UNIVERSITY OF TURKU

ABSTRACT

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Abstract

Increasing access to the internet and smartphones has led to a great opportunity for developers to make mobile games and earn profits. The battle royale genre is getting a lot of popularity and free-to-play with in-app purchases of virtual goods is the most common business model that gaming companies use in this genre. While concepts of customer engagement, customer loyalty, and perceived values are well-established in the gaming literature, empirical research on how they affect the purchase intention of players in online mobile battle royale games is not studied. Hence, the question that this study is providing the answer to is "What are the effects of perceived value, customer engagement, and loyalty on the purchase intention of battle royale mobile gamers?".

Based on the literature review, a research framework was presented. To test the hypotheses inside the research framework, data were collected via an online questionnaire created by google forms from online gaming communities. Overall, 50 participants responded to the questionnaire and all of them were valid for analysis. The data were analyzed via linear regression and the reliability of the data was tested via Cron Bach's alpha measurement. Also, the Sobel test was used to check the mediation effect between variables. SPSS 27 is used for the analysis.

The findings suggest that customer engagement, perceived values, and customer loyalty have direct effects on purchase intention in battle royale mobile games. The study also identifies the mediation role of customer loyalty between perceived values and purchase intention. Additionally, the study suggests that a new scale should be developed to measure the perceived values in the gaming context. Managerial implications of this study for the developers and mobile gaming companies are, highlighting the fact that designing exciting and attractive games, offering reasonable prices for items, and creating a community within the game can influence values perceived by the players, increase customer engagement, and enhance customer loyalty, which results in more profits for the company.

Key words	perceived value, customer engagement, loyalty, purchase intention, battle royale

UNIVERSITY OF TURKU
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THE EFFECTS OF CUSTOMER ENGAGEMENT, LOYALTY, AND PERCEIVED VALUE ON THE PURCHASE INTENTION OF MOBILE GAMERS

Master's Thesis
in International Business

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1 INTRODUCTION

This study investigates the effects of customer engagement, perceived values, and customer loyalty on the purchase intention of mobile game players in online battle royale mobile games. The researcher first reviews the relevant literature, then forms the hypotheses based on previous studies and develops a research framework. A questionnaire is used to collect the data from online gaming communities and the collected data is analyzed via quantitative methods. Lastly, the hypotheses are tested via linear regression, and theoretical and managerial implications are presented. The structure of this chapter is as follows: background of the study, research questions and purpose of the study, and the structure of the thesis.

1.1 Background of the Study

Internet and technological advancements have significantly changed our lives and behaviors. Particularly the development of mobile phones and their availability of them to us has brought about many activities and various tasks. Moreover, the progression in networks and mobile technologies alongside lower prices for mobile phones has made them more available to everyone. Thus, smartphones and tablets are now considered to be a major mass media channel and this has led to an increased demand for mobile applications and other services related to them (Hsiao and Chen 2016, 18).

The increase in the development of mobile applications has also caused many benefits for mobile game companies. The mobile games sector is a promising and growing business that by 2026, revenues are expected to grow at an annual rate of 8.74 percent, leading to a predicted market size of US$174.60 billion and also the number of users is anticipated to reach 2,309.4m (Statistica 2022).

Freemium and selling virtual goods via in-app purchases are the most common business model for mobile game developers to increase their revenue (Irpan et al. 2020, according to Purnami and Agus 2020, 10). But it is proven that only 2.2% of gamers use their actual money for mobile games (Sinclair 2014). Hence, from a practice perspective, it is important for mobile game companies that want to boost their profits to gain a deeper grasp of the factors that influence players to make in-app purchases. (Purnami and Agus 2020, 10).

Different scholars have had different views on purchasing factors in games in general and in mobile games in particular. For instance, Ho and Wu's (2012) research used the

theory of consumption values in online games and their study showed that the moderating role of game type, functional quality, playfulness, and social relationship support affect purchase intention in role-playing games. And for the war strategy game, players' willingness to spend money on the game is influenced by price, utility, and playfulness. Cheung et al (2015) looked at the sales of online games from the perspective of customer engagement. Their study concluded that customer engagement dimensions namely psychological engagement and behavioral engagement have a direct effect on online sales. Chaldea and Lupiyoadi (2019) further shed light on the understanding of customer engagement in mobile games. Their study identified aesthetics, involvement, game mechanics, and endurability as factors of engagement in mobile games. Huang et al (2017) findings based on applying uses and gratification theory show that with the mediation effect of customer engagement, entertainment and self-presentation (social gratification) have a noticeable indirect effect on players' intention to buy virtual goods in mobile social network games. Purnami and Agus (2020) investigated the role of perceived value and loyalty on the purchase intentions of mobile gamers. Their results show that mobile game loyalty and economic and social value have a significant direct impact on in-app purchasing.

Hsiao and Chen (2016) examined the role of perceived value and loyalty in mobile games' in-app purchases between paying and nonpaying players. Their findings assert that user loyalty, perceived playfulness, rewards, and access flexibility in mobile games are significantly and positively related to virtual goods purchased by both types of players. Moreover, they discuss that playfulness, good price, and reward are dimensions of purchase intention in paying users, however, the purchase intention of non-paying users is only determined by the price. In a recently published research, Jang et al. (2021) investigated the motivations and factors behind the in-app purchases of mobile games. The findings show that play frequency and social interaction are directly related to purchasing intention, however, the stage level is inversely correlated with purchase intention.

