

## INTEGRATION MODEL TPB AND PERCEIVED RISK OF INTENTION OF USE APPLICATIONS AND GAMES ONLINE FREEMIUM PAID VERSION: INDONESIAN STUDENTS CONTEXT

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### ABSTRACT

This study examines how the Theory of Planned Behavior and perceived risk can affect the intention to switch users of free versions of freemium online applications and games to use paid versions of freemium online applications and games. Data was collected using an online questionnaire which was distributed to 226 students at several universities in Indonesia. This study was analyzed using Structural Equation Modeling with Amos. The results showed that attitude proved to have a positive effect on intention. Subjective norms proved to have a positive effect on perceived behavioral control and attitudes. Perceived behavioral control has a positive effect on attitudes and intentions. Subjective norms were not shown to have a negative effect on intentions. Perceived performance risk does not affect attitudes and intentions to use freemium paid versions of online applications and games.

**Keywords:** Theory Planned Behavior, Perceived Risk, Purchase Intention, Freemium Application, Freemium Games.

### Introduction

There has been a surge in demand related to the use of technology not only devices. such as smartphones, tablets, but also online applications and games (Hamari et al., 2017). This increase in use makes technology producers both in the form of devices and software such as applications and online games competing to create products that can satisfy customers. As an example the case in the context of applications and online games, many online software services companies providing software originally paid or premium, now switch provides applications and games online with free and paid access (freemium). such as Youtube, Netflix, Disney Star, PUBG Mobile, Mobile Legend, or applications such as Joox and Sportivo music players (Putra et al., 2020).

In the application services and online games with free and paid access (freemium), these consumers are given two alternative service options, namely the free version, but with limited

services, and a paid version with free access services (Liu et al. 2014). With this model, consumers can freely choose the application services and online games they want. It is interesting to examine more deeply how the pattern of consumer behavior in deciding what product is desired with the two choices.

To explain how the pattern of consumer behavior in the context of using these freemium applications and games, several empirical concepts can be used, such as Hamari et al., (2017) examining the effect of service quality on repeat intentions to use freemium services. Ladeira et al. (2016) examine visual appeal, escapism, fun, efficiency, and economic value as antecedents of the experience of using freemium games in the context of children. However, recently Putra et al. (2020) used the TPB concept in explaining how the intention is to switch from

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using the free version of the service to the paid version.

According to (Cheng and Huang, 2013; Putra et al., 2020), TPB is an applicable model that can measure consumer behavior accurately where the TPB explains that consumer intentions in using a product or service are driven by the influence of subjective norms, perceived behavior control, and attitudes (Ajzen, 1985, 1991).

However, any behavior associated with the consumption or use of the product or service will potentially risk that may be perceived by someone. To measure intentions and behavior more comprehensively, this study also uses perceived risk as an antecedent outside the TPB framework. If linked in the TPB mechanism, the perceived risk will increase the anticipation of a negative outcome, which then leads to an unfavorable attitude. When an unfavorable attitude appears, it usually produces a negative effect on the user's intention to use a product or service (Hsieh, 2015). Based on this explanation, we conclude that perceived risk can decrease or increase a person's intention to use a product or service. Therefore, this study uses the theory of TPB and perceived risk as to the basis for measuring intentions to purchase or use freemium applications and games.

## Literature Review

### Theory Planned Behavior

Theory Planned Behavior (TPB) is one of the well-established models in viewing the phenomenon of consumer behavior patterns, especially the behavior of using technology (Cheng and Huang, 2013, Putra et al., 2020). As Sniehotta, Presseau, and Soares (2014) say that TPB is very well known among researchers and is also familiar to many students, practitioners, and policymakers, and is used in various research contexts. In concept, TPB is a model developed from the theory of reasoned action (TRA) (Ajzen and Fishbein, 1975).

This TPB model is a subjective form of perception, inherently leading to individual perceptions of human behavior patterns. The TPB explains that individuals will have an intention to perform a behavior when they evaluate it positively, then believe that other people who are considered important think they should do it, and consider it to be under their control. According to this model, attitudes, subjective norms, and perceived behavioral control (PBC) are elements that help to understand the reasons or factors that explain individual actions, (see Putra et al., 2020; Cheng and Huang, 2013; Yang and Zhou, 2011).

