The impact of Metaverse Virtual Reality towards Improving Customer Engagement: A Study Based on Online Shopping Clothing Businesses in the Clothing Industry of Sri Lanka

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Abstract

Online shopping is becoming more widespread in Sri Lanka due to its convenience. However, there are still limitations to online shopping, since the two dimensional (2D) images, do not allow customers to experience the level of in-depth experience that physical stores offer. Therefore, the purpose of this study is to examine how the metaverse technology will impact customer engagement for online shoppers in the clothing industry in Sri Lanka. This study identified social factors, interactivity, technological convenience, and motivational factors as the most common independent factors that have an influence on customer engagement when shopping online. These factors were used to study how customer engagement will be impacted by using metaverse technology. A survey was conducted among 100 individuals from Colombo using a structured questionnaire to gather their opinions on using metaverse technology when shopping online. The study revealed that all the factors have a strong positive relationship with customer engagement in a metaverse. The most significant factors are social factors and motivational factors. The individual preferences of the respondents indicate a willingness to try metaverse technology when shopping online.

Key words: Metaverse Virtual Reality, Customer Engagement, Online Shopping

1. Introduction

1.1 Background to the study

Developments in digital technology, including the emergence of the internet, have transformed commercial activities, allowing for new methods of conducting business known as electronic commerce. The concept "online shopping" represents the type of electronic commerce which includes the process of buying products that are sold online (Gabriel, Ogbuigwe & Ahiauzu, 2016). Businesses have pursued to sell their products to consumers who surf the internet since the dawn of the World Wide Web which helps consumers to purchase from the comfort of their own homes while sitting in front of the computer (Kaur, 2013).

Clothing shopping on the internet is becoming increasingly popular (Kim & Kim, 2004). It has been stated that the clothing boom has been spurred by the recent integration of apparel manufacturers towards the continued

encroachment of established shops into the online channel (Schaeffer, 2000). As a result, many consumers prefer to shop online due to its various conveniences (Kaur, 2013). Further, secure digital technologies have resulted in a highly competitive economy with more shopping options than ever before for customers (Kim & Kim, 2004).

However, despite all of the benefits of online shopping, there are also several drawbacks, such as the lack of a physical environment and ambience in which customers may experience and converse with the salesman face-to-face. To combat these issues, online stores have created real-time chat rooms and virtual fitting rooms (Yang, Zhao & Wan, 2010). As a result, the nature of purchasing is changing as technology changes. Not only has the internet changed the way people shop, but so have new improvements in smart and linked devices (Kim et al., 2013). The Metaverse Virtual Reality (MVR) is such a technical innovation that has a significant impact on the shopping experience (Swilley, 2015). The Metaverse is an immersive 3D world based virtual atmosphere where it enables users to interact with one another in a realm powered by technology (Shen et al., 2021). Digital avatars like humans allow them to socialise, shop, and interact more. Three-dimensionality in metaverse retailing allows for a richer purchasing experience across the three virtual channels that represents the real retail establishments (Cagnina & Poian 2009).

With the goal of increasing customer engagement in Sri Lanka's online clothing industry, this dissertation will gain more insight into the relationships between the theories of online shopping and metaverse virtual reality.

1.2 Overview to the Online Clothing Industry of Sri Lanka

In recent years, there has been a huge expansion in the number of Sri Lankan (SL) online-shopping platforms where SL e-commerce platforms grew by 34% in 2018, and the country's e-commerce business sector is expected to reach USD 400 million by 2022. (Ginige & Mahima, 2021). In the context of SL online-shopping platforms, clothing industry is expected to be the future of e-commerce. As stated by statistics and researchers, clothing companies are now paying particular attention to their online presence (Ginige & Mahima, 2021).