As mentioned in the above paragraph, An increasing amount of literature has been produced on these topics due to managerial and academic interest in engagement, loyalty, and perceived value an the concepts are interconnected with each other and with purchase intention. However, looking at how these factors affect purchase intention and each other in the mobile gaming industry in the context of online battle royale games is scant. Particularly, more empirical studies in this field are needed to test the vast amount of previous exploratory research. So, this study aims to fill the gap by increasing the understanding

of the effects of customer engagement, loyalty, and perceived value on the purchase intention of mobile gamers as empirical research.

1.2 Purpose of the Study and Research Question

It is becoming mainstream for online games to sell virtual goods in order to generate revenue (Ho and Wu 2012, 204) and battle royale games are growing and getting popularity among players rapidly (Choi and Kim 2018, 5). Hence it is very important to understand what effects players purchase intention and how they affect their purchase intention. Customer engagement, perceived values, and loyalty have been discussed in the literature to have effects on the purchase intention of players, however their effects in the battle royale mobile gaming context is scant. The objective of this study is to test their effects on purchase intention in mobile battle royale games.

To achieve the aim of this study, by reviewing the relevant literature, the researcher generates hypotheses about the purchase intention of mobile gamers, perceived values, customer engagement, and mobile game loyalty and how they are related to each other. Hence the question that this study is providing the answer to is "*what are the effects of perceived value, customer engagement, and loyalty on the purchase intention of battle royale mobile gamers*?" By reviewing the relevant literature, five hypotheses and a research framework based on the hypotheses are proposed in order to answer the research question. The hypotheses are as follows:

H1: *Customer engagement has a positive effect on the purchase intention of mobile players in battle royale games.*

H2*: Loyalty to battle royale mobile game positively influences purchase intention.*

H3: *Perceived values are positively related to in-app purchase intention.*

H4: *Perceived values are positively related to mobile game loyalty.*

H5: *Perceived values are positively related to customer engagement among mobile game players.*

The subsequent chapter provides the literature-based discussion which led to the development of these hypotheses.

1.3 Structure of the Study

The organization of this thesis is as follows: in chapter two, prior research related to the phenomenon is examined and related theories and studies are scrutinized. In this chapter, concepts of customer engagement, perceived values, loyalty, purchase intention, and how they are connected in a mobile gaming context is explained more in detail. Furthermore, hypotheses are created and the research model is explained. This section is important because it highlights the gap and the theoretical discussion that this study aims to contribute to.

Further in chapter 3 methodology of the study is explained. In this chapter, it is explained why a quantitative approach is utilized in this study and with which quantitative method the data is analyzed. Also, the demographic data of the participants and how are these demographics different from the demographics of the whole target population is explained. The Skewness, validity, and reliability of the data are also explained in this section.

Chapter 4 is where the collected data is analyzed via the linear regression method. The correlation between variables and the mediator effect among them is checked in this section. This chapter's purpose is to test the hypotheses and illustrates the results of the analysis and explains the findings of the study.

Lastly, chapter 5 is dedicated to the discussion of the results and what are the theoretical contribution, conclusions, managerial implementations, limitations, and future research suggestions. Finally, a summary of the whole study is presented in chapter 6.

2 THEORETICAL BACKGROUND

2.1 Games and Purchase Intention

2.1.1 Online Games and Mobile Games

In his description of online games, Curtis (1992) described them as virtual worlds connected to the internet and with multiple players. Another way of describing them is that online games are computer games that process user interactions through internet connections (Ho and Wu 2012, 204).

Video games played on mobile devices such as cellphones or tablets are called mobile games (Hsiao and Chen 2016, 19). So games that are played on consoles such as Play Station, Xbox, or personal computers are not considered mobile games (Limanto et al. 2018, 45). To narrow down the scope of this study, it is worth mentioning that the focus in the present study is on mobile games, as a different category of games such as PC games or console games might differentiate in terms of players' purchase intention. In comparison with the last 5-10 years, the internet and smartphone technology has changed the way people play games; besides, compared to other platforms, mobile games are more convenient to access and allow players to play for shorter periods of time (Hsiao and Chen 2016, 19). Also, players can now interact with each other through social features incorporated into mobile games (Limanto et al. 2018, 45). The majority of mobile games have features such as online communities and virtual currencies (Radoff, 2011). A game community is where players or interested people in the game can share their feelings, comments, opinions, and experiences with each other and become more engaged with the game, and virtual goods are the assets, properties, items, or other things that can be purchased inside the game (Radoff, 2011). Players use real-world money to purchase virtual currency or goods; this can be considered a primary source of profit for game companies (Limanto et al. 2018, 45).

2.1.2 Purchase Intention of Virtual Goods

Different items such as decorative objects, coins, heroes or any other digital object that exists inside online games or virtual social communities are considered as virtual goods (Lehdonvirta 2009, 97). Virtual goods have turned into a significant source of income for online game developers., providing them with a way to generate income and increase user interest (Ho and Wu 2012, 205).

