Understanding user behaviour to use Virtual Reality in Shopping

Nermine Essawi
Assistant Professor
Business Information Systems Department
Arab Academy for Science and Technology and Maritime Transport Alexandria, Egypt
Nessawi@gmail.com

Abstract
The use of shopping online applications is increasing after the covid-19 pandemic since the users used to shop virtually instead of the physical activity. Virtual reality technology is spreading in different fields like education, government and shopping. The aim of the study is to understand the factors that affect the user behaviour to shop in the virtual reality environment is important. Since it will increase the shopping experience and reduce the cost of physical existence of customer in stores.

The model of the study was developed based on Technology Acceptance Model (TAM) and gratification theory including 7 independent variables perceived usefulness, perceived ease of use, informativeness, entertainment, irritation, cost and trust and purchase intention in virtual reality as a dependent variable. An online questionnaire was developed with a convenient sample of 317 responses were collected and analysed. The results showed that all 6 hypothesized relationships were positively correlated (Perceived usefulness; Informativeness, Entertainment, Trust, and Cost) and one relationship is not
significantly correlated which is Irritation hypothesis. The results were presented, conclusions and recommendations were discussed.

Keywords: Augmented reality shopping, Shopping, Technology Acceptance, Gratification.

1. Introduction

Virtual Reality (VR) is considered as one of the important technologies in 20th Century. VR is a technology that provides practical three-dimensional (3D) dynamic through computer simulation (Shin et al., 2019). The digitalization of all areas of human life helps the user to be engaged in the social media and the shopping applications. User Engagement increase in the existence of virtual reality (Slater, 2016; Mystakidis, 2022).

Augmented reality (AR) is a technology that improves the customer awareness and uses real world setting. Customers can control their presence in the real world (Azuma et al., 2001). Where customers in virtual reality were controlled by the system. Virtual reality is completely virtual.

Technology Acceptance model (TAM) identifies how persons use and perceive a new technology (Fatmawati, 2015; Davis, 1989). TAM refers to how users can accept and use a technology. Variables that used to measure the user intention are perceived usefulness, perceived ease of use, and Trust. Previous researchers used TAM to understand the user behaviour (Davis, 1989; Kumar et al., 2016 & Morotti et al.; 2020; Meyers-Levy and
Maheswaran, 1991; Meirinhos et al., 2022; Hassouneh and Brengman, 2020). Gratification theory is also used to understand the user behaviour and the selected variables are informativeness, entertainment, irritation, cost (Hsu et al. 2020). Technology Acceptance model (TAM) is used to measure user acceptance towards new technologies accompanied with gratification theory (UGT). Gratification theory is used to measure the gender effect on purchase behaviour (Katz et al., 1974; Priya & Annapoorni, 2022).

Some brands make use of celebrity approvals to advertise their products and services through virtual reality stores. For example, celebrity endorsers in Pancoatbrand’s in VR store help customers to choose the appropriate clothes (Yuan et al., 2022). The present study aims to identify the factors that affect customers purchase intention to use virtual reality in online shopping during COVID-19 pandemic.

2. Literature Review

Technology Acceptance model (TAM) identifies how persons use and perceive a new technology (Fatmawati, 2015). According to (Davis, 1989), TAM refers to how users can accept and use a technology. Also, it was noted that TAM is the best model to assess the use of information technology. Perceived usefulness and Perceived ease of use considered as an important factors in TAM as they affect the users attitude which leads to behavioural intentions as well as they are associated to intention to implement.
Virtual Reality technology (Davis, 1989; Kumar et al., 2016 & Morotti et al., 2020).
Furthermore the uses and gratification theory (UGT) is a centric approach, it is essential for recognising people’s incentives for choosing media. According to (Katz et al., 1974) identifies that entertainment is an important variable for users; in other words what do customers’ do with the media. The joy that customers can have while shopping can be remarkably amplified by virtual reality shopping (Hsu et al. 2020).
Users in virtual reality feels as if they are engaged and behave as they exist in physical place located worldwide (Slater, 2016). Researchers have deployed Technology Acceptance model (TAM) to measure user acceptance towards shopping in virtual reality where other researchers’ deployed user and gratification theory (UGT) to measure customers purchase intention towards shopping through virtual reality applications(Priya & Annapoorni, 2022).
Augmented reality is a new technology that can be adapted in virtual reality headset through presenting inputs from integrated camera sensors. So, the features of augmented reality through smartphones, tablets and glasses changed the online shopping users activities (Mystakidis, 2022). It allows customer to try cosmetics virtually; Anifa and Sanaji (2022) surveyed online users who bought cosmetics online using a survey questionnaire in Indonesia, they concluded that perceived ease of use had a significant effect on trust, customer experience affects customer
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satisfaction. Moreover, perceived usefulness, and customer satisfaction had significant effect on repurchase intention and trust did not affect repurchase intention.

