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#### **CHAPTER III**

#### **RESEARCH METHODOLOGY**

#### 3.1 General Description of Research Object

YouTube is a video-sharing platform owned by Google, founded in 2015 by Chad Hurley, Steve Chen, and Jawed Karim. YouTube provides billions of videos with various categories, ranging from music, education, gaming, sports, vlogs, and more. It enables users to watch and upload unlimited videos for free through the website, mobile application, and network television. Statista (2020) reveals that more than 500 hours of video are uploaded to YouTube every minute by February 2020. According to Business of Apps (2021), the number of YouTube users in 2020 has reached 2.3 billion, indicating that YouTube is the world's largest video-streaming platform. Figure 3.1 shows a YouTube homepage.



Figure 3. 1 YouTube Homepage Source: YouTube, 2021

As time goes by, YouTube continues to grow and innovate to fulfill market needs related to entertainment. YouTube currently offers eight products: YouTube Go, YouTube Kids, YouTube Music, YouTube Originals, YouTube Premium, YouTube Select, YouTube Studio, and YouTube TV.

- 1) YouTube Go: a video-sharing platform specifically made for users to download and watch video offline, control data use, and share videos instantly.
- YouTube Kids: a video application designed specifically for kids, which provides a safer environment for kids to explore YouTube and enables parents to guide their activities easily.
- YouTube Music: a music streaming service that offers a wide variety of music, available in free and premium versions.
- 4) YouTube Originals: original movies, series, and events from YouTube.
- YouTube Studio: a management tool for content creators to manage their YouTube channels and videos.
- 6) YouTube Select: a service that enables advertisers to select more curated and higher quality content and creators for advertisement placement.
- YouTube TV: a subscription streaming service that enables users to watch live television from popular cable networks and major broadcasts.

YouTube employs a freemium business model to generate revenue from advertising and premium subscription. The implementation of advertising enables YouTube to generate income, companies to grow their brands and business by targeting the right audiences, and creators to earn income. According to YouTube's new policy, YouTube has the right to monetize and place advertising on all YouTube channels. In addition, YouTube earns money from monthly subscription, such as Youtube Premium and YouTube Music.

YouTube Premium is a subscription service that enables users to enhance their experience on YouTube and other YouTube platforms (YouTube Music, YouTube Kids). YouTube distributes the YouTube Premium membership package in three pricing categories as follows:

- 1) Individual: \$11.99/month (Rp59.000)
- 2) Student: \$6.99/month (Rp39.990)
- 3) Family (up to five family members): \$17.99/month (Rp89.000)

By paying for a monthly subscription plan, each subscriber may access the following exclusive features:

1) Ad-free videos

Users may watch millions of videos without being interrupted by ads before and during the videos, including video overlay ads, third-party banner ads, and search ads. This function is accessible across all platforms (YouTube, YouTube Music, YouTube Kids) and available on various devices such as mobile, computers, laptops, and smart TVs. In this case, users may still see the creator's branding or promotions embedded in the videos, as well as promotional links, shelves, and features inside and around the videos enabled by the creators (Google, 2021).

2) Download videos and watch offline

Users may download videos to watch offline when they are not connected to the internet. This feature can be accessed only through YouTube and YouTube Music. However, this feature is not available on computer and laptop devices (Google, 2021).

3) Play in the background

Users may play videos on their mobile device while using other applications or with the screen turned off. This feature is available on YouTube, YouTube Music, and YouTube Kids (Google, 2021).

4) Access to all YouTube Original series and movies

Users may watch more than 50 original series and movies on YouTube, such as Cobra Kai, Impulse, Origin, Lifeline, and others (Google, 2021).

5) Access to YouTube Music Premium

Users may access YouTube Music Premium to get benefits, such as listen to millions of music without ads, download music to the mobile device for offline listening, enable background play to continue playing music while using other applications, and enable audio-only mode for listening to music without loading the video (Google, 2021).

#### 3.2 Research Design

According to Malhotra (2019), research design is a framework for conducting a marketing research project, outlining procedures necessary to obtain the information needed to develop and solve marketing research problems. Research design is the foundation for conducting research; therefore, a good research design may help the implementation of research to be more effective and efficient.



Malhotra (2019) classifies research design into two main types: exploratory and conclusive, as shown in figure 3.2. They are as follows:

1) Exploratory Research Design

Exploratory research design is used to explore ideas and insights regarding problem situations (Malhotra, 2019). Furthermore, exploratory research may assist the researcher to formulate a problem more precisely, discover potential actions, and obtain additional insights for developing an approach to the problem (Malhotra, 2019).