In-app purchases also known as microtransactions are the way that developers sell their virtual goods in their applications or games and as free to play business model is becoming more popular among mobile game companies, selling virtual items via micro-transactions has become one of the most promising ways to monetize a mobile game (Ravoniarison and Benito 2019, 62).

Customers' purchase decisions are complicated. The behavior, perceptions, and attitudes of consumers usually determine purchase intentions and these components shape purchase behavior which is an important concept regarding assessing a product or service. The term purchase intention refers to a type of decision-making that analyzes the reason that consumers buy particular brands or products or services. The purchase intention of a consumer is defined as the likelihood of purchasing a certain product when certain conditions are met and, purchase intention is a useful indicator of the customers' buying journey (Morinez et al. 2007, according to Mirabi et al. 2015, 268).

Games could be categorized from different perspectives; For instance, based on the platform such as personal computer games, console games, mobile games, etc. or based on the business model that they earn money for their company, For instance Free to Play games (F2P), Play to Earn games (P2E), or pay-to-play games, or based on their genre, for example First-Person Shooter games (FPS), Real-time Strategy games (RTS), Multiplayer Online Battle Arena (MOBA) games, Battle Royale games, and Massively Multiplayer Online games (MMO). As previous research has shown, the purchase intention of players differs in various game platforms (Ghosh and Dwivedi 2021, 54) and various game types (Ho and Wu 2012, 209) and research on different game types have conducted such as war-strategy games, role-playing games, and MOBA games. However, research on online mobile battle royale games is scant. Hence, this research is aimed to address this gap and focus on mobile battle royale games as the scope of this study.

2.2 Customer Engagement

In the early 2000s, engagement became a topic of marketing literature, and specifically “customer engagement” gained popularity among marketing academics in the early 2010s (Ng et al. 2020, 237). Besides, Scholars from different disciplines have explored the concept of engagement, including management and marketing, social psychology, and information systems (Cheung et al. 2015, 242). Although "engagement" popularity increased

among researchers, few scholars have tried to define it or investigate how it is different from other concepts like participation or involvement (Brodie et al. 2011, 253).

Initial studies examined customer engagement (CE) and customer engagement behavior (CEB) in the context of the firm-customer dyad (Brodie et al. 2019, 173), but the concept has developed beyond firm-customer dyad. As of now, there are 4 main perspectives on customer engagement: (i) Van Doorn et al. (2010) described it as a behavioral manifestation; (ii) According to Brodie et al. (2011), it is a psychological state; (iii) as a disposition to act (e.g. Storbacka et al. 2016); and (iv) as a customer decision-making process that includes several steps or stages (Ng et al. 2020, 237).

As mentioned above, customer engagement is a multi-disciplinary, multi-faceted, and multi-dimensional concept with different definitions. One of the most well-known definitions of customer engagement is the definition from Van Doorn et al. and they have defined customer engagement "*customer's behavioral manifestations that have a brand or firm focus, beyond purchase, resulting from motivational drivers*" (Van Doorn et al 2010, 254).

Among different conceptualizations of customer engagement, most of the scholars who studied gaming and customer engagement, or customer engagement and sales, used Van Doorn et al. (2010) definition and framework in their research (Cheun et al. 2015, Huang et al. 2017, Limanto et al. 2018, Chaldea and Lupiyoadi 2019, Ou et al. 2019, and Kaveh et al. 2020). Van Doorn et al. (2010) model is a comprehensive framework for customer engagement that includes various perspectives of customer engagement. This framework provides a common language and understanding of customer engagement, making it easier for researcher to measure and compare customer engagement across studies. Since the Van Doorn et al. (2010) model ensures consistency and comparability of the findings with other studies, and it also incorporates behavioral manifestation of customers that is emerged from the motivational state of the customers, for this research, it is best suited to use that as the basis definition of customer engagement in this research.

Customer engagement positively relates to a firm financial performance such as sales, profits, and margins (Barari et al 2020, 469). In online games as well, customer engagement has a direct effect on players spending time and it leads to a positive impact on online sales (Cheung et al. 2015, 247). In mobile social network games, the psychological engagement causes more behavioural engagement such as spending more time on the game and increased frequency of playing the game (Cheung et al. 2011, 3) and psychological engagement significantly influences purchase intention (Huang et al. 2017,

269). all in all, based on the previous research the first hypothesis of this research is proposed to be:

H1: *customer engagement has a positive effect on the purchase intention of mobile players in battle royale games.*

2.3 Customer Loyalty

There are two ways in which customer loyalty can be defined according to marketing literature. The first definition of loyalty is that it is an attitude; Individuals attach to products, services, or organizations based on different feelings and loyalty is defined by these feelings (Fornier 1994, according to Hallowell 1996, 28). Second, loyalty can be defined behaviourally. For instance, the act of recommending a supplier/service or product, purchasing services from the same brand, expanding the relationship, and/or increasing the scope of a relationship are examples of loyalty behavior (Yi 1990, 104). In this study, the second view on loyalty is used because the goal is to find out how loyalty effect purchase items in mobile games which is an action and a manifestation of consumers' behavior.

