Perceptions of Using Augmented Reality Features on Online Shopping Fashion Platforms Based on Technology Acceptance Model

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***Abstract* — This study aims at measuring consumer perceptions of the Augmented Reality (AR) feature on an online shopping platform for fashion products online shopping. The current use of the internet affects the rapid growth of online business. However, there are many consumers who still feel worried when shopping online because they feel that the products, they get are not suitable with their expectations. Concerning these matters, technologies that combine the virtual world with the real world through the Augmented Reality feature emerge. This feature is expected to provide a new experience to consumers through 3D visualization through a mobile phone camera where consumers can try products and choose the items they want. Research design, statistical software is used for data processing to see how respondents understand the questionnaire that has been. The study was aimed at 200 respondents who had used the Zara App with the age range of 17 – 24 years or generation Z because they grew up in the internet era and socially interacted a lot through social media. The result shows that consumers' perceptions of AR feature in virtual shopping can provide convenience, benefits, and pleasure when adopting AR, as well as to create engagement with consumers.**

Keywords*: *Digital Business, Augmented Reality, Virtual Shopping, Inter-platform Engagement, Brand Interest

I. INTRODUCTION

In Indonesia, the number of internet users continues to rise. According to the Association of Indonesian Internet Service Providers' survey (APJIII) [1], data shows that internet users in Indonesia continue to increase constantly every year. In 2020, there were 196.7 million internet users, an increase of 25.53 million users compared to 2019 with 171.17 million users. Through data from the same survey agency, it is known that 62% of internet users visit online stores, of which 34.2% is used for personal business purposes, and the remaining 3.8% is used for other purposes. However, according to MARS is a survey that was conducted in the United States [2], it shows that 32.7% of consumers do not shop online because they cannot try the products they look for. Think Mobiles believes that this does not occur only in Indonesia [3]. Shoppers find it difficult to imagine the things they want on internet stores, which is why 54 percent of customers globally prefer to purchase in traditional stores. Consumers become skeptical and put more consideration when They wish they could try products at home before purchasing them from online businesses when they shop online. On the other hand, Databoks [4] sees the growth of global e-commerce is almost three times the value of the revenue (US$ 1.3 trillion) in 2014 and is estimated to increase to US$ 4.5 trillion in 2021. Through research on e-commerce platforms, data shows that in 2017 the volume of online transactions was 1.66 billion consumers and is estimated to increase to 2.14 billion consumers by 2021. [5]. As a result, online shopping will have a bright future. Seeing the magnitude of consumer interest in shopping online, of course, business actors need to put efforts in eliminating consumers' doubts. According to a report from Tractica [6], the effort could be undertaken, among others, is by developing Augmented reality features. Through the implementation of e-commerce with augmented reality, consumers would feel that the virtual shopping feels real and become a new solution and way to face all challenges in online shopping as the consumers are able to touch the product and make reviews. According to Think Mobiles [3] the development of augmented reality technology makes 63% of consumers believe that it will provide a different shopping experience, 35% of consumers may shop more often, and 22% of consumers say that they are unlikely to have AR available in the online store, please visit the offline store. Besides, 70% of consumers expect they could be more loyal to brands that use AR as part of their shopping experience. According to Nima [7], Many significant multinational retail firms, such as IKEA, Kabaq, SEPHORA, Cheirish, and others, have implemented AR. Meanwhile in Indonesia, AR applications in e-commerce are still rare. ZARA Fashion is one of the online shopping platforms that recently developed this AR function. Shoppers can download the Zara app available on iOS and Android to have the experience. After downloading, shoppers point the phone at a specially arranged window or podium in the store to activate an augmented reality fashion show experience.

Dressed in trendy looks from the studio's current collection, models Léa Julian and Fran Summers pose, talk, and wave in 12 short scenes – and give shoppers a chance to see how an outfit would actually look and move in real life. If shoppers like what you see, shoppers can purchase the outfit as a whole or item by item with the touch of a button in the app or in-store. In previous research, McLean and Wilson [9 centered on shopping in the digital age by involving external variables (AR attributes) and three other variables, namely technology attributes, Platform Engagement, and Interest in Using Brands.

