The Use of Technology Acceptance Model to Explain Brand Attitude and Loyalty Intention in E-Commerce: The Gamification Case

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THE USE OF TECHNOLOGY ACCEPTANCE MODEL TO EXPLAIN BRAND ATTITUDE AND LOYALTY INTENTION IN E-COMMERCE: THE GAMIFICATION CASE

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Abstract

Manuscript type: Research Article
Research Aims: This paper analyses the role of the Technology Acceptance Model (TAM), perceived enjoyment, perceived social influence, consumer intention to engage, and brand loyalty in the context of gamification in e-commerce.
Design/methodology/approach: Online survey was conducted to collect data, and Partial Least Square (PLS) was used to analyse the effects among variables.
Research Findings: The study found that perceived usefulness, perceived social influence, and perceived enjoyment had a positive effect on brand attitude, while perceived ease of use had an insignificant impact on brand attitude. The brand attitude was found to have a significant effect on loyalty intention.
Theoretical Contribution/Originality: This research elaborated on the role of TAM in using the gamification method for intention to engage, brand attitude, and its effect on loyalty intention.
Practitioner/Policy Implication: The company that applies gamification should develop a fun and interesting game to create engagement. Emotional bonding and a positive consumer feeling must be maintained to build consumer loyalty.
Research limitation/Implications: The external factor such as subjective norm, design, image, job relevance, technology efficacy influence, the level of perceived usefulness, and ease of use.

Keywords: Technology Acceptance Model (TAM), perceived enjoyment, perceived social influence, brand loyalty, gamification, e-commerce.

INTRODUCTION

Many businesses compete to find the most effective way to create consumer engagement. Advertising as a survival strategy is seen as inadequate to win the market, specifically to generate consumer engagement or loyalty. It requires technology and a new method to increase interactivity and fun to achieve the marketing objective. According to Das et al. (2018), through McKinsey research, from 2017 to 2022, the e-commerce market in Indonesia is predicted to ascend by eight times, from $8 billion (2017) to $55 to $65 billion (by 2022). The e-
marketplace has been dominated by several e-marketplaces such as Lazada, Tokopedia, Shopee, Elevenia, Bukalapak, Blibli, and Matahari Mall Australia (Commonwealth of Australian, 2018). Here, due to intense competition from each e-commerce, they should be able to place their best strategy to attract the consumer. A company should start to build a relationship with the customer through interactivity. A study by Hollebeek et al. (2017) mentioned that through interactivity, the consumer would have preponderant attention and a more profound cognisable process of relevant data and knowledge. A customer's interaction with the organisation will produce higher experiences (Lemon & Verhoef, 2016).

One of the many methods to create a high experience in e-commerce is through gamification. Gamification will intensify the creation of the consumer experience and consumer engagement in the non-games context (Domínguez et al., 2013). It is widely used as a technique in many fields, including for marketing purposes (Yang et al., 2017). In the e-commerce industry, gamification has grown to attract consumers and create fun and engagement for the brand. Gamification can also trigger the consumer to be more motivated to perform desired tasks and actions (Johnson et al., 2017). It also can be used to let consumers repeat buying the product and service. The concept of gamification is to give a reward to the consumer, and the reward, as the result of winning the game, can be varied, such as in the form of points, badges, or virtual goods (Schöbel et al., 2020).

A study by Gartner Inc. projected that in 2015 more than 50 percent of organisations that managed innovation processes would gamify those processes, which were driven by novelty and hype (Vesa et al., 2017). Gamification is used in many sectors, such as education, business, lifestyle, and organisation, to increase the engagement of students, consumers, or workers in an organisation. It contains challenges, fun, and competition. According to Walsh (2014), gamification increases engagement and achievement.

Even though some businesses have attempted to apply gamification in their business strategy, the study research needs to be explored more - especially by using Technology Acceptance Model (TAM).

The study aims to contribute to the development of the Technology Acceptance
Model (TAM) through the case of gamification in e-commerce. Most studies do not explore the impact of brand attitude on the intention to engage and loyalty. The research aims to give an insight into the business practices that apply gamification in e-commerce to understand the use of the TAM model to develop brand attitude, intention to engage, and loyalty.

The purpose of this paper is twofold: The first is to investigate the use of the Technology Acceptance Model (TAM) that directly or indirectly affects behavioural intention in gamification. The second is to examine whether brand attitude will affect consumer loyalty in gamification, which many papers have yet to study today.