2) Conclusive Research Design

Conclusive research design is used to assist decision-maker in evaluating, analyzing, and selecting the best action in a particular situation (Malhotra, 2019). In other words, conclusive research may enable the researcher to examine relationships and test hypotheses as a foundation in decision making.

In this study, the researcher employs a conclusive research design to examine the relationship between variables and test hypotheses from the research model. The findings of hypothesis testing will be analyzed and used to formulate the best actions that could be taken by the research object. According to Malhotra (2019), conclusive research design may be classified as descriptive and causal.

1) Descriptive Research

Descriptive research is a type of conclusive research used to describe something, usually market characteristics and functions (Malhotra, 2019). Descriptive research is classified into two types: cross-sectional design and longitudinal design.

a) Cross-sectional Design

Cross-sectional design is a type of descriptive research that collects data from sample of population only once (Malhotra, 2019). Cross-sectional design is classified into single cross-sectional design and multiple cross-sectional design. Single cross-sectional only collect one sample of population once; meanwhile, multiple cross-sectional collects two or more samples of population once (Malhotra, 2019).

b) Longitudinal Design

Longitudinal design is a type of descriptive research that repeatedly measures a fixed sample of population to gain a clear illustration regarding the situation and the changes that occur over time (Malhotra, 2019).

#### 2) Causal Research

Causal research is a type of conclusive research used to examine cause and effect relationships (Malhotra, 2019). By using causal research, researchers can understand the independent and dependent variables of a phenomenon and determine the nature of the relationship between causal variables and their possible effects.

This study employs descriptive research to examine the phenomena of YouTube Premium use. The researcher seeks to conduct in-depth analyses regarding customer perceptions of product characteristics and the relationships between variables to determine the factors that influence consumers' intentions to upgrade to YouTube Premium. The variables tested in this study are ubiquity, intrusiveness of advertising, discovery of new content, enjoyment, price value, and intention to upgrade to premium subscription. In terms of data collection, the author uses a single cross-sectional to collect one sample of respondents from the population once.

In conclusion, this study employs a conclusive research design to determine the relationship between variables and their influence on the intention to upgrade to YouTube Premium. To obtain a better understanding of this phenomenon, the researcher employs descriptive research. Single crosssectional design is employed to obtain a sample of population.

#### 3.2.1 Research Data

According to Malhotra (2019), there are two types of data that can be used in research: primary and secondary data.

1) Primary Data

Primary data can be defined as data obtained by the researcher directly to address the research problem (Malhotra, 2019).

 Secondary Data Secondary data can be defined as data collected by the researcher for purposes other than addressing the research problem (Malhotra, 2019). In this study, the researcher uses both primary data and secondary data. Primary data were collected from respondents using a questionnaire to find out consumer perception of YouTube Premium, while secondary data were gathered from various articles, books, and journals to assist the researcher in understanding market situation and building a research foundation.

Malhotra (2019) classifies scaling techniques into two types: noncomparative scaling techniques and comparative scaling techniques. Noncomparative scaling is the technique in which each stimulus object is scaled independently of the other objects, while comparative scaling is used to compare stimulus objects with one another. Noncomparative scaling techniques are used in this study since the researcher only examine one object: YouTube. Furthermore, noncomparative scaling techniques may be classified as continuous rating scale and itemized rating scale.

1) Continuous Rating Scale

Continuous rating scale is a measurement scale in which the respondents rate the objects by putting a mark at the appropriate position on a continuous line with two extreme criteria on each side (Malhotra, 2019).

2) Itemized Rating Scale

Itemized rating scale is a measurement scale that has numbers and brief descriptions related to each category, which is ordered in terms of scale position (Malhotra, 2019). Itemized rating scale is classified into three types:

a) Likert Scale

Likert scale is a five-point rating scale ranging from "strongly disagree" to "strongly agree," in which respondents express their level of agreement or disagreement with a series of statements about stimulus objects (Malhotra, 2019).

b) Semantic Differential Scale

Semantic differential scale is a seven-point rating scale with endpoints related to bipolar label that has semantic meaning (Malhotra, 2019). c) Stapel Scale

Stapel scale is used to measure attitudes, consisting of a single adjective in the center of an even-numbered range of values between - 5 and +5, without a neutral point (Malhotra, 2019).