The technology attribute is related to the Technology Acceptance Model variable developed by Davis [10]. The result showed that there was a significant correlation between variables and a strong influence Interactivity and vividness factors have an effect on subjective norms, while novelty has

an effect on perceived ease and usefulness. McLean and Wilson's investigation [9] To acquire generalizable conclusions, they must be confirmed and validated in many circumstances. For this reason, the upcoming research will focus on fashion products on the ZARA a measurement platform consumer perceptions of AR attributes (novelty, vividness, and interactivity), Technology Acceptance attributes (Perception of Ease, Perceived Usefulness, and Pleasure), Platform Attachment, and Interest of Using Brands. The results of this study contribute to the development of knowledge in the field of information systems, especially the ability of models that play a role in the performance of e-commerce online shops and is expected to contribute to the field of science AR technology allows users to see the real environment, with virtual objects added to or combined with the real environment.

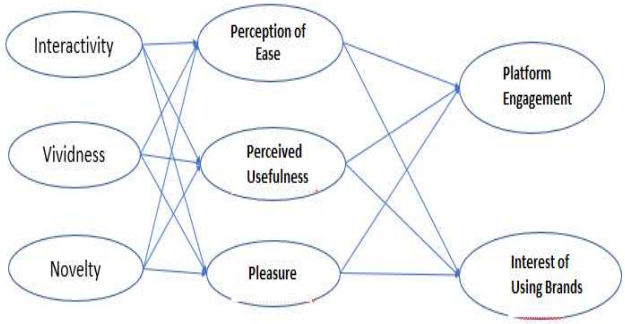

Fig. 1. Model of Research

Augmented reality technology provides virtual products to be studied in place of physical products. Augmented reality brings more information about the product, improving the visualization of the subject. Alternatively, AR is also being used in stores because in April 2018 Zara used technology in their store window displays and designated in-store places to show virtual catwalks with models wearing selected clothes [21].

II. LITERATURE REVIEW

A. Augmented Reality Attributes

Augmented Reality is used as a direct view of the real world by adding information virtually [11]. AR was developed not only for entertainment purposes, but marketers can also use it as a shopping experience [12]. In the application of AR, there are three characteristics that need to be considered [9]. First, merging the real world with the virtual world or Interactivity. Second, visualization of images clearly and in detail or Vividness. Third, the information provided is different and specific or Novelty.

B. Technology Acceptance Attributes

The Technology Acceptance Model (TAM) is a set of information systems for online consumer behavior that is based on individual acceptance or rejection of technology. [13]. The use of technology, whether directly or indirectly, is influenced by the purpose of use, attitude, benefits and convenience. However, there are some drawbacks, it is advisable to expand the context. One of the suggestions is "perceived pleasure", where the variable not only indicates performance, but also provides pleasure [12]. This expansion is implemented through technological development in the form of Augmented Reality where users would be able to have different experiences and get a perception of pleasure.

C. Platform Engagement

Business conducted through the platform will be different from traditional businesses, which produce products from upstream to downstream through distribution networks. On the other hand, the platform is the downstream of the upstream process, so that everyone can directly participate and interact and trade. Engagement itself can be defined as the degree to which the audience's physiological state changes due to media stimulation of the physiological response [14]. This engagement affects a person's mental readiness for consumption decisions and actions. Hollebeek, et al. [15]. Platform engagement can be concluded as user engagement through cognitive, affective, and behavioral processes in their use of the platform.

D. Interest in Using Brands

The possibility of a person to behave is influenced by the strength of one's intentions. This intention can be easily created because too much shopping is a hedonic experience [16]. Consumer satisfaction for a fantasy and pleasure can be fulfilled through store hopping and can increase a person's emotions [17]. Intention to use a site is as important as using a brand because one's experience will determine attitudes in taking action and determining shopping activities [18]. Thus, the intention to use the brand is generated on a person's emotions through affective involvement such as feelings and moods.

III. METHODOLOGY OF RESEARCH

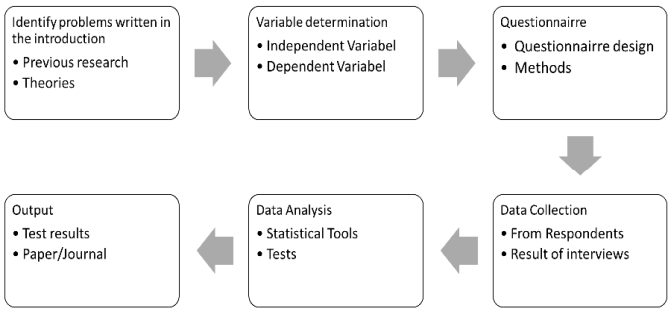

Fig. 2. Research flowchart

Our research is based on the research process shown in “Fig. 2” First, conducting the research by identifying the problems mentioned in the introduction. In addition, this study is based on previous research in theory and literature research. Second, using operational variables as a requirement for making questionnaires. Third, designing a questionnaire and distribute it to respondents. Fourth, collecting complete data online. Fifth, analyzing the data that has been processed. Sixth, achieving results through written recommendations. Finally, prepare a report by writing a scientific article. This study's research design is descriptive, with the goal of determining the relationship between two variables based on existing phenomena. The variables that were measured are the correlations between Augmented Reality attributes, Technology Acceptance Model (TAM) attributes, Platform Engage Technology Acceptance Model (TAM) qualities and Augmented Reality attributes ment, and Interest in using the