SL's internet shoppers, on the other hand, are still conversant with metaverse virtual reality. According to reports, metaverse is becoming the biggest trend in Sri Lankan fashion, with brands developing clothes that exist partially or entirely in virtual space (Fashionating World, 2022). Local multinationals such as MAS, Brandix, Norlanka, and others, which have evolved to be high-value in the Sri Lankan apparel industry, are now increasing their design capabilities with new digitalisation investments. It could even choose to create fashion for the metaverse as a following step (Fashionating World, 2022). Additionally,

telecommunications businesses such as Dialog Axiata PLC, Ideamart, and Innovation Foundry, in partnership with the Google Developer Group Sri Lanka, recently staged the highly anticipated metaverse tech event for the first time in South Asia on May 28. (The Island, 2022). According to Morgan Stanley, the metaverse will add roughly 25% to the entire earnings of the Sri Lankan fashion industry by 2030. (Fashionating World, 2022). In 2021, it would be nearly ten times Sri Lanka's garment export revenues. Nevertheless, the metaverse, according to Yohan Lawrence, Secretary General of the Joint Apparel Association Forum (JAAF), will determine the next decade of fashion in Sri Lanka (Fashionating World, 2022).

1.3 Problem Statement

Most facets of modern society are heavily influenced by technology, and the fashion business is no exception (Sina & Wu, 2019). Social networks and other online media are excellent engagement and two-dimensional communication tools, however, given the nature of this 2D communication, there is the possibility for serious risks associated with 2D static environments, due to its inability for customers to feel a product (Sina & Wu, 2019). But nevertheless, it was asserted that 3D settings provide a physical distribution of information relating to product, texture, motion, and other features. These informational spatial distributions give customers a greater sense of presence in those settings. Thus, compared to 2D static images, 3D virtual displays have a greater local presence and product impact, which affects consumers' impulsive purchasing behaviour (Sina & Wu, 2019). However, Sri Lankan online shopping has yet to adopt 3D settings, and the use of 3D environments in the fashion industry is scarce in the place. Hence, metaverse's vivid, immersive, engaging online shopping experience will encourage more people to buy online. This is true for the clothing industry as well. Therefore, it is important to understand the interest of Sri Lankan online shoppers to adopt to the MVR in their online shopping experience. As a result, this study will look at how desirable it is for online customers to have an engaging 3D-based online shopping experience with metaverse VR.

1.4 Research Aim

The research aim of this study is to examine how the metaverse virtual reality factors impact customer engagement in the clothing industry in Sri Lanka.

1.5 Scope

The survey was conducted among individuals from Colombo city who shop for clothes online.

2. Research Methodology

This study used the quantitative mono research method.

2.1 Conceptual Framework
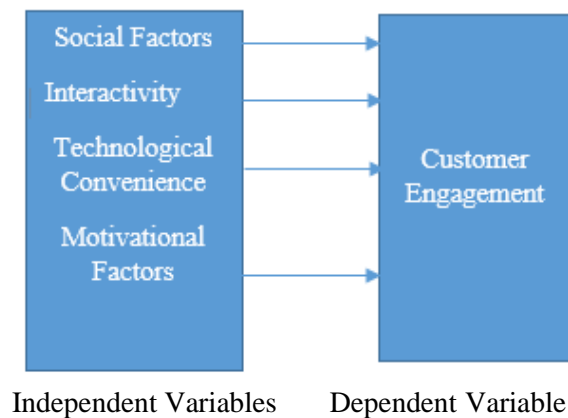
The Conceptual Framework of this study is given in Figure 1.

Independent Variables   Dependent Variable

Figure 1. Conceptual Framework

2.2 Research Hypothesis

H1 – There is a positive relationship between social factors and customer engagement in metaverse virtual reality.

H2 – There is a positive relationship between interactivity and customer engagement in metaverse virtual reality.

H3 – There is a positive relationship between technological convenience and customer engagement in metaverse virtual reality.

H4 – There is a positive relationship between motivational factors and customer engagement in metaverse virtual reality.

2.3 Operationalization Table

The Operationalisation table is given in Table 1.

Table 1. Operationalisation Table

Independent Variables	Measures
Social Factors	Sharing the shopping experiences, knowledge with others
	Giving recommendations
Interactivity	Stronger emotive involvement
	Digital environment of stores
	Drive cognitive and emotional states
Tech. Convenience	Service quality and system quality
	Real-time information
	Responsiveness, compatibility and usability
Motivation Factors	Utilitarian motivation and Hedonic motivation
	Customers repurchase of goods and services
	Enjoyment derived from the highly pleasurable sources

The dependent variable, customer engagement was measured using interaction and communication.