The importance of loyalty is well-established among practitioners and academics in the context of business. It is well known that customer loyalty leads to financial profitability as loyal customers repeat purchases and the costs of consumer retention are noticeably less than finding new customers (Oliver 1999, 33). Previous research has extended consumer loyalty and scoped it also in the online context. Online loyal consumers committ to return or buy from a particular website (Hsiao and Chen 2016, 21). In the gaming context, mobile game loyalty refers to the extent to which a player expresses an interest in mobile games and indicates their intention to continue playing them (Lin and Wang 2006, 277, 288). Mobile game loyalty has a significant impact on in-app purchases on MOBA and role-playing games (Purnami and Agus 2020, 9) and also on puzzle video games (Hsiao and Chen 2016, 27). Thus, it is relevant to make the next hypothesisas:

H2: *loyalty to battle royale mobile game positively influences purchase intention.*

2.4 Perceived Values

2.4.1 The Concept of Perceived Values

It is hard to define value and it is subjective in its nature. However, customer value and its outcomes such as the success of the business in the long term has widely discussed in marketing and business discipline. Many argue that in the new world, customer value is the most dominant competitive advantage and the key to long-run success for the company (Sweeney and Soutar 2001, 203).

Customer value usually refers to the time, after the customer has bought a product or a service and used it; if the product or service exceeds customer's expectations, then the customer value is high and if the good or service falls short of what the customer expected, then the customer value is low (Keele University blog, 2022). On the other hand, customer percieved value is a different construct that regardless of the purchase time and includes both pre- and post-purchase phase (Eggert and Ulaga 2002, 110) and is a better indicator of purchase intention and behvaiorial outcomes (Eggert and Ulaga 2002, 111).

Perceived value is defined as "*The consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given*" (Zeithaml 1988, 14). According to prior research, perceived value has a significant impact on user behavior in different ways; for example, it affects customers' satisfaction, loyalty, and purchase intention (Gan and Wang 2017, 774).

One of the influential attempts to find a measure of customer value is done by Sweeney and Soutar (2001). They propose a scale that measures customer perceived value which consists of four different dimensions; Emotional, quality, price (economic value), and social value. Emotional value is "the utility derived from the feelings or affective states that a product generates". Social value or enhancement of social self-concept is defined as "the utility derived from the product's ability to enhance social self-concept". The price value refers to "the utility derived from the product due to the reduction of its perceived short-term and longer-term costs". And the quality value, also known as functional value is "the utility derived from the perceived quality and expected performance of the product" (Sweeney and Soutar 2001, 211).

The model suggested for perceived values by Sweeney and Soutar (2001), is the model utilized in this study because it is well-established and widely used in the literature by gaming scholars and it provides a comprehensive framework for measuring customers perceive value. Moreover, the model has been tested and validated in previous research

(e.g. Hsiao 2013, Hsiao and Chen 2016, Purnami and Agus 2020), which adds to its credibility and usefulness for this study.

2.4.2 Perceived Values, Purchase Intention, Customer Engagement, and Customer Loyalty

Different scholars investigated the role of perceived value and its dimensions on the purchase intention of customers in online games (Hamari et al 2020, Purnami and Agus 2020, Hsiao and Chen 2016, Ho and Wu 2012). Their research have shown that perceived value is positively related to purchase intention in games. Moreover, perceived value is considered a critical aspect of the gaming industry as it influences players' purchase intentions by increasing their willingness to consume more virtual goods in the game (Wu and Andrizal 2021, 6). Hence the third hypothesis of the study is proposed as follows:

H3: *Perceived values are positively related to in-app purchase intention.*

Customer loyalty is also linked with perceived values and customer loyalty is influenced by perceived values (Lin and Wang 2006, 277). Scholars investigated the relationship between perceived value and loyalty in different contexts such as environmentally cautious customers of products (Koller et al 2011, Hur et al. 2013) or mobile phone users (Arrif et al 2012). In the mobile game industry, since the majority of the games are free to play and installing and quitting games does not impose high costs on players, it becomes more important for the companies to attain loyal players to maintain their operation (Molinillo et al 2020, 496). Due to its importance, researchers investigated the relationship between perceived value and customer loyalty in games as well. Firstly, in the research by Hsiao and Chen (2016) it was proved that perceived value is positively related to customer loyalty. Following this was supported by Purnami and Agus's (2020) research on MOBA and role-playing games. Therefore, the fourth hypothesis is that in the mobile battle royale games:

H4: *Perceived values are positively related to mobile game loyalty.*

Based on the research in the relationship marketing field, it is discussed that perceived value is an opportunity for firms to build long-lasting relationships (Palmatier et al. 2006; Ravald & Grönroos 1996). It is also proven that perceived value directly affects

the relationship quality and consequently, relationship quality is directly related to customer engagement (Barari et al. 2020, 469). Hence the fifth hypothesis of the research is proposed as follows:

H5: *perceived values are positively related to customer engagement among mobile game players.*

2.5 Research Framework

After conducting the literature review and exploring the previous research, five hypotheses were developed. The hypotheses are presented in Table 1 and accordingly the research framework is presented in Figure 1.