LITERATURE REVIEW

According to Foxman (2014), gamification in the leading edge is a notion that the game player uses to overcome the problem in the digital game and different natural industries, such as social or political situations. The concept of gamification is a new way that can be used as a business model and related world most admirer companies signing on (Konrad, 2011). In marketing and entrepreneurship, gamification has been used to create consumer engagement because it is beneficial to entertainment and fun in nature. It has proliferated in recent years throughout the marketing industry and, by extension, in the market research (Donato & Link, 2013). It could drive competition and reward that works for a different population so that various consumer demographics can accept it. The gamification technique could motivate consumers to achieve the measurement tasks but not drive or change the measured behaviour. It can drive purchase behaviour and encourage consumers to do tasks beyond their consent. When consumers critically look for information, gamification can be effectively used without menacing them.

According to Yam et al. (2017), gamification can also be considered a serious game. A serious game here can be used for business purposes to build an intention to buy. Donato and Link (2013) mentioned that "Gamification" would allow a researcher to comprehend the consumer's process way of thinking, motivating them to participate in a game. It is a process that drives intense gameplay to consumer measurement through the implementation of psychological and sociological factors. In their study, mentioned that one of the advantages of using gamification is the possibility of creating an engaging and enjoyable education process.
The same benefit is also helpful in the marketing context to create an engagement.

According to Gatautis et al. (2016), there are three core types of gamification: website components, process-related components, and social components. Website components can appear as visual indicators (badges or small images) on the gaming website aside from the use of a profile by using badges or small images. It shows the indicators of activity completion. A process-related component is a type of element that allows the users to show their progress through a visual bar or unlock a new challenge after the past achievement skills. It also can be demonstrated through the indicator of the percentage achieved.

Meanwhile, social components attempt to offer the fun part of the game to increase motivation. This match element will intensify the interaction among game players and create the possibility of collaborating, make the team or providing a gift to another player. The game players would receive an acknowledgement from their peers when they achieve the goal since it will appear on the leaderboard.

**Perceived Usefulness**

Lai (2017) defined perceived usefulness as the capacity of a consumer with a subjective tendency to use a specific system (game) to advance their action. It is also mentioned that Perceived Usefulness as an independent notion is the Technology Acceptance Model, defined as the extent to which consumers consider that using technology will broaden their performance (Davis et al., 1989). The perceived usefulness of the gamification marketing process can influence the customers' attitudes toward the brand (Huseynov & Dhahak, 2020).

**Perceived Ease of Use**

Perceived ease-of-use (PEOU) was identified by Davis et al. (1989) as the degree to which a person thinks using a particular system does not require effort. It is the extent to which the user hopes the system will be uncomplicated. The user using the technology will find it easy to use new technology and believe it will make their job easier (Joo, Park & Lim, 2018). Schlag and Imhof (2017) stated that perceived ease of use affects attitude to use technology due to its easiness in use (computer self-efficacy). Computer self-efficacy is used to predict perception and subsequent acceptance and use of the system among specific target user groups.
**Brand Attitude**

Brand attitude refers to agreeing or disagreeing with a specific matter (a product, service, brand, package, advertisement, or store) that comes from the learning (Schiffman & Wisenblit, 2018). The attitude is built from consumer learning that tends to be permanent. It consists of a broad assessment of another person, self-evaluation, a specific item, promotional content, or a topic. When a consumer evaluates, it will be referred to as the same object called an attitude toward an object (Solomon, 2020).

Attitude, according to Technology Acceptance Model, predicts behaviour. Consumer attitude can be positive and negative; the more positive the attitude, the more positive the customers' behaviour (Liu et al., 2012).

**Intention to Engagement**

In social media, the intention to engage is the degree to which a consumer considers engaging with a brand's touch point. Consumers usually show their engagement on social media by commenting or sharing content (Coursaris et al., 2016). Depicted as energy, involvement, and efficacy is the state of engagement (Kim, Kim & Wachter 2013). Engagement is a persistent and pervasive cognitive-affective state rather than impermanent. It has arisen in marketing research as a substantial idea bound explicitly with a solid behavioural focus (So et al., 2016).

**Perceived Social Influence**

Social influence is defined as the change in behaviour, thought, feeling, or attitude that a person or group excites in another, aware or unaware, as a part of the way remodelling a consumer's perspective or their relationship with the influential party and society (Huseynov & Dhahak, 2020). The perceived social influence will strengthen a consumer's trust to use technology (mobile technology or email), which is measured by the subjective norm (Beldad & Hegner, 2018). The people around the consumer, whether family, friends, working partners, or teachers, will influence a consumer to adjust to a specific issue to gain acceptance.

