The effect of brand image and product knowledge on purchase intentions with e-WOM as a mediator variable

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Abstract
This study aims to explain the effect of product knowledge, brand image, e-WOM on purchase intentions for edtech products in Indonesia. Data were obtained using a closed questionnaire involving 230 respondents, from Indonesians who know about edtech startup products and are between 18 and 35 years old. The sampling technique used was convenience sampling. The analysis technique used is Structural Equation Modeling (SEM) and uses the help of the AMOS version 24 program. The results show that 1) product knowledge has a positive but not significant effect on purchase intention, 2) product knowledge and brand image have a positive and significant effect on e-commerce WOM, 3) brand image and e-WOM have a positive and significant effect on purchase intention. It was also found that e-WOM functions as a mediator variable from the effect of product knowledge and brand image on purchase intention. The effect of the e-WOM mediator is stronger than the direct effect of brand image on purchase intention.

Introduction
Technological developments in the field of education (edtech) are currently increasingly sophisticated. Business people take advantage of the development of edtech as an opportunity for the development of a startup business in the education sector, which is called an edtech startup. Edtech startups exist on various platforms, from education marketplaces, course providers, to digital learning content developers (Hamdani et al., 2022). The World Bank (2020) still records that there are only 60 edtech companies in Indonesia, but with the Covid-19 pandemic this number is currently increasing rapidly. As of May 2022, there have been 391 edtech companies (Tracxn, 2022).

The high growth in the number of edtech companies proves that edtech is in great demand in Indonesia, thus making the competition in the edtech industry even more competitive. Edtech companies are competing to create strategies to attract and retain consumers to keep buying their services or products. Edtech companies must be able to create uniqueness in this marketing strategy in promoting their products, so that they are attractive to potential customers or consumers who can generate an intention to buy them. Therefore, it is important for companies to identify and analyze various ways to create purchase intentions for edtech products.

According to Albari & Dewi (2016), purchase intention is a factor that can be used to predict customer behavior in making future purchasing decisions. Meanwhile, according to Imbayani & Gama (2018), purchase intention will arise from the process of problem solving and learning that occurs within the consumer, when making a decision to choose or use a product.

Purchase intention can be influenced by various factors, including product knowledge (Imbayani & Gama, 2018; Lin & Chen, 2006; Shih et al., 2018), brand image (Susanti et al., 2020; Elseidi & El-Baz, 2016; Imbayani & Gama, 2018; Razy & Lajevardi, 2015),
and e-WOM (Imbayani & Gama, 2018; Elseidi & El-Baz, 2016; Yohana et al. 2020). However, there are also studies that show different results. For example, the results of research by Erida & Rangkuti (2017) which show that the effect of product knowledge is not significant on purchase intention. Meanwhile, research by Mantiri et al. (2022) failed to significantly prove that e-WOM has a positive effect on customer purchase intentions.

The difference in research results is interesting to do research again, especially for edtech products. Therefore, this study involves the relationship between these variables to get consistent conclusions or not. In terms of the object chosen, this study also involves individuals who have the potential to use edtech, so that the consistency of the conclusions with previous studies using different objects will be known.

In particular, the results of the study will support most existing research, or instead follow the results of research by Rangkuti & Erida (2017) and Mantiri et al. (2022). In addition, this study will also reveal the role of e-WOM not only as an influence variable on customer purchase intention, but also the possible role of e-WOM as a mediator variable of the influence of brand image and brand knowledge on purchase intention.

**Literature Review**

**Theoretical and Conceptual Background**

**Purchase Intention**

According to Elseidi & El-Baz (2016) purchase intention is explained as part of cognitive behavior about how one intends to buy a product or brand. Imbayani & Gama (2018) explain that purchase intention arises from a process that occurs when potential consumers are stimulated by external factors to determine a purchase decision for a brand or product where the decision-making process is based on personal characteristics. In addition, according to Yohana et al. (2020) purchase intention is the result of a person's learning and thinking process which will become a perception that is continuously recorded in the minds of consumers. Purchase intention is also a form of a person's willingness to evaluate, think about, subjectively assess, and consider a product or service offered to him (Al-Dmour et al., 2022).

According to Shih et al. (2018), consumer purchase intention can be measured through the desire to spend time studying product-related information, consideration for buying a product, intention to recommend a product to others, motives to buy a product which is influenced by brand image, desire to buy a product even though there is other brands, and the desire to know about product promos. Consumer purchase intention is influenced by various variables, including product knowledge, brand image, and e-WOM. The interrelationships between these variables are explained below.

