SERVICE QUALITY, SATISFACTION, CONTINUOUS USAGE INTENTION, AND PURCHASE INTENTION TOWARD FREEMIUM APPLICATIONS: THE MODERATING EFFECT OF PERCEIVED VALUE

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ABSTRACT

This study aimed to analyze factors that could influence continuous usage intention on freemium applications and purchase intention of premium services among students. Non-probability purposive sampling was used to determine the respondent. The criteria for the sample for this study were students who used freemium applications. Data were analyzed using Partial Least Square. The results confirmed that only reliability and responsiveness positively impacted customer satisfaction among the service quality dimensions, while assurance and empathy showed no effect. Only assurance and responsiveness were found to affect continuous usage intention positively, while empathy and reliability were found to have no effect. There was no evidence of the effect of the dimensions of service quality on purchase intention. Perceived value failed to moderate the effect of service quality on customer satisfaction. While there was a significant positive impact of customer satisfaction towards continuous usage intention, no effect has been found towards purchase intention. continuous usage intention was confirmed to have a positive impact on purchase intention.

JEL : O32, M31, L11.

Keywords : *service quality, perceived value, satisfaction, intention.*

ABSTRAK

Tujuan dari penelitian ini adalah untuk menganalisis faktor-faktor yang dapat mempengaruhi *continuous usage intention* dan *purchase intention* pada aplikasi yang memiliki layanan premium pada mahasiswa. *Non-probability purposive sampling* digunakan untuk menentukan jenis responden. Kriteria sampel pada penelitian ini adalah mahasiswa yang menggunakan aplikasi *freemium*. Data dianalisa menggunakan *Partial Least Square*. Hasil menunjukkan bahwa diantara dimensi *service quality,* hanya *reliability* dan *responsiveness* yang berpengaruh positif terhadap *customer satisfaction* sedangkan *assurance* dan *empathy* tidak berpengaruh. Hanya *assurance* dan *responsiveness* yang ditemukan berpengaruh positif terhadap *continuous usage intention* sedangkan *empathy* dan *reliability* ditemukan tidak berpengaruh. Seluruh dimensi *service quality* ditemukan tidak berpengaruh terhadap *purchase intention*. *Perceived value* tidak mampu memoderasi pengaruh *service quality* terhadap *customer satisfaction*. *Customer satisfaction* ditemukan berpengaruh positif terhadap *continuous usage intention* tetapi tidak terhadap *purchase intention*. *Continuous usage intention* ditemukan berpengaruh positif terhadap *purchase intention*.

Kata Kunci: *kualitas layanan, persepsi nilai, kepuasan, niatan*

1. INTRODUCTION

Internet and mobile technology have grown rapidly and changed people's daily life in Indonesia. Following the development of financial technology, people of all ages and backgrounds can easily participate in online transactions. One of the main factors supporting the simplification of online transactions is the development of facilities and infrastructure in Indonesia. Minimarket has become one of those facilities where transactions can be conducted through various means that would otherwise have only been possible using credit cards. A survey from the Association of Indonesian Internet Service Providers also found that current internet users range in age from 5 to

65 years, so it is possible, with the currently available payment options, that transactions can be made from the youngest age (APJII, 2019). Along with the growth of mobile and financial technology, the mobile application industry is also experiencing massive development. The ease of access to mobile and financial technology could increase the market potential of the mobile application industry, especially the one utilizing the freemium business model.

The mobile applications market in Indonesia is very potential. Based on the statistic, mobile game players in Indonesia reached 54,7 million in 2020 (Katadata, 2021). Indonesia is also the second largest country that uses the music streaming application Spotify in Asia after the Philippines (TechnoBusiness Media, 2022). Regardless of how enormous the market and how fast the growth of mobile applications was, freemium applications still encountered problems creating bigger demands on premium content for their potential customers. They were still struggling to create free content with good quality so that it could create demands by luring the users to opt for the freemium services within its content (Hamari & Järvinen, 2011; Hamari & Keronen, 2017; Hamari & Lehdonvirta, 2010; Holin Lin & Sun, 2011; Lin & Sun, 2007). This phenomenon also happens in Indonesia.

Based on the survey conducted on music streaming mobile applications, it was found that 48% of respondents did not opt for premium services (Daily Social, 2018). Another survey also found that 74% of mobile game users in Indonesia would not purchase premium items (Daily Social, 2016). It could bring a negative impact on the mobile application industry in Indonesia. Users' knowledge about local mobile games developed by Indonesian companies was only 0,4% (Katadata, 2021). Thus, this research wanted to investigate whether variables such as service quality and value were essential factors that could increase users' continuous usage of mobile applications, either the one that has been using the applications for free or opted for the paid services provided by the applications.

Previous studies have shown several indications of how important service quality is in improving key business objectives such as consumer retention, productivity, profitability, corporate image, and consumer intentions to share various positive elements of the company with others (Gi- Du & Jeffrey, 2004; Ladhari, 2009). According to the extant corpus (Ali, Omar, & Amin, 2013), service quality has been shown to be an antecedent variable of customer satisfaction. The higher the quality of service provided, the better customer satisfaction (Lau, Cheung, Lam, & Chu, 2013).

Customer satisfaction was also one of the critical factors in predicting consumers' intention to purchase and recommend the product to others (Rajaguru, 2016). The intention strongly correlates with consumer satisfaction when purchasing (Cronin & Taylor, 1992; Fornell & Johnson, 1993; Hui, Wan, & Ho, 2007). A couple of other research also stated that customer satisfaction dictated their intention (Anderson, 1998; Anderson & Sullivan, 1993). Specifically related to freemium application, previous research also found a relationship between satisfaction, continuance use intention, and purchase intention (Kim, Lee, & Zo, 2018).