If viewed from the definition, Ajzen and Fishbein (1975) say that attitude refers to the level of evaluation that a person likes or dislikes from the behavior to be carried out (Ajzen and Fishbein, 1975). Then the perceived behavioral control is a person's perception of the ease or difficulty in performing the desired behavior (Liao et al., 2007). Meanwhile, subjective norms are a form of social pressure regarding normative

beliefs about the expectations of others that are felt by someone to do or not to take an action (Ajzen, 1991).

### Perceived Risk

Since the 1960s, the theory of perceived risk has been used to explain consumer behavior (Lee, 2009). Featherman and Pavlou (2003) say that perceived risk is the perceived uncertainty about the possible negative consequences of using a product or service. Featherman and Pavlou (2003) define risk as a positive or negative result that will be felt when individuals use a product or service. Furthermore, when viewed from several previous studies, perceived risk can be measured on the attributes inherent in services (see Featherman and Pavlou, 2003; Hansen et al., 2018; Xie, et al., 2017).

Most researchers claim that consumer perceived risk is a kind of multidimensional construct (Lee, 2009). However, from the many dimensions that exist in the risk construct. The use of dimensions on perceived risk may vary and be adapted to the context of the research. According to (Featherman and Pavlou, 2003), the dimensions of perceived risk may vary and may be appropriate for the product or service. In research (Featherman and Pavlou, 2003), perceived risk is divided into several dimensions, such as financial risk. Security risk. Social risk. Time risk and performance risk.

Featherman and Pavlou (2003) say that in the context of product buying there is a mechanism for the formation of risk perceptions which can ultimately affect product purchases, when the social risks around the object are relatively positive, then a person can get more approval from their references in buying a product. On the other hand, when the perceived social risks are negative, then a person will get more hesitation in buying or using a product or service. Based on this explanation, we conclude that there are emotions that will arise such as anxiety or worry due to the influence of the perception of risks thought by someone so that it can affect consumer behavior we will use the product or service.

### Hypotheses Development

Referring to the concept of the theory of planned behavior, three antecedents can affect a person's intention to do something, namely perceptions of behavioral control, subjective norms, and attitudes. If described in the form of a mechanism, individuals will have an intention to perform a behavior when they evaluate it positively, then believe that other important people think they should do it, and consider it to be under their control. According to this model, attitudes, subjective norms, and perceived behavioral control (PBC) are elements that help to understand the reasons or factors that explain individual actions, (see Putra et al. 2020; Cheng and Huang, 2013; Yang and Zhou, 2011). If referring to several empirical research results, several researchers (such as Hunsinger and Corley, 2013; Bamberg et al., 2003; Smith et al., 2007) found that atti-

tudes have a positive effect on product and service user intentions. Based on the explanation above, we conclude that:

**Hypothesis 1:** Attitude has a positive effect on intention to use paid versions of freemium apps and games.

Furthermore, subjective norms function to influence a person's attitude and intention to use a product. If referring to some empirical results, Yang and Zhou (2011); Hunsinger and Corley (2013); Liao et al (2007) found that subjective norms positively affect the intention to use a product or service. On the other hand, subjective norms can also influence attitudes and perceptions of behavioral control. As Yang and Zhou (2011) found that subjective norms positively affect perceived behavioral control. Based on this explanation, we conclude that:

**Hypothesis 2a:** Subjective norms have a positive effect on attitude to use paid versions of freemium applications and games.

**Hypothesis 2b.** Subjective norms have a positive effect on perceived behavioral control to use paid versions of freemium apps and games.

**Hypothesis 2c:** Subjective norms have a positive effect on intentions to use paid versions of freemium apps and games.

If referring to several previous studies, perceived behavioral control has been shown to positively influence attitudes and can also predict intentions directly. If it is explained in the form of a mechanism, someone believes that he will be able to control behavior in the use of a product, then that person will be sure that he will be able to use the product. The study of Yang and Zhou (2011) found that behavioral control positively predicts attitudes in service use. In addition, Liao et al. (2007); Hansen et al. (2018) found that perceived behavioral control has a positive effect on behavioral intentions towards the use of online products and services. Based on this explanation, we conclude that:

**Hypothesis 3a:** Perceived behavioral control has a positive effect on attitude to use paid versions of freemium apps and games.