Zimmermann et al., (2022) investigated the effect of a smartphone-based augmented reality shopping assistant application, which uses personalized recommendations based on user shopping experiences. The authors did an online experiment and a survey. The results showed that augmented reality shopping assistant application affects customers’ perception of brick-and-mortar shopping experiences.

Furthermore, a study done by Priya & Annapoorni (2022) used the use and gratification theory to determine customer engagement and purchase intention of customers. The results indicated that use and gratification had a positive impact on purchase intention and customer engagement.

Speicher and Cucerca (2017) conducted a case study on a Virtual Reality shop prototype. The results indicated that the usability and user experience of system is above average and virtual reality output verified to be the best towards user performance and preference.

A study done by Lin et. al.: (2019) identified that there is a difference between genders in e-commerce. Also, gender differ in what information they must know before choosing to purchase (Meyers-Levy and Maheswaran, 1991). Additionally, a study done by (Meirinhos et al., 2022) tested the effect of gender on users’ intention to purchase with application as well as their
satisfaction. The result illustrated that gender had no effective impact on purchase intention, user satisfaction with the virtual reality experience. Although (Hassouneh and Brengman, 2020) examined role of gender in shaping the shopping behaviour on virtual products. They found that customers shopping behaviour in social virtual world appears to imitate the traditional shopping behaviour for real products in the real world.

In this study, the proposed model was constructed based on a combination of TAM and Gratification to predict the acceptance of shopping in virtual reality addition to cost and Trust variables. The significance of demographic variables (gender, age, income, education, and occupation) was also assessed regarding the model variables.

3. Research Model and Hypotheses

3.1. Overview of the Research Model

The suggested model incorporates 7 independent variables namely perceived usefulness, perceived ease of use, informativeness, entertainment, irritation, cost and Trust. These variables affect purchase intention in virtual reality as a dependent variable (figure 1). Perceived ease of use and perceived usefulness are two main components in the Technology Acceptance Model (TAM) theory (Davis, 1989). Informativeness, entertainment, Irritation are powerful components in uses and gratifications theory (UGT) (Katz et al., 1973; Luo, 2002). According to (Baabdullah et al., 2022; Lee et
al., 2020; Pelletier et al., 2020; Qin, 2020) the user perception and behaviour of interactive and communication technology is explained by uses and gratifications theory. Cost and Trust variables were also added to the model. Finally, the demographic was also tested to identify whose have more intention to use virtual reality in shopping.

Figure 1: Research Model

3.2. Research hypotheses

A. Perceived usefulness (PU)
Perceived usefulness was referred by (Kahar et al, 2019) as the wide range of perks, services that a user observes may leads to transact in the application. Perceived usefulness refer to the degree that users believe in applying a specific technology will improve the user’s performance. Davis (1989) illustrated that
the high PU of applying a system will lead to users confidence in improving positive performance. So the user will implement a system if he believes that the system delivers the benefits needed (Purnama&Widiyanto, 2012). Therefore, the hypothesis can be formulated as follow:

H1. Perceived usefulness affects customers purchase intention to use virtual reality in online shopping.