Concerning purchasing behavior, it is stated that perceived value and loyalty to a brand are determinant factors that influence individual intentions to buy (Choi & Kim, 2004; Hsu & Lin, 2015; Lu & Hsiao, 2010). Based on previous studies, a value consisting of emotional, social, price, and performance qualities have proven to influence a person's intention to pay for cellular internet services (Hsiao, 2013; Lu & Hsiao, 2010). Past studies also found the effect of perceived value in

the digital context, such as on financial applications (Karjaluoto, Shaikh, Saarijärvi, & Saraniemi, 2019), shopping applications (Shang & Wu, 2017), music streaming (Guerra & Fernandes, 2019) and games (Hsu & Chen, 2018).

There were several inconsistencies concerning the relationship between service quality and satisfaction dimensions. Previous studies found that service quality dimensions significantly impact satisfaction (Ali & Raza, 2017; Izogo & Ogba, 2015; Priyo, Mohamad, & Adetunji, 2019). Nevertheless, other recent studies also found that one of the dimensions of service quality, namely assurance (Ahmad, Ahmad, & Papastathopoulos, 2019; Balinado, Prasetyo, Young, Persada, Miraja, & Redi, 2021; Shao, Li, Guo, & Zhang, 2020), and responsiveness (Wang & Chen, 2016) does not affect satisfaction. A recent study stated that research related to perceived value and freemium services still needs to be explored (Hamari, Hanner, & Koivisto, 2020). Numerous past studies have proven that perceived value could act as a moderating variable towards the effect of service quality on satisfaction (Eggert & Ulaga, 2002; Ismail, Abdullah, & Francis, 2009; Srihadi, Hartoyo, Sukandar, & Maulana, 2016). Nevertheless, recent studies stated that perceived value only acted as an antecedent variable that directly influences customer satisfaction (Paulose & Shakeel, 2022; Uzir, Halbusi, Thurasamy, Hock, Aljaberi, Hasan, & Hamid, 2021; Yang & Xia, 2022). Furthermore, there are conflicting results regarding the relationship between service quality and intentions. Previous studies suggest that service quality affects intentions (Mohd Paiz, Ali, Abdullah, & Mansor, 2020), but another study showed the opposite (Habibi & Rasoolimanesh, 2021). This study was conducted to analyze whether perceived service quality, perceived value, and satisfaction can function as determinants of continuous use intention and purchase intention of freemium mobile applications.

2. THEORETICAL FRAMEWORK AND EMPIRICAL STUDIES

2.1. Freemium

Free and premium or known as Freemium, is a pricing strategy in which service or manufacturing companies provide their products for free but give their customers the option to pay a certain amount of money for additional features both physically and virtually (Marín de la Iglesia & Labra Gayo, 2009). Companies that carry out this strategy are usually in software, media, games, and web services. In this business model, the companies sustain their business (or one of the business lines) by using the revenue from users who opted for premium features. Music streaming applications such as Apple Music and Spotify and messaging applications such as Line and Kakaotalk were examples of free applications with freemium features, which people could download for free. However, they were allowed to remove advertisements or get additional emojis by paying a certain amount of money.

Providing a free sample of a product has proven to have a significant impact on sales through several means. Customers might push their transactions forward after being given free samples. Customers who initially were not interested in the product also might have become interested after tasting it (Bawa & Shoemaker, 2004; Liu, Au, & Choi, 2014). The high interest in premium features within a mobile application could signify that the freemium business model could push forward with the consumers' transactions or increase people's interest in the premium features (Daily Social, 2020).

2.2.   Intention

The intention is a function of belief, which forms the relationship between the feeling of belief and the behavior that is imitated from it (Ajzen, 1991). Intention toward a particular behavior could be a strong indicator of the manifestation of that behavior (Ajzen, 1991). This study uses two terms of intention: intention to use continuously and intention to buy. It is related to the continuous use of the application with freemium services and the purchase of freemium services within the application. The intention could be affected by several factors. One of them is the quality of service, which is one of the determining factors for a company's success (Lin, Chan, & Tsai, 2009). Previous research also found a positive relationship between service quality, purchase intention, and willingness to recommend (Cronin. Jr, Brady, & Hult, 2000).

2.3.   Dimensions of Service Quality towards Satisfaction and Intention

Service quality has become one of the critical success factors of thoroughly service-oriented businesses (Rajaguru, 2016). Service quality, which consists of assurance, empathy, reliability, and responsiveness, is an essential element of sustainable business goals, such as consumer retention, productivity and profitability, corporate image, and good product experience (Carrillat, Jaramillo, & Mulki, 2007; Kang & James, 2004; Ladhari, 2009). Service quality also contributed to the company's success by increasing product usage and the user's loyalty to the product (Lin et al., 2009). Previous studies have proven the positive impact of the dimensions of service quality, namely assurance, empathy, reliability, and responsiveness, on customer satisfaction (Ali & Raza, 2017; Izogo & Ogba, 2015; Khan, Lima, & Mahmud, 2021; Priyo et al., 2019) and intention (Hamari, Hanner, & Koivisto, 2017).