Likert scale is used in this study to measure the agreement or disagreement level of respondent regarding statements associated with the research object.

#### **3.3 The Scope of Research**

According to Malhotra (2019), the sampling process design consists of five interrelated processes that are relevant to all elements of marketing research. As a result, sample design decisions must be linked with all other research project decisions. Figure 3.3. shows the sampling process design that begins with defining the target population, determining the sampling frame, selecting a sampling technique, determining the sample size, and executing the sampling process (Malhotra, 2019).



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#### **3.3.1 Target Population**

Malhotra (2019) defines the target population as an objects or elements collection that has the information needed by the researcher and about which conclusions are to be drawn. The target population may be further defined using several aspects: element, sampling unit, extent, and time frame.

1) Element

Element is an object that contains information needed by the researcher and about which conclusions are to be drawn (Malhotra, 2019). The element of this study is respondents aged 17-35 years who have used a one-month free trial of YouTube Premium and not currently subscribing to YouTube Premium.

2) Sampling Unit

Sampling unit is the fundamental unit that contains elements to be sampled (Malhotra, 2019). In this study, the sampling unit is YouTube users who meet the criteria.

3) Extent

Extent refers to the geographical boundaries defined in the study (Malhotra, 2019). The extent of this study includes the Jabodetabek (Jakarta, Bogor, Depok, Tangerang, Bekasi) and Bandung. These cities are selected since they are located in the Java region, which has a relatively high level of internet penetration (APJII, 2020). As mentioned earlier, watching online videos is one of the most popular activities among internet users.

4) Time Frame

Time frame refers to the period of the research (Malhotra, 2019). This study was conducted from September 2021 to January 2022, with the data collection was conducted between November 2021 and December 2021.

The population of this research consists of people aged 17-35 who live in Jabodetabek and Bandung region. According to Badan Pusat Statistik (2021), there are approximately 6.9 million people aged 17-35 who live in Jabodetabek and Bandung region.

#### 3.3.2 Sampling Frame

Sampling frame is a representation of the target population elements consisting of directions set or list to identify the target population (Malhotra, 2019). This study does not have a sampling frame since there is no specific data regarding people who have used a one-month free trial of YouTube Premium and not currently subscribing to YouTube Premium. Therefore, this study employs nonprobability sampling due to the unavailability of a sampling frame.

#### **3.3.3 Sampling Technique**

Malhotra (2019) classifies sampling techniques into two types: probability sampling and nonprobability sampling.

1) Probability Sampling

Probability sampling is a sampling technique in which all population elements have an equal chance of being selected for the sample (Malhotra, 2019). Probability sampling is used if there is sampling frame. Commonly used nonprobability techniques are systematic sampling, simple random sampling, stratified sampling, cluster sampling, and other sampling techniques.

2) Nonprobability Sampling

Nonprobability sampling is a sampling technique that does not employ selection procedures and relies on the personal judgment or convenience of the researcher (Malhotra, 2019). Consequently, not all population elements have an equal chance of being selected for the sample. Nonprobability sampling is used if there is no sampling frame. Commonly used nonprobability techniques are convenience sampling, judgmental sampling, quota sampling, and snowball sampling.

a) Convenience Sampling

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Convenience sampling is a nonprobability sampling technique that seeks to obtain a convenient samples element, in which the sampling unit selection is left to the interviewer (Malhotra, 2019). b) Judgmental Sampling

Judgmental sampling is a convenience sampling in which elements of the population are selected based on the researcher's judgment (Malhotra, 2019).

c) Quota Sampling

Quota sampling is a nonprobability sampling technique that consists of two steps. The first step involves the establishment of quotas or control categories for population elements, while the second step involves the selection of sample items based on convenience or judgment (Malhotra, 2019).

d) Snowball Sampling

Snowball sampling is a nonprobability sampling technique in which an initial respondent group is selected randomly, while subsequent respondents are selected based on the references given by initial respondents (Malhotra, 2019).

This study employs nonprobability sampling with a judgmental sampling technique. Therefore, the respondents of this study are limited to people who meet the predetermined criteria: men and women aged 17-35 years, have used a one-month free trial of YouTube Premium, and not currently subscribing to YouTube Premium.

#### 3.3.4 Sample Size

Malhotra (2019) defines sample size as the number of elements to be included in a research. According to Hair et al. (2019), several criteria need to be considered in determining sample size:

1) The sample size must be greater than the number of variables

2) The minimum sample size is determined as follow:

Sample size = Number of indicators  $\times 5$ 

This study employs 26 indicators. Thus, if the number of indicators is multiplied by 5, the sample size for this study is 130.