**Product knowledge**

Before consumers buy a product, they usually look for information related to the product (Wajdi et al., 2020). Product knowledge is something that is needed by consumers, especially in the edtech industry where in addition to high competition between companies, the product choices available are very diverse. Peter & Olson (2010) explained that consumers can have three types of product knowledge, namely knowledge about product attributes or characteristics, the benefits of using products both functional and psychosocial, and values that help products in making consumers feel they have achieved their goals for the product. If consumers do not understand information about the characteristics of a product or brand, consumers can make the wrong decision in buying a product (Aisah & Wahyono, 2018). Complete information about the product makes customers understand the product well so that it creates trust which ultimately leads to purchase intentions (Imbayani & Gama, 2018).

**Brand Image**

Brand image is defined as a representation of the consumer's perspective on the experience and information generated from a brand (Yohana et al., 2020), which is stored in the consumer's memory or mind (Albari & Safitri, 2018; Nuseir, 2019). According to Aisah & Wahyono (2018), the image of a brand has an important role in influencing consumers to make purchases, because consumers tend to choose brands or products that have a positive image. This opinion is corroborated by Susanti et al. (2020), who explained that brand image is an important determinant of consumer habits in buying an item or product, especially when consumers find it difficult to differentiate products or services based on intangible attributes. Albari & Safitri (2018) also stated that "consumers who do not have enough time to identify product characteristics will rely more on brand image for purchasing decision makers". In addition, a strong brand image helps consumers to develop positive attitudes and feelings where these feelings can increase perceived value.

**e-WOM**

The growth and popularity of social media has broadened consumers' options for gathering pertinent information about products and provided them with multiple ways to offer recommendations regarding the use of these products by engaging in e-WOM (Kudeshia & Kumar, 2017). e-WOM in the form of all unofficial communications via internet technology addressed to consumers regarding the use or characteristics of certain goods and services or the seller (Ismagilova et al., 2017). e-WOM can occur in various online channels.
such as discussion forums, product reviews, social networking sites, and email (Kudeshia & Kumar, 2017). When buying online, consumers cannot touch, smell, or feel the product, so e-WOM communication is used to reduce their worries about the product or brand they will buy (Ismagilova et al., 2017). It is common for consumers to consider other consumers' product reviews, whether positive or negative, in order to gather pre-purchase information (Elseidi & El-Baz, 2016). Consumers participate in e-WOM for the reason of reducing the risk of uncertainty in purchasing products and services by seeking accurate information before making a purchase decision (Yohana et al., 2020). Meanwhile, Kunja et al. (2022) stated that e-WOM makes companies and their customers have alternative communication, maintains brand image, interacts to create higher value, and influences purchasing decisions.

Empirical Review and Hypothesis Development

Product Knowledge on Purchase Intentions

Research conducted by Lin & Chen (2006) revealed that product knowledge has a significant positive effect on purchase intention. Meanwhile, Imbayani & Gama (2018) and Shih et al. (2018) shows that product knowledge has a positive and significant influence on purchase intention. In contrast, research by Erida & Rangkuti (2017) found no significant effect between product knowledge and purchase intention. Based on the results of this study, the hypothesis is determined as follows:

H1: Product knowledge has a positive effect on purchase intention

Product Knowledge of e-WPM

Someone who has product knowledge and has purchasing experience will be more involved in communication sharing product information with others (Shen et al., 2018). Research by Liao et al. (2014) stated that the high knowledge of the product they have obtained is also used to research and carefully evaluate the information related to the product or brand they get from e-WOM. Research conducted by Aisah & Wahyono (2018) and Packard and Wooten (2013) proves this statement where there is a positive relationship between e-WOM and product knowledge. Based on this explanation, the following hypothesis is proposed:

H2: Product knowledge has a positive effect on e-WOM

Brand Image on Purchase Intentions

Based on research conducted by Nusair (2019) and Susanti et al. (2020) that brand image can have a positive and significant effect on consumer purchase intentions. This is also in line with research conducted by Imbayani & Gama (2018) and Elseidi & El-Baz (2016) showing that there is a significant and positive influence that brand image has on purchase intentions. In addition, according to Razy & Lajevardi (2015) supported brand image has a positive and significant influence on purchase intention, where the higher the brand image, the higher the consumer's purchase intention. It can be seen that brand image is one aspect that is seen before finally buying a product. Based on this research experience, a hypothesis can be drawn in the form of:

H3: Brand image has a positive effect on purchase intention

Brand Image of e-WOM

In addition to purchase intention, brand image also influences e-WOM. Brand image is very important in purchasing behavior because it can influence consumer preferences and purchase intentions as well as their willingness to pay and recommend brands to others (Santoso & Sispradana, 2021). This conclusion is also in line with research conducted by Seo & Park (2018) and Susanti et al. (2020), which proves that brand image has a positive and significant effect on e-WOM. With this, the following hypothesis is determined:

H4: Brand image has a positive effect on e-WOM

e-WOM on Purchase Intention

Research by Elseidi & El-Baz (2016), Imbayani & Gama (2018), Yohana et al. (2020), Kunja et al. (2022), and Al-Dmour et al. (2022) show that e-WOM has a positive and significant influence on purchase intentions. Meanwhile, research by Mantiri et al. (2022) show that the effect of e-WOM on customer purchase intentions is positive, but not significant. Because of that, the hypothesis is determined as follows:

H5: e-WOM has a positive effect on purchase intentions.

Based on these theoretical studies and hypotheses, a research framework can be formed that is used in the research shown in Figure 1.
Figure 1: Research Framework

Figure 1 shows the positive effect of product knowledge and brand image variables on e-WOM, product knowledge and brand image variables on purchase intentions and e-WOM variables on purchase intentions.

Research and Methodology

The population used in this study is all Indonesian people who know about edtech startup products. While the sample that will be involved in this study is a portion of Indonesian people who are familiar with edtech startup products, namely those aged between 18 to 35 years. This age range was chosen with the assumption that at that time the respondents had great potential to utilize edtech products.

The sampling in this study used the convenience sampling method, namely by selecting respondents who were able to fill out questionnaires on the Google Form, through social media groups such as Twitter, Instagram, Whatsapp, Line, Telegram and Whatsapp.

The questionnaire containing variable indicators was obtained from a modified study by Shih et al. (2018), Wajdi et al. (2020), and Imbayani & Gama (2018), namely 7 purchase intention statements, 6 items (product knowledge), 4 items (brand image), and 6 e-WOM statements. The indicator statements are provided with closed responses with 5 interval scales, from scale 1 (strongly disagree) to scale 5 (strongly agree). The results of testing the validity of the questionnaire (instrument) using the moment product correlation ($r$) show values between 0.589 to 0.809 ($r$ table = 0.279), while the value of variable reliability using the Cronbach's Alpha approach produces values between 0.729 to 0.871. Because of that the research instrument was stated to be valid and reliable, so that the questionnaire could be continued and distributed to obtain research data.

While the number of respondents involved in the study was 230 people. This number has met the recommendation of Hair et al. (2018; 2021) regarding the use of the structural equation model (SEM) analysis tool approach. The data obtained by distributing questionnaires was then processed using the AMOS 24 data processing program. In order to obtain a good model, an evaluation of the processed data was carried out based on goodness-of-fit criteria.
Findings and Discussions

Before being used for the analysis process, the data obtained was tested for the validity and reliability of the data. The test results are shown in Table 1.