The service-oriented company's ability to maintain the consumers' trust was a very important element, especially the one utilizing the freemium business model. The higher the assurance, the higher the customer satisfaction (Lau, Chang, Moon, & Liu, 2006). The clarity and honesty of the given information were one of the main factors that contributed to companies' reputation, which determined how much the consumers trusted the company (Zeithaml, Parasuraman, & Malhotra, 2000), thus dictating their perception of assurance. The ecosystem of online services has its own risk and uncertainty compared to offline services (Wu, Hu, & Wu, 2010). Therefore, providing a perception of assurance amidst problems with freemium applications could determine consumers' continuous usage intention and purchase intention.

Several studies support the positive effect of assurance toward satisfaction in diverse fields. Previous research proved that assurance positively affects Islamic banks' satisfaction (Ali & Raza, 2017). Another research showed similar results in the field of hotel industries (Priyo et al., 2019). In the digital context, the positive effect of assurance towards satisfaction of mobile services has also been supported (Khan et al., 2021). Regarding the effect of assurance towards intention, although past research on freemium applications negated the impact on purchase intention, it still found a significant positive impact on continuous usage intention (Hamari et al., 2017). Thus, hypotheses were proposed as followed:

H1a: Perceived degree of assurance positively influences freemium smartphone application user satisfaction.

H1b: Perceived degree of assurance positively influences freemium smartphone application's continuous usage intention.

H1c: Perceived degree of assurance positively influences freemium smartphone application's purchase intention.

Empathy is how services can be adjusted toward a customer's needs (Zeithaml et al., 2000). An application's ability to be personalized and customized provides a unique and specific customer experience. Digital services could be adjusted toward customers' distinctive characteristics and habits (Franke, Keinz, & Steger, 2009). The feature to customize was usually available as a form of premium service. Hence, customers need to buy premium services to customize the application according to their preferences. Purchasing premium game application services can give customers a more immersive experience, a unique look, or a distinctive advantage over others. In music applications, downloading songs or listening without needing to be connected to the internet could only be enabled through premium purchases.

An application's ability to cater to customers' personal preferences would increase their satisfaction (Lau et al., 2006) elevate the connection between them, and further increase the continuous usage of the services (Gefen, 2002; Zeithaml, Berry, & Parasuraman, 1996). As stated in the previous section, studies on the effect of service quality dimensions on satisfaction have found a significant impact of empathy in banking (Ali & Raza, 2017) and hospitality (Priyo et al., 2019). The result was also aligned with other studies in automobile repair (Izogo & Ogba, 2015) and mobile banking services (Khan et al., 2021). Research in the digital context also found a significant impact of empathy towards continuous usage intention but not purchase intention on freemium applications (Hamari et al., 2017). Thus, hypotheses were proposed as followed:

H2a: Empathy positively influences freemium smartphone application user satisfaction.

H2b: Empathy positively influences freemium smartphone applications' continuous usage intention.

H2c: Empathy positively influences freemium smartphone application's purchase intention.

Reliability is defined as a service's technical function and accuracy (Zeithaml et al., 2000). Reliability is also one-factor determining users' intention of freemium services because technical functionality plays a significant role in the experience of using freemium applications. Technical problems such as application crashes or system errors could significantly affect customers' perception of the application's reliability. Customer perceptions of the overall application service quality may also be affected (Lewis, Whitehead, & Wardrip-Fruin, 2010; Lin, Hsu, & Chen, 2013). Therefore, the service provider needs to provide accurate and reliable services. Numerous research had also supported the positive impact of reliability on satisfaction in several fields, including mobile services (Ali & Raza, 2017; Izogo & Ogba, 2015; Khan et al., 2021; Priyo et al., 2019). Reliability was found to significantly impact continuous usage intention but not purchase intention in a digital context (Hamari et al., 2017). Thus, hypotheses were proposed as follows:

H3a: Reliability positively influences freemium smartphone application user satisfaction.

H3b: Reliability positively influences freemium smartphone application's continuous usage intention.

H3c: Reliability positively influences freemium smartphone application's purchase intention.

Responsiveness is defined as how reactively the freemium service provider addresses problems encountered by the users (Zeithaml et al., 2000). In today's market, one of the important

aspects of a mobile application is how fast and to what extent the mobile application company could give their responses to users' problems and provide solutions to those problems (Hamari et al., 2017). In the context of online services, various channels such as social media, online forums, and company websites were often used as media to help troubleshoot users' problems. The availability of options that the customers could use when encountering such problems was a determinant factor in both usage and purchase intention toward the freemium smartphone application. Research in various fields, including digital, has proven the positive impact of responsiveness toward satisfaction (Ali & Raza, 2017; Izogo & Ogba, 2015; Khan et al., 2021; Priyo et al., 2019). Responsiveness in a digital context also significantly impacts continuous usage but not purchase intention (Hamari et al., 2017). Thus, hypotheses were proposed as follows:

H4a: Responsiveness positively influences freemium smartphone application user satisfaction.

H4b: Responsiveness positively influences freemium smartphone application's continuous usage intention.

H4c: Responsiveness positively influences freemium smartphone application's purchase intention.

2.4.   The Moderating Effect of Perceived Value

Perceived value is a consumer's assessment of the usefulness of a product or service in general. It was determined from consumers' perceptions of what they get relative to how much they must spend. The perceived value consists of emotional value (enjoyment), social value (connectedness), performance value (access flexibility), and value for money (good price and reward). Previous studies stated that perceived value directly influences satisfaction (Paulose & Shakeel, 2022; Uzir et al., 2021; Yang & Xia, 2022). However, several other studies state that perceived value can not only directly influence satisfaction but can also moderate the effect of perceived service quality on satisfaction (Eggert & Ulaga, 2002; Ismail et al., 2009; Srihadi et al., 2016).