#### **3.4 Research Procedure**

#### 3.4.1 Research Period

This study period is around four months, starting from September 2021 to January 2022. The research process begins with determining the research topic, writing background, and formulating research problems. Then proceeded with collecting prior literature as research references, building questionnaires, collecting primary data by distributing questionnaires, processing data, interpreting results, and ended with formulating conclusions and suggestions.

#### 3.4.2 Data Collection

The primary data was obtained by distributing online questionnaires through various mobile instant messaging and social media platforms. The questionnaire was created through the Google Form, while the secondary data was obtained from various articles, books, and journals.

#### 3.4.3 Research Process

The following is the research process carried out by the researcher:

- Identify phenomena and problems that occur. The researcher then decides on the research subject that will be investigated.
- Collect data regarding the research object for building a research background and collecting previous research to build a theoretical basis, research model, and hypothesis development.
- Build a research questionnaire by adapting indicators from several prior literatures.
- 4) Distribute pretest questionnaires to 40 respondents online. Pretest aims to determine the feasibility of the variables and indicators before being used in the actual questionnaire.
- Conduct the pretest using IBM SPSS Statistics 25 program to examine the validity and reliability of indicators.
- 6) As the data passed the validity and reliability test, the researcher then distributed the questionnaires to the respondents. The number of

respondents needed is determined using the n x 5 formula (Hair et al., 2019). Since it has 26 indicators, this study requires 130 respondents.

7) Conduct the main test using Structural Equation Modeling (SEM) method to examine the measurement model (validity & reliability) and the structural model (hypothesis testing). SEM analysis is conducted through Lisrel 8.8 program.

#### **3.5 Operationalization of Variables**

In conducting research, operational definitions and indicators are required to asisst researchers in defining the phenomena that occur in each variable. This study employs 26 indicators to describe the user intention to subscribe to YouTube Premium, which is measured using a five-point Likert scale. A scale of 1 indicates a strong disagreement, while scale of 5 indicates a strong agreement. The operational definitions and indicators are compiled based on theories from various prior literature. Table 3.1 shows the operationalization of variables in this study.

No	Variable	Operational Definition	Measurement	Code	Scale
1	Ubiquity UN	The degree to which utilizing the service enables users to access content regardless of time or location (Mäntymäki et al., 2019).	Using YouTube Premium allows me to watch video with the device I prefer at the moment. (Mäntymäki et al., 2019) Using YouTube Premium allows me to watch video wherever I am. (Mäntymäki et al., 2019) Using YouTube Premium allows me to watch video when it suits me best. (Mäntymäki et al., 2019)	U1 U2 U3	Likert 1-5
	MU		Using YouTube Premium allows me to find and watch video that I have	U4	
	NUSAI	just thought about. (Mäntymäki et al., 2019)	Δ		

Table 3. 1 Operationalization	Variables
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No	Variable Operational Measurem		Measurement	Code	Scale
			Using YouTube Premium helps me find video to fit my taste. (Mäntymäki et al., 2019)	DNC1	
2	Discovery of new content The degree to which utilizing the service facilitates the discove of new content and broadens the user's preferences (Mäntymäki et al., 2019).	very of ontent yery of ontent	Using YouTube Premium broadens my taste in video. (Mäntymäki et al., 2019)	DNC2	
			Using YouTube Premium helps me discover video I would not normally watch to. (Mäntymäki et al., 2019)	DNC3	Likert 1-5
			Using YouTube Premium allows me to discover content creator that I have not been aware of before. (Mäntymäki et al., 2019)	DNC4	
			Using YouTube Premium provides me with video recommendations that suit my preferences. (Mäntymäki et al., 2019)	DNC5	
			Using YouTube Premium helps me stay up to date with new releases by my favorite content creator. (Mäntymäki et al., 2019)	DNC6	
		The degree to which	Commercials in YouTube's free subscription are distracting. (Mäntymäki et al., 2019)	IA1	
3	Intrusiveness of advertising in free subscription	advertising distracts users from using the free version of services (Mäntymäki et al.,	Commercials in YouTube's free subscription are intrusive. (Mäntymäki et al., 2019)	IA2	Likert 1-5
		2019).	Commercials in YouTube's free subscription are annoying. (Mäntymäki et al., 2019)	IA3	
4	Enjoyment		Using YouTube Premium is enjoyable. (Turel & Serenko, 2012)	E1	
		oyment The degree to which utilizing the service is perceived as enjoyable in its own right (Mäntymäki et al., 2019).	Using YouTube Premium is pleasurable. (Turel & Serenko, 2012)	E2	Likert 1-5
			Using YouTube Premium is fun. (Turel & Serenko, 2012)	E3	
		SAI	Using YouTube Premium is exciting. (Turel & Serenko, 2012)	E4	