**Perceived Enjoyment**

Perceived enjoyment can be used in various contexts, such as education, business, or entertainment. It helps the consumer enjoy the product or service by expanding consumer compliance. The consumer who
receives enjoyment will be enthusiastic and be guided to repeat the activity (Darvishi et al., 2019). However, the impact of enjoyment on brand attitude has yet to be evaluated in the gamification context. One of their studies suggested that the expectations of social networking service (SNS) users from entertaining advertisements positively impact their attitude toward advertising on SNS. This statement also supports this view, arguing that perceived enjoyment is one of the primary influences on consumer attitudes toward promoting e-commerce (Lana & Benjamin, 2001; Gao & Koufaris, 2006). In a study by Kakabadse et al. (2008) on the case of student compliance with an internet-based learning medium, it was found that enjoyment directly influences behavioural intention but indirectly influences attitude.

**Brand Loyalty**

Brand loyalty is created due to the consumer satisfaction with the remaining brand they have brought or chosen and do not try a new brand to avert the risk. The risk level of the consumer varies for different people. Consumers with an immense perceived threat tend to be devoted to the old brand and avoid purchasing a new product. However, less knowledge about a product will consider an established brand (Schiffman & Wisenblit, 2018). Overall, consumer satisfaction has been described in the attitudinal dimension, while the tendency of a consumer to purchase a particular brand over time represents the behavioural dimension (Liu et al., 2012).

**Technology Acceptance Model (TAM)**

This research used Technology Acceptance Model (TAM) to represent its effect on engagement and loyalty. Introduced by Davis Jr (1985), TAM is an adaptation of the Theory of Reasonable Action (TRA). The Technology Acceptance Model posits to model the users' acceptance of information systems or technologies. The TAM uses two specific beliefs: perceived usefulness and perceived ease of use, to predict consumer attitude and behavioural intention, as seen in Figure 1.

![Figure 1. Technology Acceptance Model (TAM)](image-url)

In the beginning, Icek (1991) refined the Theory of Planned Behavior to discover the behavioural intention of consumers’ attitudes toward their behaviour. This theory was
adapted from the Theory of Reasonable Action developed by Fishbein and Ajzen (1975) (Ajzen & Fishbein, 1975). TRA was finally adapted to focus on creating the modelling user's acceptance of information systems or a technology known as the Technology Acceptance Model.

This research was developed from the Technology Acceptance Model, in which the variable perceived usefulness and perceived ease of use were used to find its effect on the brand attitude and intention to engage. Perceived social influence and perceived enjoyment were added according to several studies that mention both variables matched with gamification. Gamification is a game that can create social influence, fun, and a willingness to engage with the company's brand. This research explored the effect of brand attitude on loyalty intention.

**RESEARCH MODEL AND HYPOTHESIS**

*The Effect of Perceived Usefulness on Brand Attitude*

The research of Yang et al. (2017) showed that brand attitude had been predicted by perceived ease of use. According to Anouze and Alamro (2020), perceived usefulness positively affects attitude. The same research conducted in the context of mobile advertising also showed that perceived usefulness positively influences attitude (Parreño et al., 2013). The study of e-commerce also stated that consumer attitude is affected by the perceived usefulness (Gunawan et al., 2019).

**H1: Perceived usefulness has a positive and significant effect on brand attitude**

*The Effect of Perceived Ease of Use on Brand Attitude*

The study by Barreto et al. (2018) mentioned that ease of use as a part of website quality impacts the consumer attitude (destination). Gunawan et al. (2019) also stated that perceived ease of use did not affect consumer attitudes toward e-commerce. Similarly, Yang and Kenneth (2010) study found that perceived ease of use positively influenced brand attitude. However, Yang et al. (2017) described that perceived ease of use is not
seen as a predictor of Brand Attitude. Perceived ease of use will likely influence a consumer's attitude or behaviour in a system or technology context. Initially, it might not influence their attitude or behaviour for an extended period to create engagement.

**H2: Perceived ease of use has a positive and significant effect on brand attitude**

**The Effect of Perceived Social Influence on Brand Attitude**

Yang et al. (2017) research showed that perceived social influence was a predictor of brand attitude. Similarly, Djuhardi (2017) found that brand image significantly affected attitude in the context of counterfeit products. This study was also supported by Bhatia (2018), mentioning that perceived social influence in the case of a counterfeit product affects the attitude, especially the low income. Hamari and Koivisto (2013) showed that perceived social influence contributed to the attitude and intention towards gamification. The social aspect here plays the main role in game playing.

**H3: Perceived social influence has a positive and significant effect on brand attitude**

**The Effect of Perceived Enjoyment on Brand Attitude**

Yang et al. (2017) research showed that brand attitude is predicted by perceived enjoyment. The study was in line with Huang and Cappel (2005) and Kim et al. (2013), who suggested that the most motivation of game players can be found in the fun or entertainment they have received. In addition, the key to the gamification process for marketing can be seen in perceived enjoyment. Wise et al. (2019) and Huseynov and Dhahak (2020), who researched advergames, also found that game enjoyment significantly affected brand attitude.