Emotional value refers to the value that comes from a person's feelings as an affective state when that person uses something, which in this study was a freemium application (Lu & Hsiao, 2010). The affective state was people's enjoyment or pleasure when using the freemium application. The more a person enjoys a product, the better their evaluation (Isen, Shalker, Clark, & Karp, 1978). Thus, the more the customer enjoys a freemium application, the higher their satisfaction. Based on several previous studies, emotional value not only directly affects satisfaction (Paulose & Shakeel, 2022; Uzir et al., 2021; Yang & Xia, 2022) but also strengthens the effect of service quality on satisfaction (Eggert & Ulaga, 2002; Ismail et al., 2009; Srihadi et al., 2016). Instead of analyzing enjoyment's effect on satisfaction, this research wants to figure out whether enjoyment could moderate the effect of the dimensions of service quality toward satisfaction. Thus, a hypothesis was proposed as follows:

H5a: Enjoyment positively moderates the effect of assurance towards freemium smartphone application user satisfaction.

H5b: Enjoyment positively moderates the effect of empathy towards freemium smartphone application user satisfaction.

H5c: Enjoyment positively moderates the effect of service reliability towards freemium smartphone application user satisfaction.

H5d: Enjoyment positively moderates the effect of responsiveness towards freemium smartphone application user satisfaction.

Performance value is the quality and performance expected of using something, which is a freemium application in the context of this research. Performance value can also be access flexibility, referring to the extent to which users can use freemium applications whenever and wherever they want (Wei & Lu, 2014). The flexibility of using an application could determine the value of a freemium application. Based on the existing corpus, performance scores are shown to have the ability to directly influence satisfaction (Paulose & Shakeel, 2022; Uzir et al., 2021; Yang & Xia, 2022) and moderate the effect of service quality on satisfaction (Eggert & Ulaga, 2002; Ismail et al., 2009; Srihadi et al., 2016). Thus, hypotheses were proposed as follows:

H6a: Access flexibility positively moderates the effect of assurance toward freemium smartphone application user satisfaction.

H6b: Access flexibility positively moderates the effect of service empathy towards freemium smartphone application user satisfaction.

H6c: Access flexibility positively moderates the effect of service reliability toward freemium smartphone application user satisfaction.

H6d: Access flexibility positively moderates the effect of service responsiveness towards freemium smartphone application user satisfaction.

Social value can be interpreted to what extent freemium applications can increase one's social value (Lu & Hsiao, 2010). In this study, social value is also meant as connectedness, where by using certain applications, users can feel connected to other users who use the same application (Zhao & Lu, 2012). Based on various studies, it is concluded that social values can increase satisfaction (Paulose & Shakeel, 2022; Uzir et al., 2021; Yang & Xia, 2022) and moderate the effect of service quality on customer satisfaction (Eggert & Ulaga, 2002; Ismail et al., 2009; Srihadi et al., 2016). Thus, this research proposed hypotheses as follows:

H7a: Connectedness positively moderates the effect of assurance toward freemium smartphone application user satisfaction.

H7b: Connectedness positively moderates the effect of empathy towards freemium smartphone application user satisfaction.

H7c: Connectedness positively moderates the effect of reliability towards freemium smartphone application user satisfaction.

H7d: Connectedness positively moderates the effect of responsiveness towards freemium smartphone application user satisfaction.

In this research, value for money was divided into price and reward. Price is related to both the short-term and long-term costs of using a freemium application (Lu & Hsiao, 2010), while reward refers to the benefit the user could get from using a freemium application. Previous research found that value for money, either price or reward, can increase satisfaction (Paulose & Shakeel, 2022; Uzir et al., 2021; Yang & Xia, 2022). However, previous studies have also found that value for money can affect satisfaction and moderate service quality's effect on customer satisfaction (Eggert & Ulaga, 2002; Ismail et al., 2009; Srihadi et al., 2016). Thus, hypotheses were proposed as follows:

H8a: Price positively moderates the effect of assurance toward freemium smartphone application user satisfaction.

H8b: Price positively moderates the effect of empathy towards freemium smartphone application user satisfaction.

H8c: Price positively moderates the effect of reliability towards freemium smartphone application user satisfaction.

H8d: Price positively moderates the effect of responsiveness towards freemium smartphone application user satisfaction.

H9a: Reward positively moderates the effect of assurance towards freemium smartphone application user satisfaction.

H9b: Reward positively moderates the effect of empathy toward customer satisfaction.

H9c: Reward positively moderates the effect of reliability towards freemium smartphone application user satisfaction.

H9d: Reward positively moderates the effect of responsiveness towards freemium smartphone application user satisfaction.

2.5. Customer Satisfaction and Intention

Customer satisfaction measures the extent to which a product can meet customer needs and expectations (Zeithaml, Bitner, & Gremler, 2010). Customer satisfaction is one of the determinant factors that could affect a customer's intention to continuously use a product and recommend it to another person (Rajaguru, 2016). Previous research also stated that intention is closely related to customer satisfaction (Cronin & Taylor, 1992; Fornell & Johnson, 1993; Hui et al., 2007). Based on several other research, the positive effect of customer satisfaction on intention also had been supported (Ifinedo, 2018; Kumar, Israel, & Malik, 2018; Ruangkanjanases, Hsu, Wu, Chen, & Chang, 2020). Thus, hypotheses were proposed as follows:

H10a: Customer satisfaction positively influences freemium smartphone application's continuous usage intention.

H10b: Customer satisfaction positively influences freemium smartphone application's purchase intention.