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No	Variable	Operational Definition	Measurement	Code	Scale
			Using YouTube Premium is interesting. (Turel & Serenko, 2012)	E5	
5	Price value		YouTube Premium is reasonably priced. (Sweeney & Soutar, 2001)	PV1	Likert
		The degree to which premium subscription of the service offers	YouTube Premium offers value for money. (Sweeney & Soutar, 2001)	PV2	
		good value for money (Mäntymäki et al., 2019).	YouTube Premium is a good product for the price. (Sweeney & Soutar, 2001)	PV3	1-5
			YouTube Premium would be economical. (Sweeney & Soutar, 2001)	PV4	
			I would consider upgrading to YouTube Premium. (Barber et al., 2012)	IU1	
6	Intention to upgrade to premium subscription	The user's subjective probability of upgrading to premium	I intend to upgrade to YouTube Premium. (Barber et al., 2012)	IU2	Likert
		subscription (Mäntymäki et al., 2019).	I plan on upgrading to YouTube Premium. (Barber et al., 2012)	IU3	1-5
			I am interested in upgrading YouTube Premium. (Barber et al., 2012)	IU4	

#### **3.6 Data Processing**

#### 3.6.1 Pre-Test Using Factor Analysis

Factor analysis is a procedure used to reduce and summarize data (Malhotra, 2019). This analysis examines the whole set of interdependent relationships without distinguishing between independent variables and dependent variables. Factor analysis aims to discover the underlying factors that explain the correlation among a set of variables and ensure that each indicator represents a variable (Malhotra, 2019). In other words, factor analysis enables researchers to examine the validity and reliability of a variable and its indicators.

#### 1) Validity

Validity test is used to determine if a set of indicators employed can accurately reflect a variable (Malhotra, 2019). An indicator may be considered valid if it can explain the phenomena in a variable. The greater the value of indicator validity, the more valid the indicator may reflect the variable. Malhotra (2019) classifies validity into three types:

a) Content Validity

Content validity is a type of validity that includes a systematic and subjective evaluation of the representativeness of the scale content (Malhotra, 2019).

b) Criterion Validity

Criterion validity is a type of validity that tests the measurement scale performance concerning other variables chosen as relevant criteria (Malhotra, 2019).

c) Construct Validity

Construct validity is a type of validity that examines the phenomena that the scale is attempting to measure (Malhotra, 2019). Construct validity includes discriminant, convergent, and nomological validity. Discriminant validity examines the ability of a measure to not correlate with other constructs. Convergent validity examines the ability of a scale to correlate with other measures of the same construct. Nomological validity examines the ability of the scale to correlate theoretically with related constructs that are different.

The following are several requirements that must be achieved for an indicator to be considered valid: **MULTIMEDIA NUSANTARA** 

Table 3. 2 Validity Measurement

No	Validity Measure Required Value			
1	Kaiser Meyer-Olkin (KMO) Measure of Sampling Adequacy An index used to test the appropriateness of factor analysis (Malhotra, 2019).	<ul> <li>Value ≥ 0.5 indicates that factor analysis is appropriate</li> <li>Value &lt; 0.5 indicates that factor analysis is inappropriate</li> <li>The expected value is ≥ 0.5</li> </ul>		
2	<b>Bartlett's Test of Sphericity</b> A test statistic used to test hypothesis regarding variables correlation within the population (Malhotra, 2019).	<ul> <li>Value ≥ 0.05 indicates the insignificant relationship</li> <li>Value &lt; 0.05 indicates the significant relationship</li> <li>The expected value is &lt; 0.05</li> </ul>		
3	<b>Anti-Image Correlation Matrix</b> A matrix that reflects the correlation of variables and errors that possibly occur (Hair et al., 2019).	<ul> <li>Value ≥ 0.5 indicates the appropriateness for performing factor analysis, either on the entire set of variables or the specific variable</li> <li>Value &lt; 0.5 indicates that the indicator is inappropriate for performing factor analysis</li> <li>The expected value is ≥ 0.5</li> </ul>		
4	<b>Factor Loading of Component Matrix</b> A correlation between the variable and the indicators (Malhotra, 2019).	<ul> <li>Value ≥ 0.5 indicates that the indicator is valid</li> <li>Value &lt; 0.5 indicates that the indicator is invalid</li> <li>The expected value is ≥ 0.5</li> </ul>		