2.4 Population and Sampling

The population of this research is 626,000 individuals who reside in the Colombo City (Macrotrends, 2022). The sample size is 100 individuals. The study used the non-probability snowball sampling method by taking into account its convenience and inexpensiveness.

2.5 Data Collection

The data was collected using Google Forms using a Likert based structure questionnaire.

2.5 Data Analysis

The data was analysed using SPSS software using correlation and multiple linear regression analysis.

3. Findings & Discussion

3.1 Response Rate

A total of 93 valid responses were received out of the 100 questionnaires sent. Therefore, the response rate is 93%.

3.2 Demographic Details

Table 2 provides the summary of the demographic data of the respondents.

Table 2. Demographic Details

Age	
18 - 24 yrs.	45%
25 - 34 yrs.	47%
35 - 44 yrs.	4%
45 - 55 yrs.	3%
Gender	
Male	50%
Female	50%
Highest Education	
O/L	5%
A/L	31%
Bachelors	42%
Masters	15%
Employment	
Student	24%
Employed	71%
Unemployed	5%
Occupation	
Private sector	65%
Public sector	2%
Self-employed	11%
Unemployed	20%

3.3 Cronbach's Alpha Test

The reliability of the variables was examined using Cronbach's Alpha. Thus, in this questionnaire, four independent variables and one dependent variable have been analysed using Cronbach's Alpha Test. The results are shown in Table 3.

Table 3. Cronbach Alpha Test

Variable	Cronbach's Alpha	Reliability
Social Factors	0.801	Very Good
Interactivity	0.865	Very Good
Technological Convenience	0.674	Good
Motivational Factors	0.765	Good
Customer Engagement	0.903	Very Good

As per the reliability test results shown in Table 3, all the variables can be considered reliable, since they are above 0.6.

3.4 Correlation Analysis

The correlation analysis results are given below.

Table 4. Correlation Analysis Results

Independent Variable	Pearson Correlation Coefficient	Significance (2- tailed)
Social Factors	0.622	.000
Interactivity	0.523	.000
Technology Convenience	0.502	.000
Motivational Factors	0.653	.000
Dependent Variable – Customer Engagement		

As shown in Table 4, all the independent variables have a strong positive correlation with customer engagement, since the significance is 0.000 and the correlation coefficients are above 0.5. This results indicates that all the four hypotheses formulated in this study are valid.

3.5 Hypotheses Validation

H1 – There is a positive relationship between social factors and customer engagement in a metaverse virtual reality.

H1 is accepted.

This result is supported by Busalim et al. (2019), who stated that there is a relationship between social factors and customer engagement.

H2 – There is a positive relationship between interactivity and customer engagement in metaverse virtual reality.

H2 is accepted.

This result is supported by Utami, Ekaputra, Japutra & Doorn (2021) who concluded that there is a relationship between interactivity and customer engagement.

H3 – There is a positive relationship between technological convenience and customer engagement in metaverse virtual reality.

H3 is accepted.

This result is supported by Busalim et al. (2019) and Kumar et al. (2017), who found a relationship between technological convenience and customer engagement.

H4 - There is a positive relationship between motivational factors and customer engagement in metaverse virtual reality.

H4 is accepted.

This result is supported by authors such as Xu, Ryan, Prybutok & Wen (2012) and Kim et al. (2013), who concluded that there is a relationship between motivational factors and customer engagement.

3.6 Multiple Linear Regression

The multiple linear regression results are given in Table 5. The R square value is 0.490 which means that 49% of the total variance of customer engagement in metaverse is predicted by social factors, interactivity, technological convenience and motivational factors. This also means that 52.2% of the variance is impacted by other factors.

Table 5. Multiple Linear Regression analysis

Variable	Beta	Sig.
Motivational factors	0.429	0.000
Social factors	0.337	0.001
Interactivity	0.018	0.456
Technological Convenience	0.166	0.693

Based on the regression analysis results given in Table 5, it becomes evident that at 5% significance level, the most significant variables are motivational factors and social factors.