2.6. Continuous Usage Intention and Purchase Intention

One of the reasons why smartphone applications used a freemium business model was to attract a certain number of customers with free entry pricing (Hamari & Järvinen, 2011; Hamari & Keronen, 2017; Oestreicher-Singer & Zalmanson, 2013). The continuous usage of an application might affect the premium features' purchase decision (Hamari & Keronen, 2017). The previous statement was also supported by numerous previous research related to the relationship between continuous usage and purchase decision (Hamari & Keronen, 2017; Hanner & Zarnekow, 2015; Hu, 2019; Mäntymäki & Salo, 2013). Previous research also stated that continuous usage positively impacts purchasing decisions (Hamari et al., 2017). Based on the statement above, a hypothesis was proposed as follows:

H11: Continuous usage intention positively influences purchase intention.

2.7.   Research Framework

Based on the supporting theories and studies that were discussed in the previous section, satisfaction could be affected by the dimensions of service quality. In addition, perceived value can also function as another antecedent variable that affects satisfaction. However, instead of analyzing the direct effect of perceived value on satisfaction, this study wants to confirm whether perceived value could moderate the effect of service quality on satisfaction. The result of this study could provide insight into whether users' perception of the service quality of freemium applications became more positive by increasing the value of an application. Ultimately, the better the users' perception of the service quality, the higher their satisfaction. Conceptually, this could lead to continuous usage of the freemium application and further lure them to purchase the premium services. The result of this study could contribute towards better implementation of pricing structure policy, especially by freemium application developers in Indonesia. The model that depicted the hypotheses proposed above can be seen in Figure 1 below.
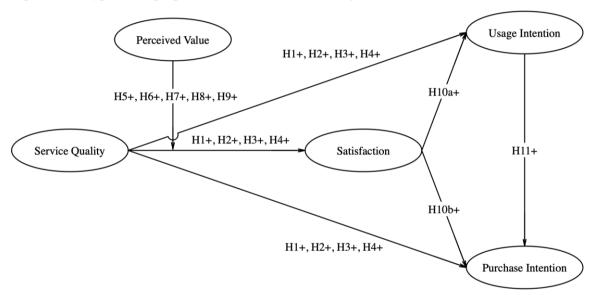

Figure 1. Research Model

3.   RESEARCH METHODS

A quantitative method was used in this study to measure the effect of service quality on satisfaction and intention. The moderation effect of perceived value towards the relationship between service quality and satisfaction was also measured in this study. This study uses non-probability purposive sampling of students who use freemium applications or buy premium services. The reason behind this was that college students were one of the major internet users in Indonesia (APJII, 2017). According to other statistics, users of one of the main categories of freemium applications, mobile games, were mainly around the age of 16-34 (Lokadata, 2018), One of the music streaming applications, Spotify, also released Spotify Consumer Insight 2017, a survey which concluded that the age of its users in Indonesia ranged from 15-34 years old (TechnoBusiness Media, 2022).

A questionnaire was used, and a total of 258 responses were collected. Among those, only 220 were used after several unsuitable entries were eliminated due to providing false information and central tendency. The indicators used are adopted from previous studies related to service quality (Hamari et al., 2017), satisfaction (Cronin. Jr et al., 2000), intention (Hsu, Yen, Chiu, & Chang, 2006) and perceived value (Zhao & Lu, 2012). The characteristics of respondents were shown on Table 1.

Table 1. Characteristics of Respondents

Category		Frequency	Percentage
Age (years)	18-19	73	33.2%
	20-21	94	42.7%
	22-23	47	21.4%
	24-25	6	2.7%
	Total	220	100.0%
Gender	Male	76	34.5%
	Female	144	65.5%
	Total	220	100.0%
Category of Freemium Applications that were used	Games	15	6.8%
	Comics	2	0.9%
	Comics and Games	1	0.5%
	Music Streaming	66	30.0%
	Music Streaming and Games	16	7.3%
	Music Streaming and Comics	6	2.7%
	Music Streaming and Messenger	40	18.2%
	Music Streaming, Messenger and Games	20	9.1%
	Music Streaming, Messenger and Comics	18	8.2%
	Music Streaming, Messenger, Comics and Games	14	6.4%
	Messenger	11	5.0%
	Messenger and Games	5	2.3%
	Messenger and Comics	6	2.7%
	Total	220	100.0%

Source: SmartPLS Output, 2022

Based on the table above, 65,5% of female respondents were involved in this study, while 34,5% were male. Regarding age, 33.2% of respondents were aged 18-19 years, 42.7% were 20-21 years, 21.4% were 22-23 years, and 2.7% were 24-25. Among the four categories of freemium applications used by respondents, namely games, comics, music streaming, and messengers, it was reported that music streaming was the most widely used freemium application, with a percentage of 30%. Then, respondents who use music streaming and messenger have a percentage of 18.2%. The rest of the responses that were below 10% included respondents that used comics, messenger, and entries on several categories of freemium applications simultaneously.

A Likert scale of 1-4 is used to reduce central tendency (Kulas, Stachowski, & Haynes, 2008), reduce the likelihood of respondents having a neutral opinion (Chyung, Roberts, Swanson, & Hankinson, 2017; Kulas & Stachowski, 2009) and reduce the likelihood of respondents choosing an answer only to please the interviewer (Garland, 1991). Previous research stated that the sample size needed a statistical power of 80%, with an R^2 of 0.25 and a significance level of 0.01. The six

arrows pointing to a construct are 103 (Hair, Ringle, Hult, & Sarstedt, 2014). Therefore, the number of samples involved in this study aligned with the minimum condition previously stated.