#### 2) Reliability

Reliability test is used to examine if a set of indicators may produce consistent results if employed repeatedly in future research (Malhotra, 2019). An indicator is considered reliable if an individual's response to a statement is constant or steady across time, indicating that it may provide a consistent result. Furthermore, the indicator's reliability implies that it may be employed in future research. Reliability is measured using coefficient alpha, commonly known as Cronbach's alpha. According to Malhotra (2019), Cronbach's alpha is the average of all potential split-half coefficients obtained by dividing the scale items differently. Value > 0.6 indicates the indicator is reliable, while a value  $\leq$  0.6 indicates the indicator is unreliable. As such, the expected value is 0.6.

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In this study, the pretest was conducted by analyzing data of 40 respondents collected online using the IBM SPSS Statistics 25 program. The objective of the pretest is to examine the feasibility of indicators, which consist of validity and reliability prior to their inclusion in the actual questionnaire.

#### **3.6.2** Main Test Using Structural Equation Modelling (SEM)

Structural Equation Modelling (SEM) is a method for predicting the dependence relationships among constructs set represented by multiple observed variables and included in an integrated model (Malhotra, 2019). SEM is a multivariate analysis technique that allows the simultaneous estimation of interrelated dependence relationships. SEM is considered a combination of two multivariate techniques: factor analysis and multiple regression analysis (Hair et al., 2019). As such, SEM consists of two parts: the measurement model and the structural model.

1) Measurement model

The measurement model describes the performance of variables to represent constructs (Hair et al., 2019). The measurement model is conducted through Confirmatory Factor Analysis (CFA).

2) Structural model

The structural model describes the relationship among multiple constructs related to multiple dependence relationships (Hair et al., 2019). Structural model enables the researcher to examine the existence of relationships among constructs.

#### 3.6.2.1 Structural Equation Modeling Stages

Structural Equation Modeling consists of six steps to represent the SEM terminology and processes. Figure 3.4 illustrates the six steps of SEM proposed by Hair et al. (2019).



Figure 3. 4 Six Stages of SEM Source: Hair et al., 2019

By looking at the figure, the process of SEM can be explained

as follows:

- 1) Define constructs that are to be used as measured (observed) variables
- Develop the measurement model by specifying measured variables and drawing a path diagram
- Develop a study to obtain an empirical result by assessing the sample size adequacy, determining estimation and missing data method
- 4) Assess the validity of the measurement model by evaluating the Goodness of Fit (GOF) value
- 5) Develop the structural model by determining relationships among variables

6) Assess the validity of the structural model by evaluating the GOF, direction, and structural parameter estimation size

#### 3.6.2.2 Measurement Model Analysis

According to Malhotra (2019), measurement model validity is assessed through the goodness of fit, reliability, and construct validity consisting of convergent and discriminant validity.

1) Measurement model fit

Goodness of fit measures the measurement model fit in terms of model ability to reproduce the covariance matrix among indicators (Malhotra, 2019). Goodness of fit provides a result regarding the degree to which the estimated indicator variables covariance is equal to the observed covariance of the sample data. Fit measures can be classified into three categories:

a) Absolute Fit Indices

Absolute fit indices measure the quality of a specified model to reproduce the observed data (Hair et al., 2019). It enables researchers to assess the fit of theory to sample data. Absolute fit indices are composed of two measurements: goodness of fit and badness of fit. In this study, the absolute fit is measured by Root Mean Square Error of Approximation (RMSEA) and Standardized Root Mean Residual (SRMR).

b) Incremental Fit Indices

Incremental fit indices measure the fit of the estimated model relative to several alternative baseline models (Hair et al., 2019). Alternative baseline models refer to a null model, which assumes that all observed variables are uncorrelated. In this study, the incremental fit is measured by Comparative Fit Index (CFI).

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#### c) Parsimony Fit Indices

Parsimony fit indices assess the complexity of a model to its fit in order to determine which model is the best among a collection of competing models (Hair et al., 2019). Parsimony fit indices are more useful in comparing the fit of two models, consisting of one complex model and one less complex model. In this study, parsimony fit is measured by Parsimony Normed Fit Index (PNFI).