Table 1-Hypotheses of the research

Hypothesis	Statement
H1	*Customer engagement has a positive effect on purchase intention of mobile players in battle royale games*
H2	*Loyalty to battle royale mobile game positively influence purchase intention.*
H3	*Perceived values are positively related to in-app purchase intention.*
H4	*Perceived values are positively related to mobile game loyalty.*
H5	*Perceived values are positively related to customer engagement among mobile game players*

The framework is designed to visualize and provide a simpler way to show the variables and their relationships. The framework also provides a foundation for the researcher to use when gathering data, analyzing it, and interpreting the results. In the next chapter, research methodology is presented and collected data, the skewness of the data, and validity and reliability of the instruments are discussed in detail.

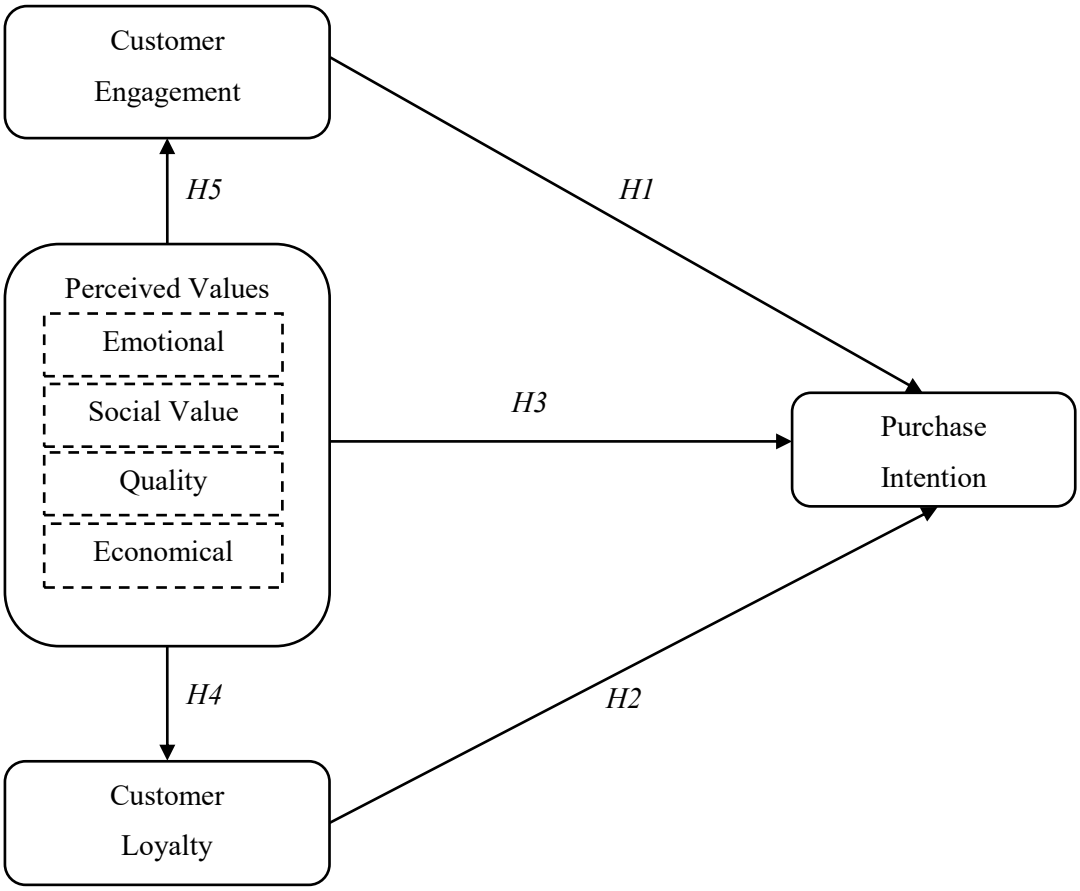

Figure 1 Research Framework

3 METHODOLOGY

In this chapter the methodology of this study is explained and the research approach is justified. Also, this chapter presents what are the measurement instruments and how the data is collected. Later the validity and reliability of the data are discussed and the chapter finishes by assessing the data skewness.

3.1 Research Approach

In quantitative research, the researcher analyzes the data and information of a sample that can be representative of the population. Quantitative methods usually use questionnaires, surveys, numeric data, and correlation techniques to collect data and conduct research. This indicates that quantitative research is concerned with measurement and it means that phenomena of interest are measurable. (Watson 2015, 1). The purpose of quantitative research is to validate theory or hypothesis through an experiment and analyze the numerical results (Lowhorn 2007, 3).

This study utilizes a quantitative method since the goal is to see whether previous theories developed and obtained by the literature are true in a certain context which is battle royale mobile games in this case. So it is best suited to collect data via a survey that the scale and measures validated by scholars of the field in previous studies. Additionally, when comparing a certain context with others, correlation and linear regression play a significant role because they are well-known statistical techniques and are utilized in the majority studies. (Twomey and Kroll 2008, 529).

Linear regression is a statistical analysis method that checks the relationship between an independent variable and a dependent variable, where the independent variable predicts the dependent variable, and the word "linear" indicates that only one independent variable is used in the analysis (Ross and Willson 2017, 39). Since 50 responses was collected via the online survey and the sample size is relatively small, linear regression is a more appropriate method for checking the relationship between variables compared to more complex quantitative method, hence in this study linear regression is utilized to analyze the data.