3.7 Descriptive Analysis

The descriptive analysis results based on the the respondents' answers to questions regarding their online shopping experience are summarised in Table 6.

Table 6. Online Shopping Experience

How often do you use internet every day?	
Less than one hour	1%
1-2 hours	12%
2-3 hours	13%
More than 3 hours	72%
I believe online shopping is secure and safe	
Strongly agree	31%
Agree	46%
Neutral	19%
Disagree	2%
Strongly disagree	1%
I am comfortable in using online shopping	
Strongly agree	46%
Agree	31%
Neutral	19%
Disagree	2%
Strongly disagree	2%
I am aware about the risks when using online shopping	
Strongly agree	38%
Agree	47%
Neutral	11%
Disagree	0
Strongly disagree	1%

As shown in Table 6, the majority of the respondents feel that online shopping is safe and secure and they are comfortable using online shopping. They are also aware of the risks when using online shopping.

Individual Preferences

The individual preferences of the respondents in relation to the factors examined in this study were gathered using a 1-5 Likert Scale, where 1 – Strongly Disagree and 5 – Strongly Agree.

Table 7. Individual Preferences

Social factors	Mean
The use of online shopping in my community influences my decision to purchase online	3.91
I share my shopping experience with others via social commerce platforms (Instagram, Facebook, Pinterest, Snapchat, TikTok and much more)	3.76
I like to get to know others experience from online shopping purchases on social platforms	4.42
The sharing of shopping experience on social platforms encourages me to engage more in online shopping	4.23
Interactivity	**Mean**
I like a vivid (realistic) online shopping experience	4.46
I like an engaging online shopping	4.28
I like an immersive (3D virtual displays) online shopping experience	4.32
I like to be able to control my online shopping experience	4.34
Technological convenience	**Mean**
I like to be able to get valuable information about the products I buy	4.69
I like to be able to talk to a digital agent when shopping	4.38
I like a stable and seamless (without delays) online shopping experience	4.70
I like the availability of the purchases at any time of the day in online shopping (24/7 availability)	4.55
Motivational factors	**Mean**
I like to collect information before I make an online purchase	4.62
I find online shopping enjoyable	4.19
I find online shopping convenient	4.32

I am satisfied with my last online shopping experience	4.26
Customer engagement	**Mean**
I would like to be able to interact with other shoppers in the metaverse virtual reality	4.15
I would like to be able to interact with agents in the metaverse virtual reality	4.30
I would like to be able to exchange my ideas and opinions with the community members in the metaverse virtual reality	4.23
I would be highly engaged in the online shopping provided in a metaverse setting	4.26
3D Virtual Displays	**Mean**
I would like to be able to shop for products with 3D virtual displays	4.39
I believe the 3D setting of a product in online shopping would have a greater sense of presence	4.44
The 3D setting of a product would highly encourage my purchasing behaviour in online shopping	4.37

Table 7 shows that the respondents on average, agree with the statements given, since the mean values are 3.9 and above. In terms of the social factors, the respondents are keen on getting to know the online shopping experiences of other shoppers, so that they could make better purchase decisions.

In terms of interactivity, the respondents are very keen on a vivid, realistic online shopping experience, which a metaverse promises to bring.

In terms of technological convenience, the respondents want a seamless online shopping experience without technical issues and lag time.

In terms of motivational factors, the respondents are eager to collect information prior to making their purchase decisions.

In terms of customer engagement, the respondents would like to conduct their online shopping in a metaverse virtual reality in order to improve the interaction and communication with other shoppers.

In terms of 3D Virtual Displays, the respondents would like to shop with 3D Virtual Displays when using online platforms, which they believe will give them a better sense of presence and would probably encourage purchases.

4. Conclusion

In conclusion, the survey results of this study indicate that there is a significant demand for the use of metaverse technology in relation to online shopping in the clothing industry. The respondents are keen on trying the 3D and VR technology in the metaverse to experience a more realistic look and feel for the products, which they believe will help customer engagement, which in turn will lead to better purchase decisions.

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