Table 1: Validity Test, Reliability and Mean

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Val./Relia.</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Knowledge</td>
<td>0.870</td>
<td>4.30</td>
</tr>
<tr>
<td>Product information in memory</td>
<td>0.652</td>
<td>4.31</td>
</tr>
<tr>
<td>Familiar with product characteristics</td>
<td>0.797</td>
<td>4.30</td>
</tr>
<tr>
<td>Knowledge based on the experience of purchasing or using the product</td>
<td>0.699</td>
<td>4.27</td>
</tr>
<tr>
<td>Knowledge of the types of products offered.</td>
<td>0.745</td>
<td>4.23</td>
</tr>
<tr>
<td>Knowledge of the advantages and disadvantages of the product</td>
<td>0.659</td>
<td>4.35</td>
</tr>
<tr>
<td>Selection of products based on quality.</td>
<td>0.797</td>
<td>4.34</td>
</tr>
<tr>
<td>Brand Image</td>
<td>0.835</td>
<td>4.09</td>
</tr>
<tr>
<td>Brands are easy to recognize</td>
<td>0.822</td>
<td>4.14</td>
</tr>
<tr>
<td>Brands are easy to remember</td>
<td>0.771</td>
<td>4.07</td>
</tr>
<tr>
<td>The brand is well known</td>
<td>0.697</td>
<td>4.05</td>
</tr>
<tr>
<td>Brands vary</td>
<td>0.698</td>
<td>4.08</td>
</tr>
<tr>
<td>e-WOM</td>
<td>0.847</td>
<td>4.19</td>
</tr>
<tr>
<td>Frequency of accessing information on the internet and social media</td>
<td>0.696</td>
<td>4.18</td>
</tr>
<tr>
<td>Product recommendations are obtained from the internet and social media</td>
<td>0.672</td>
<td>4.15</td>
</tr>
<tr>
<td>Internet access to find a selection of products</td>
<td>0.778</td>
<td>4.22</td>
</tr>
<tr>
<td>Internet access to solve problems regarding the product</td>
<td>0.721</td>
<td>4.17</td>
</tr>
<tr>
<td>Interaction activities on social media to find out product information</td>
<td>0.673</td>
<td>4.21</td>
</tr>
<tr>
<td>Encouragement to help companies recommend their products</td>
<td>0.615</td>
<td>4.20</td>
</tr>
<tr>
<td>Purchase Intention</td>
<td>0.894</td>
<td>4.24</td>
</tr>
<tr>
<td>Desire to learn product information</td>
<td>0.694</td>
<td>4.24</td>
</tr>
<tr>
<td>Considerations for buying the product</td>
<td>0.746</td>
<td>4.28</td>
</tr>
<tr>
<td>Intention to recommend the product to others</td>
<td>0.738</td>
<td>4.18</td>
</tr>
<tr>
<td>Motives to buy products are influenced by brand image</td>
<td>0.758</td>
<td>4.22</td>
</tr>
<tr>
<td>The desire to buy a product even though there are other brands</td>
<td>0.750</td>
<td>4.19</td>
</tr>
<tr>
<td>Further desire to know information about the product</td>
<td>0.739</td>
<td>4.30</td>
</tr>
<tr>
<td>The desire to buy a product after reading information on the internet</td>
<td>0.755</td>
<td>4.28</td>
</tr>
</tbody>
</table>

Based on Table 1, it can be seen that all statement indicators on the variable product knowledge, brand image, e-WOM, and purchase intention have a factor loading value greater than 0.5. Meanwhile, the construct reliability value produced is greater than 0.70. Based on these values, it can be concluded that all indicators and variables used in this study are valid and reliable, so they can be used for the next analysis process.

Table 1 also shows that the four variables have different averages. The variable values of product knowledge and purchase intention are categorized as variables with high values, while the values of brand image and e-WOM variables are categorized as quite high values. In addition, the variable that has the highest average is product knowledge of 4.3 while the variable that has the lowest average is brand image of 4.09.

The analysis and calculation of the research model are shown in Figure 2.
Based on Figure 2 it is known that overall the model shown is said to be a fit model. The model was obtained from a modification of the conceptual model by adding covariance relationships to the indicators PI2 and PI6, EWOM3 and EWOM6, and EWOM1 and EWOM2. Comparison of model sizes is shown in Table 2.

Figure 2 also shows the calculation of the goodness of fit value with the RMSEA index less than the required value of 0.08, CMIN/DF less than 2.00, and GFI, TLI, and NFI equal to or greater than 0.90, while the AGFI value is included in the marginal fit category. In general, the results of the analysis show that there is goodness of fit between the research model and the empirical research model. Therefore, model analysis can be continued by testing the research hypothesis whether it is accepted or rejected. The results of hypothesis testing are listed in Table 2.

Based on Table 2, it can be seen that of the five hypotheses tested, there is 1 hypothesis (H1) which is not supported, while the other hypotheses (H2, H3, H4, and H5) are supported. In the hypothesis that is not supported significantly, the probability value is greater than 0.05 and the critical ratio (CR) value is less than 1.96. Based on these results it can be concluded that the hypothesis which states about the positive effect of product knowledge on purchase intention (H1) cannot be supported significantly.

While the hypothesis that is significantly supported has a probability value of less than 0.05 and the value of C.R. greater than 1.96. Thus, it can be said that it is significantly supported, there is a positive influence of product knowledge on e-WOM (H2), there is a positive influence of brand image on purchase intention (H3), there is a positive influence of brand image on e-WOM (H4), and there is a positive influence of e-WOM on purchase intention (H5). The description shows empirically the fulfillment of the hypotheses of this study, namely H2, H3, H4, and H5.
Discussion

From the results of testing the hypothesis above, the discussion below can be carried out.

Hypothesis 1: Effect of Product Knowledge on Purchase Intentions

Based on the SEM testing that has been done, it can be seen that there is no positive effect of product knowledge on purchase intentions. In other words, the results of testing the hypothesis are not supported. These results do not support research conducted by Lin & Chen (2006), Imbayani & Gama (2018), and Shih et al. (2018), which states that product knowledge has a significant and positive effect on purchase intention. However, these results support research conducted by Erida & Rangkuti (2017) which found no significant effect of product knowledge on purchase intention.