**H4: Perceived enjoyment has a positive and significant effect on brand attitude**

**The Effect of Perceived Usefulness on Intention to Engage**

Research by Gunawan et al. (2019) mentioned that perceived usefulness positively affected brand attitude. The extent to which individuals have confidence in using a specific system will advance their work. Davis et al. (1989) defined perceived usefulness as the helpful word, meaning "capable of being used advantageously." Yang et al. (2017) stated that the intention to engage had been predicted by perceived ease of use. Hamari and Koivisto (2013) and
Camilleri (2019) mentioned that perceived usefulness is a major determinant of people's intentions to use computers.

\[ H5: \text{Perceived usefulness has a positive and significant effect on the intention to engage} \]

*The Effect of Perceived Ease of Use on Intention to Engage*

Perceived ease of use is a significant secondary determinant of people's intentions to use computers (Davis et al., 1989). Based on the research, Yang et al. (2017) perceived ease of use as not a predictor of intention to engage. The study of Yang et al. (2010) found that perceived ease of use positively affected brand attitude. In preliminary, perceived ease of use can influence individual attitude or behaviour in a new system or technology; however, it will not influence for a longer period to create engagement. For young users, perceived ease of use is not a big concern due to their familiarity with the technology; perceived ease of use is the degree to which a person believes that using a particular system will be free of effort (Camilleri, 2019). This is in line with Anouze and Alamro (2020), stating that perceived ease of use positively affects the intention to engage.

\[ H6: \text{Perceived ease of use has a positive and significant effect on the intention to engage} \]

*The Effect of Perceived Social Influence on Intention to Engage*

Research by Yang et al. (2017) showed that perceived social influence was not a predictor of the intention of engagement. Hamari and Koivisto (2013) stated that the crucial role of gamification is the social aspects that contribute to the intention to engage. Wang and Lin (2011) profound that variable social influence significantly affects consumer intention for a particular behaviour.

\[ H7: \text{Perceived social influence has a positive and significant effect on the intention to engage} \]

*The Effect of Perceived Enjoyment on Intention to Engage*

Yang et al. (2017) research showed that perceived enjoyment was a predictor of engagement intention. The strongest predictor of intention to engage was perceived enjoyment in gamification. This research was consistent with Huang and Cappel (2005) and Kim, Kim, and Wachter (2013), which stated that the most important motivation for the game user is fun and
entertainment. Thus, research also suggested that most people seek enjoyment when playing the game, which will significantly influence their intention to engage.

\textit{H8: Perceived enjoyment has a positive and significant effect on the intention to engage}

\textbf{The Effect of Brand Attitude on Intention to Engage}

Attitude can predict behaviour because when an individual structures a positive or negative attitude towards specific objects, the probability of acting relies on that attitude. The more positive the attitude toward behaviour, the greater the intention of the individual to perform the behaviour (Tarkiainen and Sundqvist, 2005). Lu and Ho (2020) and Chen (2007) specified that consumer preferences and attitudes to purchasing a specific product were based on their attitude and desire to perform a behaviour. Purchase intention plays an essential role as a predictor of consumer behaviour, often used instead of the actual behaviour (Huseynov & Dhabak, 2020).

\textit{H9: Brand attitude has a positive and significant effect on the intention to engage}

\textbf{The Effect of Brand Attitude on Brand Loyalty}

Previous studies found a positive relationship between attitude and loyalty toward a brand. Referring to the research of Liu et al. (2012), there is an effect of attitude on loyalty. Rajumesh (2014), in his study, also mentioned that brand attitude positively affects brand loyalty.

\textit{H10: Brand attitude has a positive and significant effect on brand loyalty}

\textbf{METHOD}

\textit{Sample and data collection}

This is a cross-sectional study with a survey through a questionnaire. Survey research is gathering information regarding or from an individual to illustrate, compare, or explain their knowledge, attitudes, and behaviour through a questionnaire (McDaniel & Gates, 2020).

The data collection method used a questionnaire with non-probability sampling as the population did not have any probabilities attached to them being chosen as the sample subjects. Judgment sampling was used because of the limited number or category of people with information (Sekaran & Bougie, 2019). The respondents of this research should be the ones who have ever
joined a game in one online shopping e-commerce providing a game application to get the point from it. This e-commerce started to use gamification in 2018. One of the games is about pouring water, in which everyone joining the game will have one tree. They should pour water on it to make it grow. The tree will grow, and the player will receive financial incentives or vouchers. Another game is also provided in a different category.