Partial Least Square through SmartPLS was used in this study. Before the hypotheses are tested, the goodness of fit must first be determined by evaluating the outer and inner models. To evaluate the outer model, the loading factor of all the indicators on each variable need to be above 0.70. Any indicators with a loading factor below 0.70 would not be included in the test. To ensure validity, the $\sqrt{AVE}$ of all the variables must have numbers higher than all the latent variable correlations. If such conditions were achieved, all the variables would be valid or have good discriminant validity. The composite reliability must be above 0.70. To evaluate the inner model, the Q2 predictive relevance of all dependent variables must be higher than 0. Lastly, the level of R2 needs to be determined to determine the impact of all the independent variables used in this study on their respective dependent variables. Studi ini mengacu pada jumlah statistik-t dan nilai-p untuk menguji signifikansi. This study uses a significance level of 0.01. Therefore, the total t-statistic must be above 2.58, and the p-value must be ≤ 0.05 for effect to be considered significant.

4.   DATA ANALYSIS AND DISCUSSIONS

4.1.   Goodness of Fit

From the results shown in Table 2, several indicators have loading values < 0,70. Those indicators were AS3, RES1, SAT1, UI3, PI3 and REW3. Therefore, these indicators were not included in the analysis. After eliminating the previous indicators, it can be concluded from Table 2 (Loading**) that all indicators have a loading value of >0.70 and are declared valid or fulfill the convergent validity test.

Based on both Tables 2 and 3, it could be seen that the smallest number of $\sqrt{AVE}$ was 0.800, while the highest number of correlations was 0.775. It was concluded that all the $\sqrt{AVE}$ were above the correlations between variables and had a good discriminant validity. The composite reliability of all indicators is above 0.70. It indicates that all variables in this study are reliable and have good internal consistency. It was found that the value of R2 on satisfaction was 0.789. Thus, assurance, empathy, reliability, and responsiveness, along with moderation variables enjoyment, access flexibility, connectedness, price, and reward, could explain satisfaction by 78.9%.

The R2 value for continuous usage intention is 0.518, meaning that assurance, empathy, reliability, and responsiveness can explain continuous usage intention by 51.8%. Conclusively, the value of R2 on purchase intention is 0.577, which means that assurance, empathy, reliability, responsiveness, and intention to use continuously can explain purchase intention by 57.7%. Based on the value of Q2 predictive relevance of satisfaction, continuous usage intention, and purchase intention, those variables had a good predictive relevance.

Table 2. Outer Model and Inner Model Evaluation

Indicators	Loading*)	Loading**)	AVE**)	√AVE	Composite Reliability**)	R²	Q² Pred. Rel.
AS: AS1	0.879	0.905	0.808	0.899	0.927		
AS2	0.876	0.888					
AS3***)	0.479						
AS4	0.893	0.905					
EM: EM1	0.826	0.826	0.662	0.814	0.887		
EM2	0.858	0.860					
EM3	0.790	0.788					
EM4	0.779	0.779					
REL: REL1	0.855	0.856	0.734	0.857	0.917		
REL2	0.840	0.838					
REL3	0.881	0.882					
REL4	0.851	0.851					
RES : RES1***)	0.687		0.736	0.858	0.893		
RES2	0.834	0.852					
RES3	0.872	0.898					
RES4	0.794	0.822					
SAT : SAT1***)	0.576		0.796	0.892	0.887	0.789	0.537
SAT2	0.882	0.895					
SAT3	0.844	0.890					
UI : UI1	0.912	0.926	0.856	0.925	0.922	0.518	0.422
UI2	0.902	0.925					
UI3***)	0.366						
PI : PI1	0.914	0.925	0.827	0.909	0.905	0.577	0.453
PI2	0.853	0.893					
PI3***)	0.537						
EN : EN1	0.827	0.828	0.789	0.888	0.937		
EN2	0.903	0.902					
EN3	0.926	0.925					
EN4	0.895	0.895					
AF : AF1	0.740	0.746	0.640	0.800	0.842		
AF2	0.880	0.874					
AF3	0.773	0.774					
CON : CON1	0.826	0.823	0.696	0.834	0.873		
CON2	0.872	0.871					
CON3	0.803	0.807					
PR : PR1	0.870	0.868	0.764	0.874	0.906		
PR2	0.902	0.901					
PR3	0.849	0.852					
REW : REW1	0.818	0.865	0.773	0.879	0.872		
REW2	0.876	0.893					
REW3***)	0.466						

*: Before elimination of loading <0.70

**: After elimination of loading <0.70

*** : indicators with loading <0.70

Source: SmartPLS Output, 2022

Table 3. Latent Variable Correlations

	AS	EM	REL	RES	SAT	UI	PI	EN	AF	CON	PR	√AVE
EM	0.606											0.814
REL	0.583	0.635										0.857
RES	0.418	0.511	0.622									0.858
SAT	0.495	0.646	0.737	0.690								0.892
UI	0.591	0.497	0.581	0.560	0.626							0.925
PI	0.518	0.476	0.450	0.437	0.493	0.746						0.909
EN	0.550	0.627	0.670	0.586	0.775	0.628	0.506					0.888
AF	0.455	0.491	0.610	0.492	0.569	0.388	0.355	0.608				0.800
CON	0.462	0.424	0.635	0.598	0.602	0.531	0.445	0.639	0.594			0.834
PR	0.443	0.520	0.538	0.547	0.609	0.553	0.506	0.524	0.430	0.554		0.874
REW	0.494	0.549	0.589	0.586	0.637	0.602	0.519	0.665	0.502	0.627	0.641	0.879
√AVE	0.899	0.814	0.857	0.858	0.892	0.925	0.909	0.888	0.800	0.834	0.874	