3.2 Measurement Instruments

In this research, there are four constructs: perceived value, customer loyalty, customer engagement, and purchase intention. Perceived value is measured with four variables: emotional, social value, quality, and economic value. In total, there are 7 variables. All of these constructs are measured based on the scales and instruments of previous research. The summary of the variables and measurement instrument are presented in Table 2.

Table 2-Constructs and measurement instruments

Construct	Type of Measure	Variable Code	Adapted from
Perceived Values	Reflective	PercValue	Sweeney and Soutar, 2001
Emotional	Reflective	EnValue	Sweeney and Soutar, 2001
Social value	Reflective	SoValue	Sweeney and Soutar, 2001
Quality	Reflective	QuValue	Sweeney and Soutar, 2001
Economic value	Reflective	EcValue	Sweeney and Soutar, 2001
Customer Engagement	Formative	CE	Van Doorn et al., 2010
Customer Loyalty	Reflective	MLoyalty	Yang and Peterson, 2004
Purchase Intention	Reflective	PIntention	Bhattacherjee, 2001

Perceived values, customer loyalty, and purchase intention constructs are measured via a 7-point Likert scale ranging from strongly disagree to strongly agree. Customer engagement is measured via a seven-point continuous scale of money, time, and frequency. The participants are asked to respond to a continuous scale; for instance from 1= “less than 10 minutes per day” and 7=” more than 4 hours per day”. The list of items in the survey is in Appendix 1.

3.3 Data Collection

The data for this research gathered through an online survey. The survey was posted on social media, online communities of gamers, and gaming forums. At the beginning of the survey it is an introduction about the research and what is the survey about. Further, it asks the participants whether they have played a battle royale mobile game such as PUBG mobile, Call of Duty mobile, Brawl Stars, or Fortnite for the past three (or six) month

before collecting demographic data: age, gender, income, profession, education, and platform (see Appendix 2).

In total 50 responses got collected in an online survey using Google Forms. The online survey was published in two Discord servers, two Facebook groups, three Telegram Channels, and one Instagram page-all communities of battle royale mobile games-and individuals who were accessible to the researcher.

The demographic data (Appendix 3) collected from the respondents provides notable insights to the research. The average age of players in the sample is 21.44 years, which is among the age range (18-24) of mobile battle royale gamer in the United States according to a report by Data.ai (2022). However, the gender distribution in the sample doesn't correspond to the same report. In the sample with 39 male and 10 female players, the ratio is almost 4 to 1, while in contrast, the gender distribution seems to be a more equally distributed between male and female players in battle royale mobile players.

It should be noted that other background data from the sample is not comparable with the population since publicly available free demographic data on mobile battle royale players, such as Call of Duty Mobile, Fortnite Mobile, and PUBG Mobile, are limited due to the best of knowledge of the author. The lack of access to such information brings a challenge in comparing the demographic characteristics of the sample data with the population. Therefore, when generalizing the findings of this study to the population of mobile battle royale players caution should be considered.

3.4 Evaluation of Validity and Reliability

The validity and reliability of research must be measured for any empirical study in order to assure the quality of the research and accordingly the credibility of its results (Yin 2003, 33).

The definition of validity is "the extent to which a concept is accurately measured in a quantitative study" (Heale and Twycross 2015, 66). The validity of the measured items in this research is approved due to the fact that they are adapted from previous scholars' studies (Table 2).

Reliability is defined as an instrument's ability to consistently produce the same results when used in the same situation repeatedly (Heale and Twycross 2015, 66). For example when someone takes a test that measures how loyal they are to a brand, their answers should be pretty much the same each time they take the test. It is not possible to

give an exact calculation of reliability, however, there are different ways to estimate it (Heale and Twycross 2015, 66).

Cronbach's alpha, also known as Coefficient alpha, is one of the most common ways to check the reliability of the instrument (Cho 2016, 651). Alpha was created by Lee Cronbach in 1951 to measure the reliability of a scale and it is measured as a value ranging from 0 to 1 (Tavakol and Dennick 2011, 53). When the items are highly correlated, the alpha value is high and when they are not, the value is low and based on various sources, the acceptable range for alpha values is ranging from 0.70 to 0.95 (Tavakol and Dennick 2011, 54). Cronbach's alpha of the measured items is calculated via SPSS 27 in this study and are presented in Table 3.

Perceived Values variable has four components: Emotional Value, Social Value, Quality value, and economical value. Emotional Value is measured via four items: named as EnValue1 to EnValue4. Social Value is measured via four items: named as SoValue1 to SoValue4. Quality Value is measured via four items: named as QuValue1 to Quvalue4. Economical value is measured via 3 items: named as EcValue1 to EcValue3. Customer Engagement variable has three items to measure: named CE1 to CE3. Customer Loyalty variable has five items to measure: named MLoyalty1 to Mloyalty5. Purchase Intention variable has two items to measure: named PIntention1 and PIntention2 (Appendix 1).