B. Perceived ease of use

Perceived ease of use (PEOU) was defined by (Davis 1989) as the users can accept using a system with lowest effort which leads to high level of confidence in system. In other words, how simple using a system or application. Also, PEOU referred to how easy and useful to use a specific site with the least effort so the user can be motivated in using technology (Wiwoho, 2019). Where Wilson et al., (2021) explained PEOU as the user’s evaluation of using a new technology that had a positive or negative impact based on the needed efforts to learn the system. So the hypothesis can be formulated as follow:

H2. Perceived ease of use affects customers purchase intention to use virtual reality in online shopping.
C. Informativeness
Informativeness refers to the degree where the user receives usefulness and helpful information from media (Chen and Wells, 1999; Ducoffe, 1995). According to (Capgemini, 2020; Central Statistics Office, 2020; StatistischesBundesamt, 2020) the main reason that users use internet is collecting information about products and services. Therefore the hypothesis can be formulated as follow:
H3. Informativeness affects customers purchase intention to use virtual reality in online shopping.

D. Entertainment
Entertainment refers to the degree to which media is enjoyable and amusing for users to fill the need for entertainment, amusement, dream and relief (Ducoffe, 1996; Luo, 2002). Users are prompted to utilize certain media more frequently than others if they have a higher enjoyment value. So, this will motivate their purchase decision (Huang, 2008). So the following hypothesis is suggested as follow:
H4. Entertainment affects customers purchase intention to use virtual reality in online shopping.
E. Irritation
Irritation refers to the degree to which media annoy users in terms of frustrating, aggressive, complex design choices (Chen and Wells, 1999; Ducoffe, 1996). Ducoffe (1996) identifies that annoying ads increase user worries, which results in dilute user shopping experience. As well as (Hausman and Siekpe, 2009) explain that disordered website leads to decrease in purchase intention and reduce value ads. So the following hypothesis can be as follows:
H5. Irritation affects customers purchase intention to use virtual reality in online shopping.

F. Trust
Trust can be referred as a realm of uncertainty overweighs the interpersonal connections to establish transaction value exceeds product expectations based on user perceptions (Anifa and Sanaji, 2022). As a result, there is an imbalance in the degree of trust needed to tolerate user expectation (Subagio et al., 2018). Febriani & Ardani (2021) explain trust as user believes in the organization, as well as quality of products during online transactions. Also user’s confidence in meeting expectations by supplier who motivate them to accomplish their transactions online (Ali, 2016).

Trust is considered as a variable in purchase intention in using an online application so risk and delay will be reduced by customers (Afshan & Sharif, 2016). According to (Chopra and Wallace, 2003; Papadopoulou and Nikolaidou, 2010) trust can be defined
as the degree of information reliability of acquired like the data accuracy and information quality while using online service. Therefore the following hypothesis is suggested.

H6. Trust affects customers purchase intention to use virtual reality in online shopping.

G. Cost

Cost is referred to the amount to be paid to have something. Cost is considered as a vital variable when buying goods or service whether it is brick and mortar or using application. According to (Venkatesh et al., 2012) there is a relationship between the cost and the benefits that the user receives. So the following hypothesis is suggested as follow:

H7. Cost affects purchase intention in virtual reality.

H. Purchase Intention

Purchase intention is referred to the willingness of customer to buy goods and services (Armitage and Christian, 2003). The intention is a significant factor of implementation and actual usage of a system while applying on TAM (Turner et al., 2010). Purchase intention is dependent variable in the suggested model.

4. Research Methods
4.1. Development of Instruments

An online questionnaire was developed adopted from existing literature and refined based on the specific topic of this study. The questionnaire consisted of 29 items. All items in the survey were measured using a five-point Likert scale ranging from (1) strongly agree to (5) strongly disagree. The demographic characteristics of user was added namely age, gender education, occupation, and income to find whether there is a significant different among users’ demographics with respect to independent and dependent variables. Past research also showed that moderators of age, gender, and income play a substantial role in predicting users’ acceptance of technology (Sharma et al., 2013). A statistical analysis for this study was done using the Statistical Package for Social Science (SPSS) software. Reliability analysis Cronbach alpha was conducted to measure the reliability of factors that affect customers’ purchase intention to use virtual reality in online shopping. the social construct could be considered reliable whenever Cronbach Alpha coefficient is 0.45 or more (Nunnally, 1967). The conceptual and operational definitions of variables are shown in Table (1).
Table 1: Conceptual and Operational Definitions of the variables under study:

<table>
<thead>
<tr>
<th>Variables under study</th>
<th>Conceptual definition</th>
<th>Operational definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived usefulness</td>
<td>Perceived usefulness refers to the degree to which a customer believes that using a system could improve his job (Davis et al., 1989)</td>
<td>Adopted from Zimmermann et al., (2022)</td>
</tr>
<tr>
<td>Perceived ease of use</td>
<td>Perceived ease of use refers to the degree of trust in using a system without requiring a lot of effort consequently customers accept it (Davis et al., 1989).</td>
<td>Adopted from Putri &amp; Iriani, 2021</td>
</tr>
<tr>
<td>Entertainment</td>
<td>Entertainment refers to the degree to which the media is exciting and entertainment for customers to satisfying their need (Ducoffe, 1996; Luo, 2002).</td>
<td>Adopted from Zimmermann et al., (2022)</td>
</tr>
<tr>
<td>Informativeness</td>
<td>Informativeness refers to the degree to which media deliver beneficial information to customers (Chen and Wells, 1999; Ducoffe, 1995)</td>
<td>Adopted from Zimmermann et al., (2022)</td>
</tr>
<tr>
<td>Irritation</td>
<td>Irritation refers to the degree to which using media upsets customers (Chen and Wells, 1999; Ducoffe, 1996).</td>
<td>Adopted from Zimmermann et al., (2022)</td>
</tr>
<tr>
<td>Trust</td>
<td>Trust refers to customers trust in merchants who satisfies their expectations to promote them to complete online transactions (Ali, 2016).</td>
<td>Adopted from Zimmermann et al., (2022)</td>
</tr>
<tr>
<td>Cost</td>
<td>Cost refers to the amount of money paid in order to have something (Venkatesh et al., 2012)</td>
<td>Adopted from Venkatesh et al., 2012</td>
</tr>
<tr>
<td>Purchase Intention</td>
<td>Degree to which users intend to adopt the technology or increase their use of it in the future Liaw, 2008; Ngai et al., 2007; Van Raaij &amp; Schepers, 2008)</td>
<td>Adopted from Zimmermann et al., (2022)</td>
</tr>
</tbody>
</table>
4.2. The Developed Questionnaire

The questionnaire used in this survey was divided into 8 constructs based on the research variables as shown in table 2.

**Table 2: List of Survey Statements / Items by Construct**

<table>
<thead>
<tr>
<th>Construct</th>
<th>Statement(s)</th>
<th>Related studies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. Virtual reality can increase my shopping productivity.</td>
<td>2020; Putri &amp; Iriani, 2021, Hausman and</td>
</tr>
<tr>
<td></td>
<td>3. Virtual reality can increase my shopping effectiveness.</td>
<td>Siekpe, 2009</td>
</tr>
<tr>
<td>Ease of use</td>
<td>4. Virtual reality is easy to learn</td>
<td>Anifa &amp; Sanaji, 2002, Davis, 1989, Putri &amp; Iriani,</td>
</tr>
<tr>
<td></td>
<td>5. Virtual reality is clear and understandable.</td>
<td>2021</td>
</tr>
<tr>
<td></td>
<td>6. Virtual reality is easy to use</td>
<td></td>
</tr>
</tbody>
</table>

Entertainment
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7. Virtual reality is enjoyable. 
8. Virtual reality is pleasing.
9. Virtual reality is entertaining.

Hausman and Siekpe, 2009

Informativeness

10. Virtual reality offers a good source of product information.
11. Virtual reality supplies relevant information.
12. Virtual reality is informative concerning the shown products.

Hausman and Siekpe, 2009

Irritation

13. Virtual reality is annoying.
14. Virtual reality is frustrating.
15. Virtual reality is irritation.

Zimmermann et al., 2022

Trust

16. I am confident in the application. I feel that it works well.
17. Virtual reality in shopping seems very reliable.
18. I feel safe that when I rely on virtual reality, I get the right information

Zimmermann et al., 2022, Hoffman, et al., 2018

Cost

20. Shopping using Virtual reality provide more cost than original shopping.
21. Shopping using Virtual reality are good value for money.

Venkatesh et al., 2012,

Purchase intention

22. I would definitely buy products in Virtual reality.

Zimmermann et al., (2022)
I would intend to purchase products in Virtual reality in the near future.

If it would exist today. It is likely that I would purchase products in Virtual reality in the near future.