Source: SmartPLS Output, 2022

Table 4. Path Coefficient

	Path Coefficient	T-Statistic	P-Value
AS -> SAT	-0.036	0.623	0.267
AS -> UI	0.354	4.277*)	0.000*)
AS -> PI	0.078	1.184	0.118
EM -> SAT	0.084	1.255	0.105
EM -> UI	-0.053	0.616	0.269
EM -> PI	0.145	2.063	0.020
REL -> SAT	0.228	2.813*)	0.003*)
REL -> UI	0.067	0.768	0.221
REL -> PI	-0.077	1.054	0.146
RES -> SAT	0.195	3.099*)	0.001*)
RES -> UI	0.185	2.584*)	0.005*)
RES -> PI	0.006	0.097	0.462
AS*EN -> SAT	0.003	0.030	0.488
EM*EN -> SAT	-0.072	0.617	0.269
REL*EN -> SAT	-0.040	0.381	0.352
RES*EN -> SAT	-0.125	1.420	0.078
AS*AF -> SAT	-0.116	1.311	0.095
EM*AF -> SAT	-0.015	0.125	0.450
REL*AF -> SAT	0.055	0.484	0.314
RES*AF -> SAT	0.041	0.582	0.280
AS*CON -> SAT	0.159	1.486	0.069
EM*CON -> SAT	-0.051	0.425	0.336
REL*CON -> SAT	0.019	0.155	0.439
RES*CON -> SAT	0.086	0.943	0.173
AS*PR -> SAT	0.116	1.148	0.126
EM*PR -> SAT	0.023	0.238	0.406
REL*PR -> SAT	0.033	0.334	0.369
RES*PR -> SAT	-0.124	1.814	0.035
AS*REW -> SAT	-0.015	0.127	0.450
EM*REW -> SAT	0.069	0.691	0.245
REL*REW -> SAT	-0.061	0.499	0.309
RES*REW -> SAT	0.075	0.826	0.205
SAT -> UI	0.308	3.241*)	0.001*)
SAT -> PI	-0.009	0.106	0.458
UI -> PI	0.675	11.409*)	0.000*)

Source: SmartPLS Output, 2022

4.2.   Dimensions of Service Quality towards Satisfaction

Based on Table 4, it was shown that among the dimensions of service quality that could influence satisfaction in this study, reliability and responsiveness were the only variables that had significant positive impacts with the t-statistics value of 2.813 (p-value of 0.003) and 3.099 (p-value of 0.001) respectively. In contrast, assurance and empathy had proven not to affect satisfaction. Thus, it was concluded that H1a and H2a were rejected while H3a and H4a were accepted. Among service quality variables such as assurance, empathy, reliability, and responsiveness, the most important variables that could affect students' satisfaction were the reliability and responsiveness of the freemium application. These results contradict previous research, which found a positive impact on service quality dimensions on customer satisfaction (Chandra, Ng, Chandra, & Priyono, 2018).

However, some are still in line with the study, which found a positive impact on reliability and responsiveness to customer satisfaction (Ali & Raza, 2017; Izogo & Ogba, 2015; Priyo et al., 2019). The customer would feel satisfied if the service that had been provided to them were more than the cost they would have to pay (Chandra et al., 2018). Customers who feel satisfied will also share their experiences with others (Ali & Raza, 2017). The fact that there was no impact of assurance toward satisfaction is also supported by several other prior findings (Ahmad et al., 2019; Balinado et al., 2021).

4.3.   Dimensions of Service Quality towards Continuous Usage Intention

The path coefficient results above also indicated that among the service quality dimensions that could influence continuous usage intention, only assurance and responsiveness had significant positive impacts with the t-statistics values of 4.277 and 2.584, respectively. In contrast, empathy and reliability had proven not to affect continuous usage intention. Therefore, it was concluded that H2b and H3b were rejected while H1b and H4b were accepted. Based on the previous statements, this study concluded that among service quality variables, the most important variables that could affect students' intention to use freemium applications were assurance and responsiveness. Even though these results conflicted with the previous study that found the positive impact of service quality on intention, they were still partially in line with the studies mentioned earlier that found the positive impact of assurance and responsiveness toward intention (Mohd Paiz et al., 2020; Shao et al., 2020). This finding is also in line with previous research that found no direct effect of service quality on intention and would only affect intention through perceived value (Habibi & Rasoolimanesh, 2021).

4.4.   Dimensions of Service Quality towards Purchase Intentions

The above findings suggested that no service quality dimensions could affect students' purchase intention. Therefore, H1c, H2c, H3c, and H4c were rejected. These results were proven to be inconsistent with several previous studies that found significant positive impacts on service quality towards intention (Mohd Paiz et al., 2020; Shao et al., 2020). Several reasons could justify these findings. To begin with, the range of prices of the freemium services might not suit the allowance that the students have. Take music streaming applications, for example. The cost of a music streaming subscription could vary between IDR 35,000 to IDR 55,000 per month. For game applications, the prices of premium items could vary between IDR 14,000 to IDR 1,599,000 per item. Although some of the prices might look irrelevant for some students, they might be significant for others.