Table 1. Respondents Demographic Profile

Research Procedure & Measurement Development

<table>
<thead>
<tr>
<th>Profile</th>
<th>Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>54</td>
<td>19.93 %</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>217</td>
<td>80.07 %</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>271</td>
<td>100 %</td>
</tr>
<tr>
<td>Education</td>
<td>Highschool and</td>
<td>158</td>
<td>58.31 %</td>
</tr>
<tr>
<td></td>
<td>Under</td>
<td>9</td>
<td>3.32 %</td>
</tr>
<tr>
<td></td>
<td>Diploma</td>
<td>102</td>
<td>37.64 %</td>
</tr>
<tr>
<td></td>
<td>Bachelor</td>
<td>2</td>
<td>0.74 %</td>
</tr>
<tr>
<td></td>
<td>Master</td>
<td>271</td>
<td>100 %</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>≤20 years old</td>
<td>94</td>
<td>34.69 %</td>
</tr>
<tr>
<td></td>
<td>21-30 years old</td>
<td>166</td>
<td>61.25 %</td>
</tr>
<tr>
<td></td>
<td>31-40 years old</td>
<td>9</td>
<td>3.32 %</td>
</tr>
<tr>
<td></td>
<td>&gt;40</td>
<td>2</td>
<td>0.74 %</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>271</td>
<td>100 %</td>
</tr>
<tr>
<td>Income</td>
<td>≤ Rp 2.500.000</td>
<td>210</td>
<td>77.49 %</td>
</tr>
<tr>
<td></td>
<td>Rp 2.500.001 –</td>
<td>36</td>
<td>13.29 %</td>
</tr>
<tr>
<td></td>
<td>5.000.000</td>
<td>19</td>
<td>7.01 %</td>
</tr>
<tr>
<td></td>
<td>Rp 5.000.001 –</td>
<td>3</td>
<td>1.11 %</td>
</tr>
<tr>
<td></td>
<td>7.500.000</td>
<td>3</td>
<td>1.11 %</td>
</tr>
<tr>
<td></td>
<td>Rp 7.500.001 –</td>
<td>271</td>
<td>100 %</td>
</tr>
<tr>
<td></td>
<td>10.000.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Of a total of 320 questionnaires collected, it was only 271 questionnaires could be used for further data processing. The 271 collected data were then used in the analysis. Table 1 shows the demographic profile of the respondents.

Females dominated the respondents in the research (80.07 per cent). From educational level, the latest education of most of the respondents was high school (58.30258 percent), and they were predominately aged 21 – 30 years (61.26 percent). Overall, the income of the respondents was below Rp.2.500.000 (77.49 percent). The demographics profile is shown in Table 1.

The respondents in the research were dominated by females (80.07 percent). From educational level, the latest education of most of the respondents was high school (58.30258 percent), and they were predominately aged 21 – 30 years (61.26 percent). Overall, the income of the respondents was below Rp.2.500.000 (77.49 percent). The demographics profile is shown in Table 1.

The questionnaire contained 29 item indicators that needed to be filled by the respondents. Perceived usefulness was measured with three indicators, perceived
ease of use with three indicators, perceived social influence with five indicators, perceived enjoyment with four indicators, intention to engage with three indicators, brand attitude with eight indicators, and brand loyalty with three indicators. The indicator was adapted from several previous studies of Yang Yang & Yousra Asaad (2017), and Leckie, Nyadzayo, and Johnson (2016). The 5-point Likert scale was anchored from Strongly Disagree (1) to strongly agree (5) and used to measure each item’s questions.

Structural Equation Modeling (SEM) – Partial Least Square (PLS) was used for the data analysis in this study. There are two SEM PLS models: the measurement model to examine a link between observed and latent variables and the structural model to investigate the link between the latent and latent variables. Warp PLS version 7.0 was used in this study.

**Results of the Measurement Model**

A reliability and validity test is needed to examine reliable and valid instrument development. Composite reliability was used to test reliability measurement with a value above 0.60. The validity measurement will be Convergent Validity with a factor loading value of 0.6 and Average Variance Extracted to 0.50 (Hair et al., 2010).

Table 2 shows that the testing result of the research instrument used in the study was valid and reliable due to the value of Composite Reliability, Convergent Validity, and AVE that have already been above the required value.