brand in the context of using the Zara AR App on Zara retail platform. The selection of respondents was done by using a sampling technique, namely convenience sampling and purposive sampling to more than 200 respondents from generation Z with an age range of 17-24 years because that generation grew up in the internet era and is a majority. In collecting data, this study used a questionnaire containing 30 items with a Likert scale of 1-5 (strongly disagree - strongly agree) that have been developed from previous research and distributed online via google form or paper.

The questionnaire consists of two parts, the first is about the variables to be tested and the second is about the respondent's profile. The questionnaire has been tested first using statistical software to test the respondents' understanding of the points given. The final data analysis used partial least squares for testing, and performed statistical descriptive analysis, testing validity, reliability and mean. The validity test aims to test the accuracy of the data collected, and uses two validity tests, namely discriminatory validity and convergence validity. The purpose of the convergence validity was to check the accuracy of the data collected and measured with external load and AVE, and the standard figure was > 0.5. The standard value of the discriminant which aims to determine the validity of the relationship between tools is <0.9. In addition, the Cronbach alpha indicator with a standard > 0.7 was used to analyze the feasibility analysis which aims to measure the stability and credibility of the data collected. In addition, when briefly describing the conditions of the research objective, this study will also measure descriptive analysis based on the mean and standard deviation.

IV. RESULT AND DISCUSSION

In this study, Statistical software is used for data processing to see how respondents understand the questionnaire that has been made and the resulting number of respondents is 200 respondents who are women and from generation Z.

A. Respondent Demographics

The profile of respondents in this study will be described in table 1. All respondents from this study are women because they focus on women's clothing as the object of research which is dominated by women. The profiles of the 200 respondents who have been collected is as follow; the respondents are dominated by the age of 21 years as many as 58 people, the age of 20 years 56 people and the remaining 86 respondents aged 17, 18, 19, 22, 23 and 24 years of high school 142 students, 47 private employees, 8 housewives, 3 entrepreneurs and an average monthly income of < 2,000,000. The level of education of 123 respondents was high school.

TABLE I. RESPONDENTS DEMOGRAPHICS

Profile of Respondents		
Description	**Frequency**	**Percentage**
Age		
17	9	3,83
18	10	4,26
19	14	5,96
20	56	23,83
21	58	24,68
22	24	10,21
23	22	9,36
24	7	2,98
Occupation		
Housewife	8	3,40
Private sector employee	47	20,00
Students	142	60,43
Entrepreneurs	3	1,28
Income (IDR)		
< 2.000.000	113	48,09
> 5.000.000	44	18,72
2.000.000 - 5.000.000	43	18,30
Level of Education		
Diploma	7	2,98
Other	4	1,70
Bachelor	66	28,09
High School	123	52,34

B. Validity and Reliability Test

An indicator is considered valid if it has an AVE value and all outer loading has a value > 0.5 [19]. As for reliability, it can be seen through Cronbach's Alpha and Composite Realibility > 0.7 [20].

TABLE II. VALIDITY AND RELIABILITY TEST

Construction	**Outer Loading**	**Cronbach's Alpha**	**AVE**	**CR**
Interest of Using Brand		0,763	0,588	0,810
Prefer to use based on experience	0,763			
Preferred over competitors based on features	0,727			
Preferred over competitors based on knowledge	0,808			
Interactivity		0,830	0,552	0,786
Ability to control navigation	0,830			
Ability to control content	0,685			
Ability to respond to specific needs	0,706			
Novelty		0,679	0,590	0,811
Offers experience	0,679			
Offers unique information	0,826			
Features different than usual	0,792			
Perception of Ease		0,786	0,563	0,865
Easy to use	0,786			
Easy to learn	0,790			
Easy to adopt	0,734			
Clear and understandable	0,779			
Flexible	0,654			
Perception of Pleasure		0,735	0,566	0,796
Exhilarating	0,735			
Comfortable	0,782			
Having fun	0,739			
Perception of Benefit		0,768	0,516	0,882
More effective	0,768			

