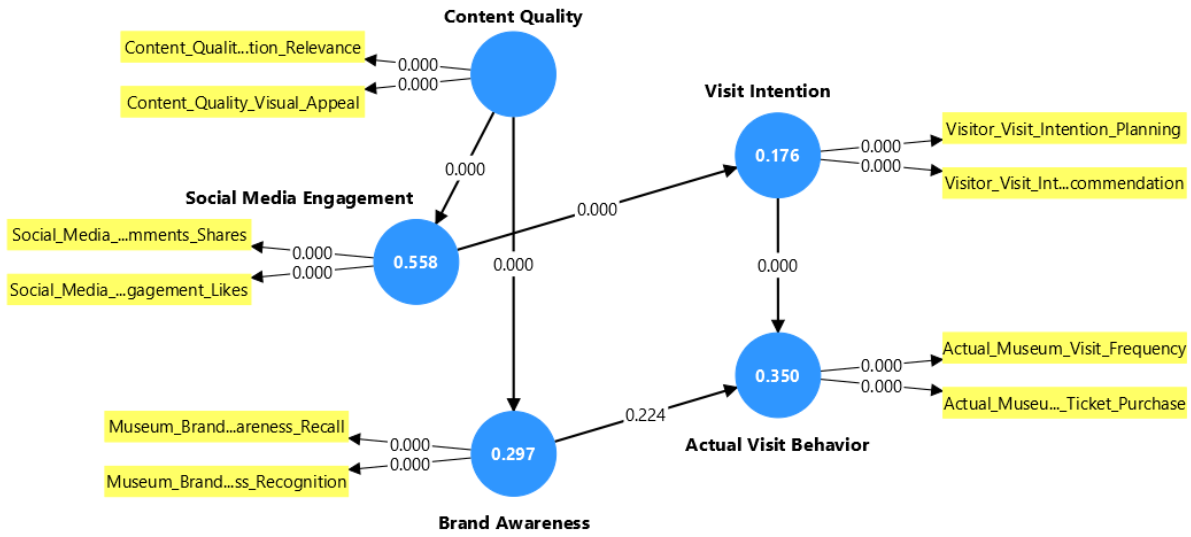


Figure 2. PLS-SEM model.

Table 4. Path coefficients for Model 2

Relationship	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics ($\|O/\text{STDEV}\|$)	P values
Brand Awareness → Actual Visit Behavior	0.083	0.085	0.069	1.215	0.224
Content Quality → Brand Awareness	0.545	0.545	0.056	9.657	0.000
Content Quality → Social Media Engagement	0.747	0.747	0.037	19.924	0.000
Social Media Engagement → Visit Intention	0.419	0.417	0.070	5.987	0.000
Visit Intention → Actual Visit Behavior	0.537	0.533	0.072	7.474	0.000

confirming that social media engagement is pivotal for users to develop positive responses. Understanding social media effectiveness for museums and the mechanisms identified here can help future researchers improve models and address implementation challenges.

Knowledge of current behavioral patterns can benefit the management and optimization of digital marketing strategies. Nevertheless, recognized models do not always meet practical criteria in real contexts. Due to methodological, contextual, and measurement issues, outcomes in digital environments differ significantly from those in traditional settings.

As empirical evidence on social media effectiveness in museums remains limited, this study contributes insights on user behavior to the digital marketing literature. These findings align with prior studies that depict engagement as the ability to manage and apply digital tools, enabling an effective structure and improving communication and interaction processes. Platform design may contribute to the experience by improving system accessibility and usability. These results are consistent with work examining how digital platforms generate user engagement by facilitating communication through online tools [17, 18, 19].

The structural analysis is only partly based on empirical data, such as indicators for engagement and quality in the measurement of constructs; other parts rely on assumptions, such as proxy indicators for behavior. The evaluation model can be applied when analyzing existing systems and platforms, as opposed to newly developed products. Data limitations and sampling constraints also prevent generalization to a broader population. Further research should test the robustness of the conceptual model in different contexts and samples, validate structural relationships, prepare consistent datasets and measurement instruments, and obtain reliable data for the constructs. This would allow the model to be improved and the factors determining effectiveness to be evaluated more accurately. These findings are consistent with the limitations of PLS-SEM approaches on small samples.

5. CONCLUSION

This study can form a basis for further research to clarify relationships among the constructs and broaden knowledge in digital marketing and cultural promotion. Comparisons with findings in other contexts and regions can help validate the model. The framework can also provide an analytical reference for future studies and serve as a guide for researchers and practitioners, including museum managers and digital marketers, through different stages of social media marketing [3, 1]. As with other work on digital marketing effectiveness, it remains unclear whether the proposed model will be implemented in the future. Further research should test the robustness of the conceptual model across contexts and samples, validate its structural relationships in different settings, prepare consistent datasets and measurement instruments, and collect reliable data for the constructs. This will allow the model to be refined and the factors determining effectiveness to be evaluated more accurately as further empirical data become available.

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