<table>
<thead>
<tr>
<th>Construct and items</th>
<th>Mean</th>
<th>SD</th>
<th>CA</th>
<th>CR</th>
<th>AVE</th>
<th>Factor Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Usefulness (PU)</td>
<td>4.065</td>
<td>0.969</td>
<td>0.869</td>
<td>0.920</td>
<td>0.793</td>
<td>0.872-0.909</td>
</tr>
<tr>
<td>Perceived Ease of Use (PEU)</td>
<td>4.168</td>
<td>0.940</td>
<td>0.815</td>
<td>0.903</td>
<td>0.757</td>
<td>0.844-0.893</td>
</tr>
<tr>
<td>Perceived Social Influence (PSI)</td>
<td>4.091</td>
<td>0.933</td>
<td>0.912</td>
<td>0.935</td>
<td>0.742</td>
<td>0.816-0.904</td>
</tr>
<tr>
<td>Perceived Enjoyment (PE)</td>
<td>4</td>
<td>0.947</td>
<td>0.887</td>
<td>0.922</td>
<td>0.748</td>
<td>0.807-0.908</td>
</tr>
<tr>
<td>Brand Attitude (BA)</td>
<td>3.811</td>
<td>0.995</td>
<td>0.907</td>
<td>0.945</td>
<td>0.682</td>
<td>0.716-0.905</td>
</tr>
<tr>
<td>Intention to Engage (IEE)</td>
<td>3.799</td>
<td>0.890</td>
<td>0.874</td>
<td>0.923</td>
<td>0.799</td>
<td>0.816-0.916</td>
</tr>
<tr>
<td>Brand Loyalty (BL)</td>
<td>3.594</td>
<td>1.105</td>
<td>0.767</td>
<td>0.867</td>
<td>0.688</td>
<td>0.697-0.889</td>
</tr>
</tbody>
</table>

**Results of Structural Model**

Table 3 shows the model fit measurement with the conformity of the requirement. To evaluate the data match with the empirical model, a model fit required to be done for this research was developed. The categories of model fit used in this research included
Average Path Coefficient (APC), Average R-squared (ARS), Average Adjusted R-Square (Aars), Average Block VIF (AVIF), Average Full Collinearity VIF(AFVIF), Sympson's Paradox Ratio (SPR), R-Squared Contribution Ratio (RSCR), Statistical Suppression Ratio (SSR), and Nonlinear Bivariate Causality Direction Ratio (NLBCDR).

Table 3. Results of Goodness of Fit

<table>
<thead>
<tr>
<th>Model Fit</th>
<th>Requirement</th>
<th>Result</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average path coefficient (APC)</td>
<td>$P &lt; 0.05$</td>
<td>(APC)=0.265, $P&lt;0.001$</td>
<td>Model has been fit</td>
</tr>
<tr>
<td>Average R-squared (ARS)</td>
<td>$P &lt; 0.05$</td>
<td>(ARS)=0.611, $P&lt;0.001$</td>
<td>Model has been fit</td>
</tr>
<tr>
<td>Average adjusted R-squared (AARS)</td>
<td>$P &lt; 0.05$</td>
<td>(AARS)=0.607, $P&lt;0.001$</td>
<td>Model has been fit</td>
</tr>
<tr>
<td>Average block VIF (AVIF)</td>
<td>AVIF $&lt; 3.3$</td>
<td>(AVIF)=1.833</td>
<td>Model has been fit</td>
</tr>
<tr>
<td>Average full collinearity VIF (AFVIF)</td>
<td>AVIF $&lt; 3.3$</td>
<td>(AFVIF)=2.463</td>
<td>Model has been fit</td>
</tr>
<tr>
<td>Sympson's paradox ratio (SPR)</td>
<td>SPR $&gt; 0.7$</td>
<td>(SPR)=1.000</td>
<td>Model has been fit</td>
</tr>
<tr>
<td>R-Squared Contribution ratio (RSCR)</td>
<td>RSCR $&gt; 0.9$</td>
<td>(RSCR)=1.000</td>
<td>Model has been fit</td>
</tr>
<tr>
<td>Statistical Suppression ratio (SSR)</td>
<td>SSR $&gt; 0.7$</td>
<td>(SSR)=1.000</td>
<td>Model has been fit</td>
</tr>
<tr>
<td>Nonlinear bivariate causality direction ratio (NLBCDR)</td>
<td>NLBCDR $&gt; 0.7$</td>
<td>NLBCDR=1.000</td>
<td>Model has been fit</td>
</tr>
</tbody>
</table>

As shown in Table 4, the hypothesis testing result showed that there were ten hypotheses with each path coefficient and p-value to prove the hypothesis proposed. Perceived usefulness positively affected brand attitude from $\beta = 0.396; p < 0.05$; therefore, hypothesis 1 was supported. Perceived ease of use had no significant effect on brand attitude from $\beta = 0.208; p > 0.05$; therefore, hypothesis 2 was not supported. Perceived social influence was found to positively affect brand attitude, as seen from $\beta = 0.049; p < 0.05$, indicating that hypothesis 3 was supported. Further, perceived enjoyment was found to affect brand attitude from $\beta = 0.387$ positively; $p < 0.05$; therefore, hypothesis 4 was supported.