**Hypothesis 3b:** Perceived behavioral control has a positive effect on intention to use paid versions of freemium apps and games.

Most consumers are concerned about various risks in using technology, such as transaction security, available information, products, online privacy, and personal data, and these issues are often ignored by site providers. From a theoretical perspective, it seems reasonable that the perceived risk will cause a lower level of intent to use, which will result in lower use of technology (Wu and Wang, 2005). perceived risk as a predictor and barrier to online transactions, and is expected to significantly influence consumer behavioral intentions (Wu and Wang, 2005).

Several studies have found that risk can affect intentions to use online products (see, Feather-

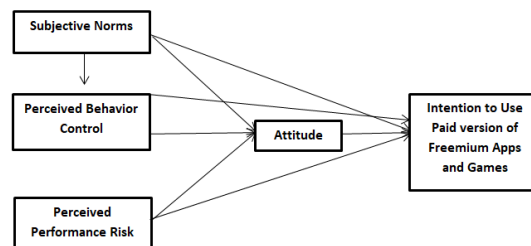
man and Pavlou, 2003; Hansen et al., 2018; Xie et al., 2017). E-services have a negative impact on perceptions of technology use and adoption. Furthermore, Lee's (2009) research shows that social risk has a negative effect on subjective norms in the implementation of e-banking. Sweeney et al. (1999) found that perceived performance risk, perceived financial risk had a negative effect on customer value perceptions. On the other hand, Hansen et al. (2018) found that the perception of risk positively affects attitudes. positive risk perception affects perceived behavioral control.

If the analogy in this study. when the risks are positive, the person will get relatively more approval and referrals in buying or using the service. Conversely, when the risks are negative, the person will tend to have more doubts about buying or using the service. In the context of this study, we use several dimensions of perceived risk, where we use perceived performance risk. We believe that in the context of using these freemium game and application services, there will be a performance risk of freemium game and application services. On the other hand, According to (Featherman and Pavlou, 2003). the dimensions of perceived risk may vary and may be appropriate for the product or service. Based on this explanation, we conclude that:

**Hypothesis 4a:** Perceived performance risk has a negative effect on attitude to use paid versions of freemium apps and games.

**Hypothesis 4b:** Perceived performance risk has a negative effect on intentions to use paid versions of freemium apps and games.

Figure 1. Research Model



**Research Methods**

**Sampling and Data Collection**

The research sample method in this study uses purposive sampling, by setting several criteria on the sample, such as students who use applications and games from the free version who have not made purchases on applications and games from the premium version within the previous 6 months and are 15-25 years old. Data was collected using an online survey method which was distributed to 226 respondents.

**Measurement**

To obtain indicator items that are appropriate to the research context, the researchers carried out translations and modifications so that measurements could be used according to the

context of this research. In the TPB model we use measurements from several previous researchers, consisting of Attitudes Cheng et al. (2006), Wu and Chen (2005) subjective norms, Wu and Chen (2005) perceived behavioral control, and Cheng et al. (2006). Meanwhile, the perceived benefits of Yiu et al. (2007), Featherman and Pavlou (2003) performance risk. Furthermore, to measure the perception of each respondent, each measurement item is measured using a 5-point Likert scale, with answer choices ranging from strongly disagree (1) to strongly agree (5). We also included three demographic questions about gender, age, and length of use of free versions of freemium apps and games. In addition, to analyze the data, we used SEM analysis using Amos.