I would expect to purchase products in Virtual reality in the near future if it would exist today.

4.3. Data collection

An anonymous online questionnaire was employed in English using Google Forms. A convenience sampling methodology was utilized (Raza et al., 2020) as the target population were from Alexandria, as it is considered a second capital of Egypt. 350 participants were invited by email, LinkedIn, and Facebook Messenger to participate in this survey. The Data collection lasted for 30 days. Of the 350 responses received, after revising and checking missing question responses, 317 responses were considered valid for further analysis. Cronbach’s alpha coefficient was conducted to determine the reliability of the questionnaire. The overall Cronbach’s alpha coefficient showed that the scale is highly reliable, all items were equal or greater than 0.7 as shown in Table 3 (Kannan & Tan, 2005). Respondents’ characteristics are presented in Table 4, where the majority of the sample were female (87.3%), 32.4% were aged above or equal 40 and 60.8% are private employee. and 30.5% had a monthly income range between EGP 10,000 - EGP 15,000. Descriptive statistics showed that there is almost
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increase in the rate of virtual shopping after COVID-19 pandemic.

Table 3: Cronbach’s Alpha Coefficient

<table>
<thead>
<tr>
<th>#</th>
<th>Construct</th>
<th>Cronbach’s alpha</th>
<th>No. of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Perceived Usefulness</td>
<td>0.968</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Perceived ease of use</td>
<td>0.782</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Informativeness</td>
<td>0.943</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Entertainment</td>
<td>0.819</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Irritation</td>
<td>0.802</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>Trust</td>
<td>0.972</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>Cost</td>
<td>0.931</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>Purchase Intention</td>
<td>0.933</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Total number of constructs’ items</td>
<td>0.933</td>
<td>25</td>
</tr>
</tbody>
</table>

Table 4: Respondents’ Profile

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Category</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>40</td>
<td>12.6%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>277</td>
<td>87.3%</td>
</tr>
<tr>
<td>Age</td>
<td>18-24</td>
<td>51</td>
<td>16%</td>
</tr>
<tr>
<td></td>
<td>25-30</td>
<td>61</td>
<td>19.2%</td>
</tr>
<tr>
<td></td>
<td>31-39</td>
<td>102</td>
<td>32.1%</td>
</tr>
<tr>
<td></td>
<td>&gt;=40</td>
<td>103</td>
<td>32.4%</td>
</tr>
<tr>
<td>Occupation</td>
<td>Student</td>
<td>48</td>
<td>15.4%</td>
</tr>
<tr>
<td></td>
<td>Private employee</td>
<td>193</td>
<td>60.8%</td>
</tr>
<tr>
<td></td>
<td>Government employee</td>
<td>36</td>
<td>11.3%</td>
</tr>
<tr>
<td></td>
<td>Entrepreneur</td>
<td>12</td>
<td>3.4%</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>28</td>
<td>8.8%</td>
</tr>
<tr>
<td>% Income</td>
<td>Less than 2000</td>
<td>45</td>
<td>14.19%</td>
</tr>
<tr>
<td></td>
<td>2000-5000</td>
<td>39</td>
<td>12.3%</td>
</tr>
</tbody>
</table>
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<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5000-10000</td>
<td>54</td>
<td>17.3%</td>
</tr>
<tr>
<td>10000-15000</td>
<td>97</td>
<td>30.5%</td>
</tr>
<tr>
<td>More than 15000</td>
<td>82</td>
<td>25.8%</td>
</tr>
<tr>
<td>Total</td>
<td>317</td>
<td></td>
</tr>
</tbody>
</table>

4.4 Testing of Hypotheses

Statistical Correlation test using SPSS software was employed to find the relationship strength between factors (Cronk, 2019). It obtained interrelationship type and direction, the intensity of relationship among factors as well.

All seven hypotheses were supported as shown in Figure 2. The results showed that Perceived usefulness has a significant positive effect on Behavioural intention (R = 0.682; P < 0.01), Informativeness has a significant positive influence on Behavioural intention (R = 0.758; P < 0.01), Entertainment has a significant positive impact on Behavioural intention (R = 0.694; P < 0.01), Irritation has a significant positive effect on
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Behavioural intention (R = 0.693; P < 0.01), Trust value has also a significant positive effect on Behavioural intention (R = 0.832; P < 0.01), finally Cost has a significant positive effect on Behavioural intention (R = 0.8221; P < 0.05). Based on the results of the data analysis above, it is found that trust has the strongest influence of the behaviour in using virtual reality. While irritation value has the lowest effect on Behavioural intention of virtual reality.