Perceived usefulness was found to have an insignificant effect on the intention to engage, as shown from $\beta = 0.003; p > 0.05$; thus, hypothesis 5 was not supported. Perceived ease of use had an insignificant effect on the intention to engage, shown by $\beta = 0.070; p > 0.05$. For this, hypothesis 6 was not supported. Perceived social influence had a significant positive effect on the intention to engage, shown by $\beta = 0.086; p < 0.10$; hypothesis 7 was supported. Perceived enjoyment was found to positively affect intention to engage, shown by $\beta = 0.515; p < 0.05$; then hypothesis 8 was supported. Further, the brand attitude had a significantly positive effect on the intention to engage,
shown by $\beta = 0.515$; $p < 0.05$; therefore, hypothesis 9 was supported. Brand attitude positively impacted brand loyalty, shown by $\beta = 0.685$; $p < 0.05$. Then, hypothesis 10 was supported.

Table 4. Hypothesis Testing Results

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Path Coef</th>
<th>P-value</th>
<th>Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Perceived Usefulness $\rightarrow$ Brand Attitude</td>
<td>0.396</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>H2</td>
<td>Perceived Ease of Use $\rightarrow$ Brand Attitude</td>
<td>0.049</td>
<td>0.208</td>
</tr>
<tr>
<td>H3</td>
<td>Perceived Social Influence $\rightarrow$ Brand Attitude</td>
<td>0.178</td>
<td>0.001*</td>
</tr>
<tr>
<td>H4</td>
<td>Perceived Enjoyment $\rightarrow$ Brand Attitude</td>
<td>0.387</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>H5</td>
<td>Perceived Usefulness $\rightarrow$ Intention to Engage</td>
<td>0.003</td>
<td>0.48</td>
</tr>
<tr>
<td>H6</td>
<td>Perceived Ease of Use $\rightarrow$ Intention to Engage</td>
<td>0.07</td>
<td>0.123</td>
</tr>
<tr>
<td>H7</td>
<td>Perceived Social Influence $\rightarrow$ Intention to Engage</td>
<td>0.086</td>
<td>0.077**</td>
</tr>
<tr>
<td>H8</td>
<td>Perceived Enjoyment $\rightarrow$ Intention to Engage</td>
<td>0.515</td>
<td>&lt;0.001*</td>
</tr>
</tbody>
</table>

Note: *Sig 0.05 **Sig 0.1

RESULTS AND DISCUSSION

The result indicated that perceived usefulness, social influence, and enjoyment positively affected brand attitude. The study supported by Yang et al. (2017) and Huseynov and Dhahak (2020) mentioned that perceived usefulness, perceived social influence, and perceived enjoyment could positively affect brand attitude. Perceived usefulness was also the most robust predictor among other variables to create brand attitude. This meant that in the context of gamification, the effectiveness, familiarity, and game benefits would make the consumer think a lot about the brand. Ultimately,
choosing a particular brand will create an emotional bond, positive feelings, and pleasure. Otherwise, the hypothesis (H2) showed that Perceived ease of use did not affect brand attitude. The result is in line with Gunawan et al. (2019), which also found the same result in e-commerce. The perceived ease of use covers the ease of playing a game in e-commerce, flexibility, and ease of accessing the game. Still, more is needed to make customers feel optimistic about the brand and emotionally bound.

The data suggested that perceived social influence, enjoyment, and brand attitude positively affected the intention to engage. Perceived enjoyment was found to be the strongest predictor of intention to engage. This study was supported by Yang Yang & Yousra Asaad (2017). The use of the game itself is to create fun, excitement, and pleasure. The more consumers enjoy the game in e-commerce, the more they will engage with it.

In contrast to the hypothesis H5 and H6, perceived usefulness and perceived ease of use had no significant effect on the intention to engage, and this result was supported by Huseynov and Dhahak (2020) and Zhao, Anong, Zhang (2019) finding that both variables had no significant effect on the intention to engage. Even though the game's effectiveness, familiarity, and easiness will not trigger the purpose of engaging to play more games, it is more on the enjoyment of playing the game. Moreover, most respondents were millennials, considered the tech-savvy generation, making it easy to adapt to the technology and be familiar with its use. One of the factors is the high penetration of smartphones and Indonesian consumer adoption of technology, which engages the consumer. This made them choose specifically what e-commerce they would visit when they do online shopping.