In this context, edtech companies need to realize that good product knowledge does not immediately make someone interested in buying edtech products. However, companies can provide other marketing strategies to foster purchase intentions in consumers.

Hypothesis 2: Effect of Product Knowledge on e-WOM

The results of hypothesis testing show that there is a positive effect of product knowledge on e-WOM. In other words, product knowledge can drive e-WOM actions, even if product knowledge does not generate purchase intentions. This means that the six indicators of product knowledge can be used to carry out e-WOM activities online about a product.

Testing this hypothesis is in line with previous studies conducted by Aisah & Wahyono (2018), Shen et al. (2018), Liao et al. (2014), and Packard and Wooten (2013). They state that there is a positive influence of product knowledge on e-WOM. Thus edtech companies can use the results of this research to make policies in the field of management, especially in designing the e-WOM content of the products they offer.

Hypothesis 3: Effect of Brand Image on Purchase Intentions

The results of the analysis obtained in this study indicate that the brand image variable has a positive and significant effect on the purchase intention variable. This means that the better the brand image owned by an edtech company, the more it will encourage consumer purchase intentions. These results are in line with the results of previous research by Susanti et al. (2020), Nusei (2019), Imbayani & Gama (2018), Razy & Lajevardi (2015) and Elseidi & El-Baz (2016) that brand image purchase intention is positively and significantly supported by brand image.

Brand image is one of the determining factors that is seen before consumers finally buy a product. Edtech companies need to maintain and improve their brand image so that it is embedded in the minds of consumers. Especially now that there are growing competitors in the edtech industry that offer similar products.

Hypothesis 4: Effect of Brand Image on E-WOM

The results of the study show that brand image has a positive and significant effect on e-WOM. This also proves that the better the brand image of an edtech company, the better the delivery of e-WOM. If the brand image in the consumer's mind is good, of course the consumer will not hesitate to recommend the brand to others knowing that the brand is well known and has product results that meet consumer expectations as well.

The results of this analysis support research conducted by Seo & Park (2018), Susanti et al. (2020), and Santos & Sispradana (2021), who explain that brand image has a positive and significant effect on e-WOM. The implication is that edtech companies need to attract the attention of consumers by providing a good image so that consumers are encouraged to obtain product information through online recommendations for edtech companies from other people.

Hypothesis 5: Effect of E-WOM on Purchase Intentions

This hypothesis was formulated based on research conducted by Elseidi & El-Baz (2016), Imbayani & Gama (2018), Yohana et al. (2020), Kunja et al. (2022), and Al-Dmour et al. (2022) that e-WOM has a positive and significant influence on purchase intentions. The results of testing the research hypothesis turned out to support and strengthen previous studies. In other words, the higher the e-WOM towards edtech products, the higher their purchase intention.

E-WOM can be a concern for consumers to dig up information so they can have more confidence in the product to be purchased. Consumers use e-WOM because it can reduce the risk of uncertainty in product purchases. This needs to be considered by every edtech company, because if the e-WOM spread by other people is in the form of negative information, it will have a negative impact on the company, such as decreasing consumer intentions to buy.

Based on this explanation, it is then possible to calculate the effect of a variable on other variables, either totally, directly or indirectly. The recapitulation of the calculation results is listed in Table 3.
The results of this study indicate that almost all hypotheses are supported, except for the hypothesis about the positive effect of product knowledge on purchase intention. This study also shows that e-WOM is a variable whose existence is important to generate purchase intention, because as a mediator variable e-WOM is able to increase the total influence which is greater than the direct effect of product knowledge and brand image on purchase intention.

Therefore, further research can be developed using more diverse subjects and objects, so that the possibility of the research model becomes more tested. In addition, to further enrich the relationship between e-WOM variables and purchase intention of a product caused by product knowledge and brand image, further research needs to try further to use other variables that can influence e-WOM and purchase intention of a product. In this study it was also found that e-WOM has a fairly large and dominant total effect compared to other variables.

This research also provides managerial implications for edtech companies in Indonesia, where e-WOM and brand image are important to encourage consumers to buy products. A good brand image of edtech companies in Indonesia can help increase consumer purchase intentions and e-WOM amid intense competition. Therefore, edtech companies must improve and maintain the brand image of the company and prioritize aspects that influence strong and positive e-WOM delivery, so that edtech companies can encourage more consumers to be interested in buying edtech company products.

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