In order to confirm the research aim; hypotheses were tested, it was important to test data obtained using different tests. For all questions in the questionnaire simple frequencies were derived. Chi-square test was used to test which are the main factors that affects behavioural intention. The chi-square significance tests, with value equal to 0.05 or less indicates that a dimension is significant, where we can reject the null hypothesis. On the other hand, if the value is larger than 0.05, it indicates that the result is not significant. In other words, we fail to reject the null hypothesis. The research assumes: If H0: \( \mu_1 = \mu_2 = \mu_3 \), accept H0 if significant of variance >0.05. If H1: \( \mu_1 \neq \mu_2 \neq \mu_3 \) accept H1 if significant of variance <0.05.

Logically and theoretically speaking, perceived usefulness is an essential factor for virtual reality, but in order to test whether in reality, the perceived usefulness by users will affect purchase intention in virtual reality or not, chi square tests were used and the results obtained were as follows: Chi square = sig. = 0.000.
The researcher found that the value associated with the perceived usefulness is 0.000, by comparing the value to 0.05, we find that there is significant difference for perceived usefulness with purchase intention, H1 is accepted.

The researcher expects that perceived ease of use will not affect purchase intention as Egypt is a developing country. In order to test this hypothesis, chi square test provided the following results: Chi square = sig. = 0.000. With these values, it has been found that the null hypothesis can be rejected and accept H1. The interpretation is that perceived ease of use affects purchase intention, H2 is accepted.

Gathering information for goods and service is a main reason to use internet. A chi square test is used to test this hypothesis. The results of Chi square are =sig. 0.000. With this result, it has been found that the null hypothesis can be rejected and accept H1. The interpretation is that informativeness affects purchase intention, H3 is accepted.

A higher entertainment value encourages customers to use certain media than other. To test this hypothesis a chi square test is used. The results of Chi square are =sig. 0.000. these explained, the null hypothesis can be rejected and accept H1. The interpretation is that entertainment affects purchase intention. H4 is accepted.

Purchasing from disorganised websites will lead to diminish purchase intention. So, the researcher expects that irritation affects purchase intentions. A chi square test is used. The result was Chi-square = sig. 0.531. By comparing the value to 0.05, we find 0.531 is
greater than 0.05. Therefore, H1 can be rejected and accept H0. The interpretation indicated that there are other aspects that need to be considered in virtual reality. It has been found that the irritation does not affect purchase intention, H5 is rejected.

Trust is an essential factor in online transactions. A chi square test has been used. Results were obtained as follows: Chi-square for employee’s perception = sig.:0.00. The value associated with trust is 0.000, so it is smaller than 0.05, therefore Ho can be rejected. It has been found that trust affect purchase intention, H6 is accepted.

When cost of purchasing goods or service through using a technology is low; so, customers are willing to adapt the application. To test whether the cost will affect purchase intention in virtual reality or not, chi square tests were used and the results obtained were as follows: Chi square = sig. = 0.000. The researcher found that the value associated with cost is 0.000, by comparing the value to 0.05, we find that the cost affects the purchase intention in virtual reality, H7 is accepted.

Table (5) below illustrates the summary to the tested hypothesis.

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Dependent</th>
<th>Independent</th>
<th>Chi square Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: Perceived usefulness affects purchase intention in virtual reality.</td>
<td>Purchase intention</td>
<td>Perceived usefulness</td>
<td>Accepted</td>
</tr>
</tbody>
</table>
H2: Perceived ease of use affects purchase intention in virtual reality. | Purchase intention | ease of use | Accepted

H3: Informativeness affects purchase intention in virtual reality. | Purchase intention | Informativeness | Accepted

H4: Entertainment affects purchase intention in virtual reality. | Purchase intention | Entertainment | Accepted

H5: Irritation affects purchase intention in virtual reality. | Purchase intention | Irritation | Not accepted, Irritation affects purchase intention since P-value more than 0.05