Table 3. 3 Cut Off Value of GOF Indices

Fit	N < 250			N > 250			
Indices	m ≤ 12	12 <m<30< th=""><th>m ≥ 30</th><th>m ≤ 12</th><th>12<m<30< th=""><th>m ≥ 30</th></m<30<></th></m<30<>	m ≥ 30	m ≤ 12	12 <m<30< th=""><th>m ≥ 30</th></m<30<>	m ≥ 30	
Absolute Fit Indices							
RMSEA	< <b>0.08</b> with CFI ≥ 0.99	< <b>0.08</b> with CFI ≥ 0.97	< 0.08 with CFI > 0.93	< <b>0.07</b> with CFI ≥ 0.96	< <b>0.07</b> with CFI ≥ 0.94	< <b>0.07</b> with CFI ≥ 0.92	
SRMR	Biased upward, use other indices	≤ <b>0.08</b> with CFI ≥ 0.95	< <b>0.09</b> with CFI > 0.93	Biased upward, use other indices	≤ <b>0.08</b> with CFI > 0.94	≤ <b>0.08</b> with CFI > 0.92	
Incremental Fit Indices							
CFI	≥ 0.99	$\geq 0.97$	> 0.93	≥ 0.96	> 0.94	> 0.92	
Parsimony Fit Indices							
PNFI	0 < PNFI < 1						

Source: Hair et al., 2019

#### 2) Measurement model reliability and validity

Measurement model reliability and validity can be assessed through Confirmatory Factor Analysis (CFA). According to Malhotra (2019), CFA is a method of examining how well a predefined measurement theory consisting of measured variables and factors fits acquired data. CFA provides information about the validity and reliability of variables.

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a) Validity

Variable validity is measured by considering the Standardized Loading Factor (SLF) and t-value. Variable is regarded as valid when the SLF value is  $\geq 0.5$  and the t-value is  $\geq 1.96$  (Hair et al., 2019).

#### b) Reliability

Variable reliability is measured by considering the value of Construct Reliability (CR) and Variance Extracted (VE). Variable is regarded as reliable when the CR value is  $\geq 0.7$  and the VE value is  $\geq 0.5$  (Hair et al., 2019). The values of CR and VE are obtained from the following formula:

$$CR = \frac{(\Sigma SLF)^2}{(\Sigma SLF)^2 + (\Sigma error)^2} \qquad VE = \frac{\Sigma SLF^2}{\Sigma SLF^2 + (\Sigma error)}$$

#### 3.6.2.3 Measurement Model Analysis

A structural model is a process model that illustrates dependence relationships among constructs (Hair et al., 2019). The component of the structural model reflects the proposed theory by providing a set of structural equations that define what items are related and not related to each other (Hair et al., 2019). According to Malhotra (2019), the structural model analysis includes examining the model fit, comparing the proposed model to competing models, and testing hypotheses and structural relationships.

Structural model fit is measured with the goodness of fit, consisting of absolute fit indices (using RMSEA and SRMR), incremental fit indices (using CFI), and parsimony fit indices (using PNFI). As mentioned earlier, the structural model is regarded fit if it achieves the specified values.

According to Lind et al. (2019), hypothesis testing is a procedure for determining if the hypothesis is reasonable based on the

theory of probability and sample data. Hypothesis testing is conducted through six steps as follows:





1) State null hypothesis (H0) and alternate hypothesis (H1)

A null hypothesis is a statement regarding the population parameter value established for testing numerical evidence (Lind et al., 2019). The null hypothesis cannot be rejected unless convincing evidence proves the hypothesis is false. If the null hypothesis is rejected, the alternate hypothesis can be accepted. Alternate hypothesis is an accepted statement if there is convincing evidence to reject the null hypothesis (Lind et al., 2019).

2) Determine the significance level

The level of significance, sometimes called the level of risk, is the probability of rejecting the null hypothesis when it is true (Lind et al., 2019). The significance level is denoted by the Greek letter  $\alpha$  (alpha). Lind et al. (2019) state that there are two types of error in testing hypothesis:

a) Type I Error: reject the null hypothesis when it is true

b) Type II Error: not reject the null hypothesis when it is false

There are some significance levels commonly used, such as 0.05 level, 0.01 level, 0.10 level, and other levels between 0 and 1 (Lind et al., 2019). In this study, the 0.05 level is selected as the

level of significance.