The data suggested that based on the result of H10, a brand attitude positively affected brand loyalty. This study was supported by Liu et al. (2012) and Rajumesh (2014). When the consumer has a positive feeling and an emotional bond toward e-commerce, it will create loyalty. They will recommend the brand and use the brand in the future.

According to the result, perceived usefulness was the strongest predictor of brand attitude. The company using gamification should make sure that the game has a practical design and is simple to be used by the consumers. It also should bring benefits that
attract consumers, such as points that could be exchanged with vouchers or discounts. The more incentive is given, the more attractive to the consumer. This effort will build a positive consumer brand attitude toward e-commerce.

According to the result, it was found that perceived enjoyment was the strongest predictor of intention to engage. Creating interactive and dynamic game content is to get the essence of fun and pleasure of consumers as well as the capability of collaboration. A company should design a game that allows the consumer to level up the challenge.

The brand attitude was found to affect brand loyalty. The company using gamification should focus on creating a positive feeling and emotional bonding to increase consumer loyalty. To achieve that, the company should let the consumer share their level with the other consumers. The application of brand attitude to create brand loyalty can also be made by increasing the perceived enjoyment of the consumer, in which the company should make a game interesting, enjoyable, and engaging.

This research also yielded a theoretical implication. The first is that perceived ease of use was found to not affect Brand Attitude, unlike a similar study that mostly had an impact. According to the respondent data, most of them were aged below 20 to 30 years, and technology for a youngster was familiar and easy for them to adapt to. Therefore, the easiness of playing the game will not influence consumer emotional bonding, positive feeling, or derived pleasure toward the brand. Another factor that needs to be researched in the future is perceived usefulness, which emphasises helping the consumer think about and be more familiar with the brand.

Moreover, in gamification, the reward the consumers receive, such as points, money, or bonuses, effectively impacts brand attitude. The second is that perceived usefulness and perceived ease of use had no significant effect on the intention to engage. Some research has inconsistent results with this study.

In the context of gaming, the intention to engage also can be influenced by the sense of being challenged. This is supported by the study by Lu and Ho (2020), mentioning that when the game is played, the self–
achievement or team achievement is proved to influence the continued use of the game. Challenges from the item of self-achievement and team achievement include comparing the result, breaking the record, continuously surpassing the result, and refreshing the record.

**CONCLUSION**
This research has contributed to the development of the Theory Acceptance Model (TAM) proposed by Davis et al. (1989) in confirming that the perceived usefulness affected the brand attitude in gamification in e-commerce. However, it showed that the perceived ease of use did not affect the brand attitude in the same context. Perceived usefulness also showed no direct effect on the intention to engage for gamification. It suggests that future research should adopt Theory Action Model 2 (TAM2), proposed by Venkatesh and Davis (1996), to eliminate the role of attitude.

There are some limitations found in this research. According to So et al. (2014), there is a direct effect between consumer engagement on consumer loyalty; therefore, in the future, it is advised to consider the intention to engage in building consumer loyalty. According to Venkatesh and Davis (1996), several external factors influencing perceived usefulness and ease of use can also be examined for future research. The external factor can be the subjective norm, design, image, job relevance, or technology efficacy. The other limitation found in this research is that the context was only limited to the study in e-commerce, which could be different if applied in a different industry or study context.

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### APPENDIX
Questionnaire

Perceived usefulness
The game effectively made me think about ….
The game increased my familiarity with ….
I found the game useful in the branding of ….

Perceived ease of use
It was easy for me to learn how to play that game and compete with another person
It was flexible for me to play that game and compete with other people
It was easy to access the game and get another person to compete

Perceived social influence
If my friends think it is fun to win the game competition and get the prize, I will do it
If my classmates think it is fun to win the game competition and get the prize, I will do it.
If my classmates like to join the game competition, I will do it as well
If people I know think it is fun to win the game competition and get the prize, I will do it
If people I know like to join the game competition, I will do it as well

Perceived enjoyment
The game was interesting
The game made me feel enjoyable
The game was a good way to spend my leisure time
The game involves me in an enjoyable process

Intention of engagement
I intend to join this activity again
I intend to play that game frequently in the future
I intend to continue playing that game because it is fun

Brand attitude
This activity makes me feel more emotionally bonded with …. brand now.
This activity evoked positive feelings about …. brand.
I shall be more inclined to buy … brand from now on.
This activity makes me to derive pleasure from choosing ….
This activity makes me delighted to choose ….
This activity makes me intend to use other ….. services or products.
I like the experience of that activity about playing ….. game and win the prize in the competition.
I may recommend …… to other people.

**Loyalty Intention**

I would recommend this brand to friends
I will buy my chosen brand again
I will not buy another brand if this is present in the store
If I got any mobile for free, I would choose my brand