**Result**

Based on the respondent profile, it was found that of the 223 respondents who participated in the survey, 68% of the respondents were male. The ages variable with the 15-20 year category occupied the highest percentage at 68,8%, then followed by the 21-25 year category at 31,2%. Whereas for the length of time using the application or paid versions of Freemium online Games, the usage category for more than 5 months was the highest category with 47.5%. Respondent profiles are presented in Table 1

Table 1 Respondents Profile

Variable	Category	Frequency	%
Gender	Male	119	68
	Female	104	32
Ages (year)	15- 20	153	68,8
	21-25	70	31,2
Length of time using the application or paid versions of Freemium online Games	1 month	71	32
	3 Months	23	10
	5 Months	13	6,5
	>5 Months	106	47,5

Source: Primary Data (2021)

This study uses a two-step approach for Structural Equation Model analysis (SEM) (Anderson and Gerbing, 1988), in the analysis phase, before testing the structural model, this study tests the measurement model using confirmatory factor analysis (CFA). Based on the results of the CFA analysis, each measurement item shows a loading factor value above 0.60. Furthermore, the Average Variance Extracted (AVE) for each construct has a value of more than 0.5. This shows that the measurements used also have good discriminant and convergent validity (Bagozzi and Yi, 1988).

Furthermore, in the reliability test, we used composite reliability analysis and Cronbach Alpha. Based on the results of the analysis, the value of the composite reliability ranged from 0.81 to 0.89. Meanwhile, the Cronbach Alpha value ranged from 0.897 to 0.906. This indicates that the value of composite reliability (CR) and Cronbach Alpha are more than 0.7, so it can be concluded that the measurements used have good reliability (Bagozzi and Yi, 1988). The

results of the validity and reliability test are presented in Table 2.

Tabel 2. Results of Validity and Reliability Test

Indicators	Loading (λ)	Cronbach Alpha	CR	AVE
Subjective Norm 1	0,79	0,899		
Subjective Norm 2	0,92	0,898		
Subjective Norm 3	0,85	0,900	0,89	0,72
Perceived CB 1	0,85	0,897		
Perceived CB 2	0,78	0,901		
Perceived CB 3	0,67	0,900	0,81	0,60
Perceived PR 1	0,95	0,906		
Perceived PR 2	0,82	0,903	0,89	0,78
Attitude 1	0,85	0,897		
Attitude 2	0,85	0,899	0,84	0,73
Intention 1	0,63	0,901		
Intention 2	0,90	0,898		
Intention 3	0,78	0,902	0,82	0,60

Source: Primary Data (2021)

After that, the Goodness of Fit test was carried out on the model. we made some modifications to fit the entire model so that the actual value of the Goodness Of Fit index listed is above the recommended threshold value. Based on the results of Goodness of Fit Test, it was found that ( $X^2 / df = 1.169$ ,  $GFI = 0.953$ ,  $RMSEA = 0.60$ ,  $AGFI = 0.911$ ,  $TLI = 0.953$ ,  $NFI = 0.929$ ,  $CFI = 0.970$ ). So it can be concluded that the research model fulfills the criterion of the goodness of fit index and can be continued in the structural model analysis. In detail, Goodness of Fit is presented in Table 3.

Table 3. Goodness of fit

GOF	Statistic Output	Cut-Off Value	Status
Chi-Square	169.6	Expected small	Fit
Significance Probability	0.00	≤ 0,05	Fit
CMIN/DF	1,169	≤ 2,0	Fit
GFI	0.953	≥ 0,90	Fit
RMSEA	0.60	0,50 - 0,80	Fit
AGFI	0.911	≥ 0,80	Fit
TLI	0.953	≥ 0,90	Fit
NFI	0.929	≥ 0,90	Fit
CFI	0.970	≥ 0,90	Fit

Source: Primary Data (2021)

After analyzed the Goodness of Fit test of the model, hypothesis testing used Structural Equation Model. Based on the results of the structural model analysis, it was found that the CR value between the attitude variables on intention was 3,692 with a significance of 0,00, so hypothesis 1 was accepted. Furthermore, the CR value between subjective norm variables on attitude was 5,327 with a significance of 0.00, so

hypothesis 2a was accepted. Meanwhile, the CR value between subjective norm variables on perceived behavioral control was 8,433 with a significance of 0.00, so hypothesis 2b was accepted.