3) Determine the test statistic

The test statistic is a value used to determine the null hypothesis's rejection, resulting from the sample information (Lind

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et al., 2019). There are some test statistics commonly used, such as z-test, t-test, F-test, and  $\chi^2$  test. In this study, the t-test is used in determining the rejection of null hypothesis.

4) Determine the decision rule

A decision rule is a statement that specifies the circumstances under which the null hypothesis is rejected and that is not rejected (Lind et al., 2019). The rejection area or region denotes the location of all those values that are either so small or so large to exist under a true null hypothesis (Lind et al., 2019). The conditions for rejecting or accepting the null hypothesis are determined by the critical value, which is the dividing point between the rejection and acceptance area. In this case, the critical value is 1.65. Figure 3.6 shows the areas of rejection and acceptance of the null hypothesis in the one-tailed test.



5) Make a decision

The next step of hypothesis testing is to calculate the test statistic value, compare the result to the critical value, and decide whether the null hypothesis is accepted or rejected (Lind et al., 2019). The t-value must be 1.65 or higher to reject the null hypothesis. 6) Interpret the result

The last step of hypothesis testing is interpreting the test result. At this step, the researcher may analyze the test results to determine the solution to the problem.

#### **3.7 Variable Identification**

#### 3.7.1 Exogenous Construct

Exogenous construct is a latent and multi-item equal to independent variable (Hair et al., 2019). Exogenous constructs are only determined by factors outside the model and are not affected by any constructs in the model. Hence, they do not have arrows from other constructs or variables that lead to them (Hair et al., 2019). Exogenous constructs are represented by the mathematical symbol  $\xi$  (ksi). Figure 3.7 illustrates the exogenous construct. In this study, the exogenous variables are ubiquity, discovery of new content, and intrusiveness of advertising in free subscription.



#### **3.7.2 Endogenous Construct**

Endogenous construct is a latent and multi-item equal to dependent variable (Hair et al., 2019). Endogenous constructs are determined by other constructs in the model. Hence, they have arrows from other constructs or variables that lead into them (Hair et al., 2019). Endogenous constructs are represented by the mathematical symbol  $\eta$  (eta). Figure 3.8 illustrates the exogenous construct. In this study, the endogenous constructs are enjoyment, price value, and intention to upgrade to premium subscription.



#### 3.7.3 Measured Variable

Measured variable is an observed or measured value for a particular item, collected from respondents' answers or other observation types (Hair et al., 2019). In other words, the questionnaire questions will represent the measured variables. Since this study uses 26 questions in the questionnaire, 26 indicators may be considered as measured variables.

#### 3.8 Measurement Model

Six measurement models are used in this study to explain the observed variables. They are as follows:

1) Ubiquity

The following measurement model is a first order factor model consisting of a single latent factor layer to represent the latent variable ubiquity ( $\xi$ 1) Ubiquity has four indicators which are illustrated in the measurement model as shown in figure 3.9.



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#### 2) Discovery of New Content

The following measurement model is a first order factor model consisting of a single latent factor layer to represent the latent variable discovery of new content ( $\xi$ 2). Discovery of new content has six indicators which are illustrated in the measurement model as shown in figure 3.10.



Figure 3. 10 Discovery of New Content Measurement Model

#### 3) Intrusiveness of Advertising on Free Subscription

The following measurement model is a first order factor model consisting of a single latent factor layer to represent the latent variable intrusiveness of advertising ( $\xi$ 3). Intrusiveness of advertising has three indicators which are illustrated in the measurement model as shown in figure 3.11.



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#### 4) Enjoyment

The following measurement model is a first order factor model consisting of a single latent factor layer to represent the latent variable enjoyment ( $\eta$ 1). Enjoyment has five indicators which are illustrated in the measurement model as shown in figure 3.12.



Figure 3. 12 Enjoyment Measurement Model

#### 5) Price Value

The following measurement model is a first order factor model consisting of a single latent factor layer to represent the latent variable price value ( $\eta$ 2). Price value has four indicators which are illustrated in the measurement model as shown in figure 3.13.



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6) Intention to Upgrade to Premium Subscription

The following measurement model is a first order factor model consisting of a single latent factor layer to represent the latent variable intention to upgrade ( $\eta$ 3). Intention to upgrade has four indicators which are illustrated in the measurement model as shown in figure 3.14.



Figure 3. 14 Intention to Upgrade to Premium Subscription Measurement Model



#### **3.9 Structural Model**



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