Saving time	0,667			
Improve quality	0,669			
Product Search	0,770			
Finish shopping	0,723			
Faster	0,708			
Useful in shopping experience	0,717			
Platform Engagement		0,697	0,515	0,807
Thinking about platforms	0,807			
Product search within the platform	0,612			
Demanded to write review on the platform	0,637			
Spending a lot of time on the platform	0,792			
Vividness		0,920	0,808	0,944
Clear interface	0,872			
Detailed interface	0,929			
More alive interface	0,926			
Interface can be well defined	0,867			

Based on Table 2, it can be seen that all AVE and outer loading values are > 0,5 and Cronbach's alpha and composite reliability values are > 0,7. The smallest value for outer loading is 0,612 on the product search indicator on the platform. It means that the indicators used in this study have met convergent validity or valid. Cronbach's alpha value for each variable is 0,763 for Interest in Using Brands, Interactivity 0,830, Novelty 0,679, Perception of Ease 0,786, Perception of Pleasure 0,735, Perception of Benefit 0.768, Platform Attachment 0,697 and Vividness 0,920. Furthermore, the AVE results have also met the assessment criteria with the value of Interest in Using Brand 0,588, Interactivity 0,552, Novelty 0,590, Perception of Ease 0,563, Perception of Pleasure 0,566, Perception of Benefit 0,516, Platform Attachment 0,515, and Vividness 0,808. This means that all constructs have met the assessment criteria. Based on these numbers, it can be concluded that all indicators are valid and reliable so that research can be carried out for further in-depth analysis of consumer perceptions of the use of AR features.

C. Descriptive Analysis

Descriptive analysis test is seen based on the average value and standard deviation to briefly describe the research objectives. Table 3 shows that most of the respondents gave a fairly good score with an average value of > 3 and > 4 for each question indicator and variable ranging from Interactivity, Vividness, Novelty, Perception of Ease, Perception of Benefit, Perception of Pleasure, and Platform Attachment to Interest. Using Brands. Interest in Using Brands AR attribute shows the highest average value of 4,24 which indicates that AR features provide a unique and new experience. On the other hand, the smallest result, namely AR Platform Engagement of 3,70, indicates that the clarity of the image generated from the AR feature still needs to be improved. From the two largest and smallest results, it can be concluded that respondents often use Zara as a product search platform. Furthermore, respondents assessed that the visuals displayed through Zara Fashion had not been displayed in detail. The assessment is still said to be good because it has a scale of > 3 (medium), but this value can be further improved in order to achieve the level of user satisfaction and support other variables.

TABLE 3. DESCRIPTIVE ANALYSIS

Constructs	**Mean**	**SD**
Interactivity	3,87	6,282
Vividness	3,91	7,448
Novelty	3,78	7,514
Perception of Ease	4,20	6,462
Perception of Benefit	4,02	7,389
Perception of Pleasure	4,16	6,652
Platform Engagement	3,70	8,353
Interest in Using Brands	4,24	6,745

Based on Table 3, it is known that consumer perceptions towards the use of AR features can be said to be good. Through AR, consumers can experience convenience, benefits, and pleasure. In building a good AR, it is necessary to develop technology through AR features that can be applied by online business people. By implementing AR features, consumers will be given a different and unique experience where the experience is still rare and potential to add competitive value. In addition, it is necessary to clearly present 3D images where consumers get a clear representation of the product from the color, image of each item, type, to image details. The clarity of the image can eliminate consumer doubts in shopping online because of the product description that is offered virtually but provides a real experience.

V. CONCLUSION

This study examines the effect of implementing the Augmented Reality feature in building Platform Engagement and Interest in Using Brands with the Technology Acceptance Model (TAM) theory. Through our research, it is known that, in general, the application of AR features in the online shop business creates a positive perception among users. The main thing that consumers feel in using AR features is that these features provide a unique and different experience for consumers because they are rarely found on other online shop platforms. Users also consider that the AR features on online business platforms can provide convenience and benefits because they help consumers review products. Besides these two values, another thing that is obtained is pleasure. In addition to getting shopping efficiency, consumers also feel happy when using the platform because of the additional AR features. That way, consumers can save shopping time and eliminate doubts about buying products online because of the virtual product picture. Based on the results of the research, marketers need to take advantage of technological developments in creating different businesses that can create values. Through the application of this AR feature, it helps marketers to eliminate consumer doubts in doing online shopping because it can provide a real picture of a product through a virtual experience with image clarity and time efficiency offered.

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