In addition, for most of the freemium applications, students could get away from paying for the premium services as long as they could bear the limitation on the free version. This result aligned with a previous study that found no effect of service quality on intention (Habibi & Rasoolimanesh, 2021; Hamari et al., 2017). The lack of influence of service quality on purchase intention may be due to premium options unrelated to the customer's needs (Hamari et al., 2017). Take Spotify, for example, as a music streaming application; its core service allows people to listen to their desired music. As long as the user can listen to music, advertisement (which is usually one of the premium features' main selling points) might not hinder them.

4.5.   Moderating Effect of Perceived Value

The moderation effect of perceived value on the effect of service quality on customer satisfaction was proven based on the result above that none of the perceived value variables could moderate the effect. Hence, H5, H6, H7, H8, and H9 were rejected. These results are inconsistent with previous studies that prove the moderating effect of perceived value on the relationship between service quality and customer satisfaction (Eggert & Ulaga, 2002; Ismail et al., 2009; Srihadi et al., 2016). However, these findings are still in line with other studies that state perceived value as an antecedent variable that directly affects customer satisfaction (Paulose & Shakeel, 2022; Uzir et al., 2021; Yang & Xia, 2022). The price of the premium services might contribute to this finding. As mentioned in the previous section, premium services could be too expensive for students. Thus, the perceived value for money may be too low to affect their satisfaction.

4.6.   Satisfaction towards Intention

Among the effect of customer satisfaction towards intention, it was found that customer satisfaction positively influenced continuous usage intention with t-statistics of 3.241 (p-value of 0.001), while purchase intention was unaffected. Hence, H10a was accepted, but H10b was rejected. The result was consistent with previous studies that found a significant positive impact on customer satisfaction towards intention (Ifinedo, 2018; Kumar et al., 2018; Ruangkanjanases et al., 2020). This finding also aligned with a previous study that proved that satisfaction affects continuance intention but not purchase intention (Kim et al., 2018). As mentioned in the previous statement, regardless of how satisfied the students were with the freemium application they were using, they would not want to opt for the premium services if they could not afford them. This finding also suggested that although the free version of the application has limitations, as long as they could utilize the primary function of the application, they still feel satisfied with it. Based on the findings above, it was also suggested that regardless of how good the service quality of the freemium application was, the students would not purchase the freemium service.

4.7.   Continuous Usage Intention towards Purchase Intention

Finally, based on the path coefficient results above, it was concluded that continuous usage intention positively impacts purchase intention with the t-statistics value of 11.409 (p-value 0.000). Thus, H11 was accepted. This finding suggested that students' continuous usage of a freemium application could lead to purchasing its premium services. This finding was in line with previous research that proved that continuous usage intention could lead to purchases (Hamari et al., 2017; Hamari & Järvinen, 2011; Oestreicher-Singer & Zalmanson, 2013). A past study also stated that higher usage intentions could manifest in higher purchase intentions (Liu et al., 2014).

5.   **CONCLUSION, SUGGESTION AND LIMITATION**

Based on previous discussions, several conclusions could be drawn. First and foremost, it was concluded that among the dimensions of service quality, only the reliability and responsiveness of the freemium application had a significant positive impact on students' satisfaction. Moreover, among the dimensions of service quality, only assurance and responsiveness could positively affect students' intention to use freemium applications. Moreover, among the dimensions of service quality, only assurance and responsiveness can positively influence students' intention to use freemium applications. As for the quality variables, none of them can affect students' intention to buy premium services in freemium applications. Likewise, with perceived value variables, none of which can moderate the effect of service quality on satisfaction. Student satisfaction positively impacts continuous usage intention but not purchase intention. Finally, continuous usage intention was found to have a significant positive impact on purchase intention.

These results provided several theoretical implications. To begin with, as long as the application could function properly and there were numerous means for students to turn in when a problem might occur, they would feel satisfied with the application, regardless of the risk and the customization option that the application had. On another note, if it was proven that there was no apparent risk while using a freemium application, students would still want to use the applications, regardless of the application's lack of customization. The findings above also suggested that even though technical difficulties might occur when using the applications, they did not matter as long as the application developers addressed those problems. Conclusively, the above findings suggested that the more the students were satisfied with the application, the more they would keep using it. However, they still would not go as far as purchasing the premium service that the application has.

There were several practical implications to the findings above. Based on the findings, to bring satisfaction to freemium application users in Indonesia, the developers need to focus on an application that functions properly and provides a sufficient means of contact in case there are troubles within the application. These could be achieved in several ways. To ensure the application functions properly, developers should perform trials that involve users. It was usually conducted as a beta test where users were asked to test the application in a specific timeframe before it was released. An application usually only gives support in the form of e-mail. Although it might seem efficient, users may be dissatisfied with the support as they need to wait a while for the developers to respond.

By adding other support means such as forums or through social media like Facebook, developers could increase their response rate and provide better user satisfaction. In addition, app developers and publishers must be able to ensure user safety (usually related to user personal information) and quickly address any issues that may be encountered. It helps maintain the number of users and prevent them from switching to other similar applications. In conclusion, the more the applications could provide satisfaction to the users, the more the possibility for them to continue using the applications. As a result, the more they can purchase premium services.

While this study investigated the motives of users' purchase intention, several limitations could be addressed for future studies. This study did not take the allowance of the students into account. Future studies should include the amount of allowance the average students have to

explain better why they decided to purchase or not purchase the premium service of a freemium application. This study used several categories of freemium applications. Further studies should use freemium applications within a specific category to find whether there were differences in purchase intention among several categories of freemium applications available in the market. Pointing future research toward a specific category could also contribute to a better representation of that category. Conclusively, future studies on freemium applications that include perceived value could further confirm whether it could act as a moderating variable towards the relationship between service quality and satisfaction.

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