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The Effects of Virtual Reality Technology on Visitor Experience: Legoland, Johor, Malaysia

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Abstract: *Nowdays, theme parks are a growingly common travel destination for tourists all over the world. According to Themed Entertainment Association (2016), theme parks provide an experience with a distinctive atmosphere and as such offer top-notch rides and attractions, a wide range of performances and events, environmental buildings and landscapes, options for dining, and eye-catching retail stores. Technology advancements have a significant impact on the travel and tourism sector, improving customer satisfaction by giving them a more immersive experience. Virtual reality (VR) is a new area of technological development that is increasingly being used in a variety of fields, including entertainment, marketing, and education (Guttentag, 2010). This research aims to understand how VR technology may enhance theme park visitors' experiences and actions. Data was gathered from 200 theme park guests who have experience VR roller coasters in the previous 12 months. The data was collected by using quantitative method. Statistical Package for Social Sciences (SPSS) was used for data analysis. The result of the study indicates that functional and experience has a significant impact on satisfaction and revisit intention at LEGOLAND Malaysia. The findings of this study can be used by the management to plan and implement marketing activities that will improve the services offered by the LEGOLAND Malaysia.*

Keywords: Virtual Reality, Theme Park, functional value, Satisfaction

1. Introduction

Theme parks are becoming popular types of tourism destinations, and they draw more than 500 million visitors a year (Association/AECOM,2020). The emergence of theme parks has greatly benefited the travel and tourism industry (Dong & Siu, 2013). The tourism business has been severely impacted by COVID-19. A few amusement parks had to close, and when they reopen, there is the potential for a surge of visitors. Consequently, focusing on the theme park is of great significance to the development of tourism in the post-epidemic era.Theme parks are an important component of the tourism industry in much of the world and of considerable economic significance as they require heavy investment and involve some very large corporations. The sector is less established in parts of Asia but is flourishing there because of economic development which is encouraging demand for leisure and tourism and facilitating funding.

Through virtual reality, travellers are able to have a more interactive and extensive experience when exploring a place or an attraction. (Han, tom Dieck, & Jung, 2018). As a significant

tourist destination, a rising number of theme parks around the world have begun to adopt VR technology as an innovative approach to revitalize their original properties to attract more visitors (Jung et al., 2018). For instance, Legoland Florida has invested and retrofitted its original roller coaster Project X using the VR technology. Equipped with a VR headset, it becomes The Great Lego Race, providing visitors a whole new experience. Over the past several years, studies on the effectiveness of VR technology at museums, cultural heritage sites, shopping centers and art galleries have increased (Han et al., 2018; Jung et al., 2018; tom Dieck et al., 2016). However, as a critical tourism destination attraction, theme parks have received scarce attention and there is thus a critical need to study theme park visitors' experience and behavioral intentions associated with VR applications. To overcome the past research negligence and to enrich the current understanding of VR technology at theme parks the purpose of this study is to investigate the efficacy of VR technology applications in increasing theme park visitors' experiences and behaviours.

2. Literature Review

2.1 Vitual Reality in tourism

The term "virtual reality" (VR) is used to describe a variety of computer-generated 3D environments that imitate complex real-life scenarios and situations. (Diemer, Alpers, Peperkorn, Shiban, & Mühlberger, 2015). With the emergence and innovation of VR technology, numerous VR apps have been widely used in the hospitality and tourism sectors. These applications allow customers to have more involved and varied experiences while also providing businesses with additional commercial benefits. (Jung et al., 2018; Tussyadiah et al., 2018). For example, Jung et al. (2018) conducted a research to investigate how visitors would experience a national park virtually using a VR headset. The finding of the studies discovered that a tourist are wholly immersive with VR experience and positively influenced tourists' intentions to visit the destination. Tussyadiah et al. (2018) studied user experience during a virtual reality tour of a tourist attraction and discussed about how VR could alter visitors' perceptions of this destination. Their empirical findings indicated that a well-designed VR technology encourages tourists to explore and interact with the destination, which increases their satisfaction.