Table 3-Cronbach's alpha of the measured items

Measured Item	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Emotional Value	.840	.840	4
Social Value	.828	.824	4
Quality Value	.897	.900	4
Economical Value	.590	.603	3
Customer Engagement	.618	.566	3
Customer Loyalty	.843	.851	5
Purchase Intention	.902	.904	2

The Cronbach's alpha of Social Value measure is 0.590 which is lower than 0.700 so the reliability of this item is doubtful. Also the Cronbach's alpha of Customer Engagement is 0.618 which is lower than 0.700 so the reliability of this item is doubtful too. Cronbach's alpha of all the other measured items is higher than 0.700, therefore the items are reliable.

An important note here that should be taken into consideration is that an independent variable and a dependent variable are analyzed using single regression; only two variables are involved. The analysis is performed in order to determine whether changes in the independent variable can explain the variation in the dependent variable. However, in multiple regression, two or more independent variables are analyzed in relation to a dependent variable. In conclusion, the number of independent variables taken into account in the analysis is the primary distinction between single and multiple regression. Multiple regression examines the relationship between a dependent variable and two or more independent variables while adjusting for the effects of other variables. Single regression examines the relationship between two variables.

Based on the research framework, the analysis should be done via multiple regression technique to check the effects of independent variables on the dependent variable while controlling for other independent variables, however, due to the data limitation, multiple regression is not possible. While utilizing multiple regression the P values become very high and it might be because of multicollinearity between independent variables and a small sample doesn't help with the issue. Hence, several single regression analyses are used to check the correlation between the dependent variable and each of the independent variables in pairs. This is one of the major limitations of this study and is further discussed in section 5.3.

3.5 Evaluation of Skewness of the Data

Skewness measures how much a variable's distribution is asymmetrical. When a distribution is perfectly normal, its skewness value is zero. A positive skew value means that the distribution's tail is longer on the right side than on the left side, and most values are on the left side of the mean. On the other hand, a negative skew value means that the distribution's tail is longer on the left side than on the right side, and most values are on the right side of the mean (Kim 2013, 52). West et al. (1996) suggested that a skew value greater than 2 is a significant deviation from normality. Normality of the data is essential to linear regression (Ross and Willson 2017, 39), which is the method used in this study to analyze the collected data. In this section the normality of the data is checked via SPSS 27 and the results are presented in Table 4.

Table 4-Skewness and Kurtosis of the measures

Measure		Statistic	Std. Error
PercValue	Mean	5.0333	.13672
	Std. Deviation	.96677	-
	Skewness	-.220	.337
	Kurtosis	-.405	.662
EnValueMean	Mean	5.8400	.12833
	Std. Deviation	.90740	-
	Skewness	-.359	.337
	Kurtosis	-.813	.662
SoValueMean	Mean	4.4750	.19888
	Std. Deviation	1.40630	-
	Skewness	-.166	.337
	Kurtosis	-.418	.662
QuValueMean	Mean	5.4550	.19557
	Std. Deviation	1.38292	-
	Skewness	-1.019	.337
	Kurtosis	.984	.662
EcValueMean	Mean	4.1400	.20384
	Std. Deviation	1.44136	-
	Skewness	-.184	.337
	Kurtosis	-.403	.662
CE	Mean	3.6400	.16214
	Std. Deviation	1.14650	-
	Skewness	.393	.337
	Kurtosis	.074	.662
MLoyalty	Mean	5.2800	.18330
	Std. Deviation	1.29615	-
	Skewness	-.585	.337
	Kurtosis	-.140	.662
PIntention	Mean	3.6700	.28198
	Std. Deviation	1.99389	-
	Skewness	.247	.337
	Kurtosis	-1.048	.662

Kurtosis is a metric for quantifying the degree of peakiness in a distribution (Kim 2013, 53). West et al. (1996) suggested that a kurtosis value greater than 7 would indicate a significant deviation from normality. The majority of statistical programs, such SPSS, compute "excess" kurtosis by subtracting 3 from the kurtosis due to practical considerations. A perfect normal distribution has an excess kurtosis of zero (Kim 2013, 53).

Since the Skewness is equal to 0.337 and Kurtosis is equal to 0.662 and they are both in the range of -1 and 1, the data is not outside the range of normality or in other words, is fairly normally distributed.

Another test which is commonly used to check the normality of the data set is Kolmogorov–Smirnov test (Steinskog et al. 2007, 1151). The Kolmogorov-Smirnov test basically determines whether a sample is derived from a population that has a fully specified continuous distribution (Drezner et al. 2010, 694) and the continuous distribution is most of the times -but not always- the normal distribution. It is possible to use SPSS and check whether the data is normally distributed or not via Kolmogorov-Smirnov test. The tests results are presented in Table 5

Table 5-Kolmogorov-Smirnov test results

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
PercValue	.093	50	.200*	.986	50	.812
EnValueMean	.122	50	.060	.930	50	.006
SoValueMean	.087	50	.200*	.980	50	.543
QuValueMean	.153	50	.005	.908	50	.001
EcValueMean	.103	50	.200*	.979	50	.516
CE	.132	50	.030	.962	50	.105
MLoyalty	.101	50	.200*	.942	50	.016
PIntention	.119	50	.075	.920	50	.002

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

If the P value is greater than $\alpha = 0.05$, then it means that Null hypothesis is not rejected and, in the Kolmogorov,-Smirnov test, the Null hypothesis is *data is approximately normal* (SPSS Tutorials 2021). In Table 5, for all the measures the P value is greater than $\alpha = 0.05$ which means that the data is approximately normal, except for Quality Value. In QuValue measure, since the P Value is equal to 0.005 and is not greater than $\alpha = 0.05$, the Null hypothesis is rejected and the data is not normally distributed. Hence, this measure is out of the data analyzation and is further discussed in the limitations of the research section.