H6: Trust affects purchase intention in virtual reality. | Purchase intention | Trust | Accepted

H7: Cost affects purchase intention in virtual reality. | Purchase intention | Cost | Accepted

### 5. Conclusion and Discussion

#### 5.1. Conclusion

Results approved the acceptance of six hypotheses and reject one hypothesis, which proved that the research model is appropriate to explain the factors of purchase intention in virtual reality in Egypt during. Trust (H7) had the highest significant positive effect on users’ of purchase intention in virtual reality. This highlighted that the accuracy and information quality of online shopping are vital to purchase intention. This finding was consistent with (Chen et al., 2019, Gefen et al., 2003, Kim and
Peterson, 2017 & Priya & Annapoorni, 2022) who found that trust has a strong and positive influence on purchase intention in virtual reality. Since trust had the most significant positive effect on users’ purchase intention in virtual reality. Accordingly, developers must seek to increase the level of trust by providing more accurate and trustworthy information and offer sophisticated systems to protect customer’s information.

The second largest significant impact on users’ purchase intentions in virtual reality is cost (H6). The results are in line with other study (Alpay et al., 2010 & Thusi and Maduk, 2020). This study confirms a positive and a significant relationship of cost with users’ intention to adopt online system. Since cost was proved to have a great influence on purchase intention, thus, developers should promote to decrease the expenses that consumers have to bear to use virtual reality technology. Additionally, marketers should motivate loyal users to add their friends and family members and award them by providing offers and discount coupons.

Furthermore, informativeness was found to be an important factor that impact users’ purchase intention in virtual reality (H3). This result is well matched with previous studies (Priya & Annapoorni, 2022). This indicates that the information available in online shopping are significant and attractive which encourage them to purchase.
Research findings showed that Perceived usefulness (H1) has a positive effect on purchase intention in virtual reality. This result was consistent with majority of previous studies, (Anifa, & Sanaji, 2002, Puspitasari, & Briliana, 2018). This proved the importance of minimal effort to access virtual reality; in other word the simplest ways to access virtual reality will promote users to repurchase.

Furthermore, perceived ease of use (H2) had a significant impact on purchase intention in virtual reality. This supported by previous studies (Keni, 2020, Anifa, & Sanaji, 2002 & Aditya & Wardhana, 2016). This explains that the customer will repurchase the product or service if there is a clear perception of ease of use of technology free from obstacles when working; which will increase the trust. The more the customer can conduct any action with minimum effort, the more will be the purchase intention.

Also, entertainment (H4) had a positive impact on purchase intention in virtual reality. This supported by Zimmermann et al., 2022, this explains that the more the entertainment the more the customers will use the technology.

On the other hand, it was found that Irritation value (H5) has no significant impact on purchase intention in virtual reality, this result is well-matched with Zimmermann et al., 2022. So, virtual reality developers should work more on creating user friendly interface, reliable, efficient, and accessible system to enable
higher adoption rates. Finally, marketers also should focus on mid age group, with high in their marketing campaigns concerning virtual reality.

5.2. Theoretical and Empirical Contribution
This research demonstrated an extended model of technology acceptance model and gratification theory in addition to two essential variables (cost and trust) to inspect the factors that determine customer purchase intention in virtual reality COVID-19 pandemic. The proposed model was tested using Statistical Correlation test. The results showed that the 6 hypothesized relationships were all significant and 1 is insignificant.

5.3. Practical Implications
The results of this research can be used by marketers to take the opportunity and to promote more to virtual reality during Covid-19 pandemic particularly in Egypt. Virtual reality is more accessible in games, applying it in shopping will help in personalize the shopping experience. This helps stores to avoid customers cancellation of orders. As well as helps customers to take decision whether to purchase or not quickly. Also it allows customers to browse different items and fitting more by immersing customers in online shopping experience.

5.4. Future Recommendation
Sample used in this research is convenient and do not reflect the viewpoint of the entire population, as the survey was conducted in Alexandria only. For future research, this model may be
extended considering other cities in Egypt to generalize the results. Moreover, comparative analysis of developed and developing countries can be made to investigate the main difference in other cultural backgrounds. Also, other variables can be added such as cultural moderators.

References
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