2.2 Relationship between Tourist satisfaction and Intention to Revisit

The relationship between satisfaction and customers' behavioral intentions in the services sector has been extensively researched during the past decades. In the tourism context, recognizing the importance of satisfaction in predicting tourists' behavioral intentions, various studies have sought to investigate into the relationship between these two variables at destination level. The link between tourists' level of satisfaction with a destination and their intention to revisit the destination is grounded in the theory of destination choice set (Crompton, 2005). According to the latter tourists select destinations with attributes that they believe will best satisfy their needs. As argued by Stylos et al. (2017) tourists' intention to return to a destination is also determined by the extent to which they perceive that the attributes of a destination shall meet their needs. A stream of research has established that the more tourists' express their satisfaction with a destination the more likely they are to revisit the destination(Loi, So, Lo, & Fong, 2017; Petrick et al., 2001)Tourists' revisit intention which refers to their perceived likelihood of coming back to the same destination is a specific element of favorable postconsumption behavior and is key component of tourism loyalty (Loi et al., 2017).

3. Methodology

A systematic sampling approach was employed in this study. Specifically, the total respondent target population consisted of 200 individual who have visited to Legoland in the past 3 years during the period of data collection. Data collection was proceeded using a self-administrated questionnaire, consisting of both scaled variables which were functional and experience, tourist satisfaction and demographic enquiries. A screening question was asked to secure that the tourists had visited the Legoland Malaysia, to prevent response error. Respondents were asked to indicate their level of agreement based on a Likert scale of 1 to 5 (from very disagree to very agree). Researchers focus with respondents that are 18 years old and above to ensure this study was relevant. The method needs to consequently be applicable and related to the objective of this research and as the result will be decided through the method used.

4. Result and Discussion

Descriptive analysis was carried out with the aims of explaining tourist satisfaction of respondent with Augmented Reality (AR) technology with their trips. The statistical tests used were frequency, percentage, mean and standard deviation.

Table 1: Demographic of respondents

Demography		Frequency	Percentage
Gender	Male	93	46.5
	Female	107	53.5
Marital status	Single	96	48.0
	Married	104	52.0
Age	18 – 29	96	48.0
	30 – 39	86	43.0
	40 and above	18	9.0

Table 1 shows in this study 53.5% of the respondents were female and 46.5% of respondents were male. 52% of the respondents were married and 48% of the respondent were single. According to the age group, most of the respondents were from the age group of 18 - 29 years old with percentage of 48% followed by the age group of 30 - 39 with a total number of percentages of 43% and the least number of respondents were in the age group of 40 and above with only percentage of 9%. Therefore, this study can conclude that there is no bias in this study.

4.1 Descriptive statistics for variable

Table 2: Descriptive Statistics for Functional (N=200, Mean=4.53)

Items	Mean	SD	Level
1. The AR system at LEGOLAND MALAYSIA worked smoothly	4.56	0.624	High
2. The AR system at LEGOLAND MALAYSIA provide high quality of information about the Lego character	4.51	0.634	High
3. It was comfortable to use this AR glasses at LEGOLAND MALAYSIA.	4.51	0.694	High
4. LEGOLAND MALAYSIA AR system provided authentic audio setting	4.53	0.641	High
5. The AR imagery that occurred was clear	4.57	0.597	High
6. The AR imagery that used was detailed	4.53	0.649	High

Table 2 shows the descriptive statistics for the Functional variable. Overall, the functional of AR technology at LEGOLAND Malaysia is at a high level (Mean=4.53). The item that highest

level of functional is item on the "The AR imagery that occurred was clear" (Mean=4.53). "The AR system at LEGOLAND Malaysia provide high quality of information about the Lego character" and "It was comfortable to use this AR glasses at LEGOLAND Malaysia" has the lowest level item (Mean=4.51).

Table 3: Descriptive Statistic for Experience (N=200, Mean=4.58)

Items	Mean	SD	Level
1. Time period for the ride that using AR technology at LEGOLAND MALAYSIA very suitable	4.55	0.671	High
2. I was able to block out most other distraction from outside during AR ride	4.58	0.588	High
3. I was absorbed in the AR environment	4.57	0.598	High
4. I had fun during the ride that using AR system	4.56	0.599	High
5. I felt the AR ride at LEGOLAND MALAYSIA was very interesting	4.57	0.606	High

Table 3 shows shows the descriptive statistics for the experience variable. Overall, the experience of visitor at LEGOLAND Malaysia with AR technology is at prominent level (Mean=4.56). The highest level of experience is item on the "I was able to block out most other distraction from outside during AR ride" (Mean=4.58).

Table 4: Descriptive Statistics for Tourist Satisfaction (N=200, Mean=4.57)

Items	Mean	SD	Level
1. A trip to LEGOLAND MALAYSIA to experience AR technology was worthwhile	4.58	0.621	High
2. A trip to LEGOLAND MALAYSIA was as good as I expected	4.58	0.599	High
3. A trip to LEGOLAND MALAYSIA is satisfying	4.57	0.614	High

Table 4 shows the descriptive statistics for tourist satisfaction variable. Overall, the tourist satisfaction with the AR technology at LEGOLAND Malaysia is at a high level (Mean=4.57). The item that has the highest level of tourist satisfaction is item on the "A trip to LEGOLAND MALAYSIA to experience AR technology was worthwhile" and "A trip to LEGOLAND MALAYSIA was as good as I expected" (Mean=4.57).