Furthermore, the CR value between subjective norm on intention was 0.302 with a significance of 0.763, so hypothesis 2c was rejected. The CR value between the perceived control behavior on attitude was 3,251 with a significance of 0.0,01, so hypothesis 3a was accepted. Furthermore, the CR value between perceived control behavior on intention was 3,919 with a significance of 0.00, so hypothesis 3b was accepted. The CR value between perceived performance risk on attitude was 1,547 with a significance of 0,122, so hypothesis 4a was rejected, and the last one, the CR value between perceived performance risk on intention was 1,075 with a significance of 0,763, so hypothesis 4b was rejected. Based on the results, hypotheses 1, 2a, 2b, 3a, and 3b are accepted.

Table 4. Results of SEM Analysis

Hypothesis	CR	P-value	Results
1: Attitude ->Intention	3,692	0,00	Accepted
2a: Subjective norm -> Attitude	5,327	0,00	Accepted
2b: Subjective norm -> Perceived Control Behavior	8,433	0,00	Accepted
2c: Subjective norm -> Intention	0,302	0,763	Rejected
3a: Perceived Control Behavior -> Attitude	3,251	0,01	Accepted
3b: Perceived Control Behavior -> Intention	3,919	0,00	Accepted
4a: Perceived Performance Risk -> Attitude	1,547	0,122	Rejected
4b: Perceived Performance Risk -> Intention	1,075	0,763	Rejected

Source: Primary Data (2021)

## Discussion

The purpose of this study was to measure the intention to purchase or use the paid version of freemium applications and games based on integrating the theory of TPB and the perceived risk of study among students in Indonesia. Our risk is integrated with TPB theory because we feel can lower the risk or can also increase one's intention to use a product or service. Based on the test results, we found several new findings regarding the antecedents of intention to use paid versions of freemium online applications and games.

Based on the results of the analysis, we found that subjective norms have a positive effect on attitudes and perceived behavioral control in using paid versions of freemium online applications and games. This is in line with research conducted by Yang and Zhou (2011)

and Putra et al (2020). This is in line with previous research (Cheng and Huang, 2013, Putra et al. 2020) that attitudes affect the intention to use paid versions of freemium online applications and games.

On the other hand, subjective norms do not have a positive effect on intentions, but subjective norms have a positive effect on attitudes. This is in line with the research of Putra et al. (2020) who found that subjective norms did not have a positive effect on intentions, but rather subjective norms had a positive effect on attitudes. We conclude that subjective norms only affect the intention to use paid versions of freemium online apps and games indirectly through attitudes.

In addition, we also find that perceived behavioral control has a positive effect on attitudes and intentions to use paid versions of freemium online applications and games. This is in line with the results of previous studies which found that perceived behavioral control is one of the factors that drive behavioral intentions (Liao et al., 2007; Bamberg et al., 2003; Hansen et al., 2018; Smith et al., 2007; Putra et al., 2020).

However, the results of testing the perceived performance risk that negatively affects the intention to use freemium applications and games were not proven. Research results from Lu et al. (2005) found that people do not consider the risks of using free trials very carefully. When they decide to use the product continuously, the importance of risk attracts more attention. Usually, users are attracted to innovative technologies with free trials. In addition, people who decide to adopt better innovations may consider different issues than those considered by people who just examine the product. We conclude that in the context of this study, respondents had first tried the performance of applications and games freemium through non-paid version, so it makes the respondent has been able to estimate and feel directly associated with the risk of performance that would be felt if the switch to the paid version.

## Conclusion and Limitations

Based on test results, we conclude that some of the findings attitudes proved a positive influence on the intention. Subjective norms proved to have a positive effect on perceived behavioral control and attitudes. Perceived behavioral control has a positive effect on attitudes and intentions. Subjective norms were not shown to have a positive effect on intentions. Performance risk has no negative effect on attitudes and intentions to use freemium-paid versions of online applications and games. Although perceived performance risk is one of the main concerns in this study, it turns out that perceived performance risk has not been shown to have a negative effect on intentions to use freemium-paid versions of online applications and games. We conclude that the other dimensions of perceived risk (such as financial risk, security risk, social risk, risk Time) can affect the intention in the context of this study. In addition, several technology adoption models such as the Technology Acceptance

Model and linking satisfaction to the use of relevant freemium paid versions of online applications and games are used in further research.

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