4.2 Relationship between Functional and Experience toward Tourist Satisfaction

Table 5: Relationship between Functional and Tourist Satisfaction

		Functional	Tourist Satisfaction
Functional	Pearson Correlation	1	.771**
	Sig. (2-tailed)		<.001
	N	200	200

***. Correlation is significant at the 0.01 level (2-tailed).*

H1: There is a significant positive relationship between functional and tourist satisfaction.

Table 5 shows that the relationship between Functional and Tourist Satisfaction is strong (r=0.771). The relationship is also significant at level of 0.01. Therefore, the hypothesis that there is a significant positive relationship between functional and tourist satisfaction was accepted.

Table 6: Relationship between Experience and Tourist Satisfaction

Correlations

		Experience	Tourist Satisfaction
Experience	Pearson Correlation	1	.798**
	Sig. (2-tailed)		<.001
	N	200	200

**. Correlation is significant at the 0.01 level (2-tailed).

H2: There is a significant positive relationship between experience and tourist satisfaction.

Table 6 shows that the relationship between Experience and Tourist Satisfaction is strong (r=0.798). The relationship is also significant at level of 0.001. Therefore, the hypothesis that there is a positive relationship between experience of using AR technology and tourist satisfaction was accepted.

Table 7: Relationship between Tourist Satisfaction and Intention to Revisit

		Tourist Satisfaction	Intention to Revisit
Tourist Satisfaction	Pearson Correlation	1	.759**
	Sig. (2-tailed)		<.001
	N	200	200

**. Correlation is significant at the 0.01 level (2-tailed).

H3: There is a significant positive relationship between tourist satisfaction and intention to revisit

Based on Table 7, the relationship between Tourist Satisfaction and Intention to Revisit is strong (r=0.759). The relationship is also significant at level 0.01. Therefore, we accept the hypothesis that there is significant positive relationship between tourist satisfaction and intention to revisit.

Table 8: Multiple Regression Testing

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.806a	.650	.645	.30335

a. Predictors: (Constant), Tourist Satisfaction

Table 8 shows the multiple regression testing for functional, experience and tourist satisfaction. The change in variance in customer satisfaction explained by the independent variable is 65% (R square). From the table, it is indicated that there is significant positive influence of the independent variable towards customer satisfaction (F=121.368, p<0.05). There is only two independent variable that significantly influence towards tourist satisfaction that is functional (Beta=0.095, p=,0.05) and experience (Beta=0.383, p=,0.05). Overall, the level of functional and experience towards tourist satisfaction and intention to revisit is at prominent level. There is significant positive relationship between all the functional, experience, tourist satisfaction and intention to revisit.

5. Conclusion

This study revealed that functional of AR technology and experience positively influenced tourists' satisfaction. In addition, to get the best experience and excitement, establishing meaningful challenges and immersing people in fascinating worlds are two major areas that should be prioritized at the same time.The findings of the present study are also supported by Chen (2013), who concluded that all three quality dimensions, including system quality and experience, influence the behavioural intention. Kim et al. (2013), who studied the intention to adopt a ubiquitous tour information service, also indicated that system quality and information quality are important. Thus, system quality is important not only in the general business environment but also in the tourism environment.

Result from this study indicate that functional and experience of tourist had stronger effect on satisfaction that resulting intention to revisit. System design and functionalities play a role in users' overall satisfaction thus, VR application developers should focus primarily on the interaction and on personalized information, pictures, and videos. Personal information, images, and videos become crucial when using AR applications to preserve historical locations, along with the quality of the content and the system. The finding of this study, contribute to the growing body of knowledge in managing and marketing tourism destination. This study could be replicated in heritage destination or in other tourism entertainment sectors.

In conclusions, the findings of this study suggest that theme parks should provide and enhance the overall park experience by offering a variety of attractions and value by providing entertaining, aesthetically pleasing, and captivating experiences for visitors to increase visitor satisfaction and revisit intention. To establish an environment and experience that will encourage visitors to consider returning, it is important to understand and manage visitors' satisfaction. The management of theme parks must produce and deliver the emotional experiences that motivate guests to partake in the attractions.

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