4 RESULTS

after choosing the research method and collecting the necessary data for the hypotheses using the appropriate tool, it is now time to use the appropriate statistical techniques that are dependent on the research method, type of variables, etc. to analyze the collected data and finally put the hypotheses to the test and see which of them get rejected and which get approved. The data is analyzed via SPSS 27.0 software and the method to check the hypothesis is linear regression, and to check the mediator effects of the variables Sobel test is used.

4.1 Testing the Hypotheses

The research framework is depicted below and the hypotheses are tested via linear regression in this section. All variables are measured using the mean of the items that measured the variable as mentioned in Appendix 1. In Table 6 the Null hypothesis are presented and the correlation analyses between the variables is shown in Table 7.

Table 6-Null Hypotheses

Hypothesis Number	Statement
H1	*Customer engagement has a positive effect on purchase intention of mobile players in battle royale games*
	H1: *customer engagement has a positive effect on purchase intention of mobile players in battle royale games.* H0: *customer engagement has not a positive effect on purchase intention of mobile players in battle royale games.*
H2	*Loyalty to battle royale mobile game positively influence purchase intention.*
	H1: *loyalty to battle royale mobile game positively influence purchase intention.* H0: *loyalty to battle royale mobile game not positively influence purchase intention.*
H3	*Perceived values are positively related to in-app purchase intention.*
	H1: *Perceived values are positively related to in-app purchase intention.* H0: *Perceived values are not positively related to in-app purchase intention.*
H4	*Perceived values are positively related to mobile game loyalty.*
	H1: *Perceived values are positively related to mobile game loyalty.*

	H0: *Perceived values are not positively related to mobile game loyalty.*
H5	*Perceived values are positively related to customer engagement among mobile game players*
	H1: *perceived values are positively related to customer engagement among mobile game players.* H0: *perceived values are not positively related to customer engagement among mobile game players.*

In Table 7, wherever the P value (Sig.) is below than 0.05, it means that the correlation between the variables is significant and the Null hypothesis is false. the P value for varibales customer engagement and purchase intention, customer loyalty and purchase intention, perceived values and purchase intention and perceived values and customer loyalty are below 0.05 which means the relation ship between the variables is approved.

On the other hand, the P value between Social values and purchase intention, is equal to 0.054 which is not below than 0.05. This means that the correlation between social values and purchase intention is not significant and the Null hypothesis is true. Similarly, between perceived values and customer engagement the P value is equal to 0.114 which is not below than 0.05. This also means that the correlation between perceived values and customer engagement is not significant and the Null hypothesis is ture.

As mentioned in the previous chapter, since the collected data is not normal for quality value measure, it is not possible to test this hypothesis with linear regression and it is further discussed in the limitaion of the research section. The models' summary of the regressions and the regression diagrams are presented at Appendix 4.

Table 7- Coefficients and Correlations Between Variables

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Dependent Variable
		B	Std. Error	Beta			
1	(Constant)	1.717	.910		1.886	.065	PIntention
	CE	.537	.239	.309	2.247	.029	
2	(Constant)	-.853	1.002		-.851	.399	PIntention
	MLoyalty	.857	.184	.557	4.645	.000	
3	(Constant)	-.629	1.388		-.453	.652	PIntention
	PercValue	.854	.271	.414	3.152	.003	
3.1	(Constant)	-1.485	1.716		-.865	.391	PIntention
	EnValueMean	.883	.290	.402	3.039	.004	

3.2	(Constant)	1.928	.922		2.091	.042	PInten-
	SoValueMean	.389	.197	.274	1.978	.054	tion
3.3	QuValueMean	-	-	-	-	-	-
3.4	(Constant)	1.583	.814		1.944	.058	PInten-
	EcValueMean	.504	.186	.364	2.711	.009	tion
4	(Constant)	1.196	.789		1.515	.136	MLoyalty
	PercValue	.811	.154	.605	5.267	.000	
5	(Constant)	2.289	.854		2.680	.010	CE
	PercValue	.268	.167	.226	1.609	.114	

4.2 Testing Mediator Effects via Sobel Test

Michael E. Sobel created the statistical method known as the Sobel test, which is used to assess the significance of a mediation effect. (Sobel 1982, 308). In order to check the mediation effect of customer engagement between Perceived Values and Purchased Intention, the online Sobel test calculator is used. Available at: https://quantpsy.org/sobel/sobel.htm <accessed, 23 February, 2023>

The p-values provided (rounded to 8 decimal places) are taken from the unit normal distribution and assume a two-tailed z-test that examines whether the mediated effect is equals to zero in the population. The test ratio's critical values are +/- 1.96 and encompass the center 95% of the unit normal distribution.. In short, if the Sobel test value is above 1.96 or below -1.96, then the mediation effect is significant. In Figure 2, the Sobel Value is equal to 1.308 which is not above 1.96 so the mediation effect is not significant.

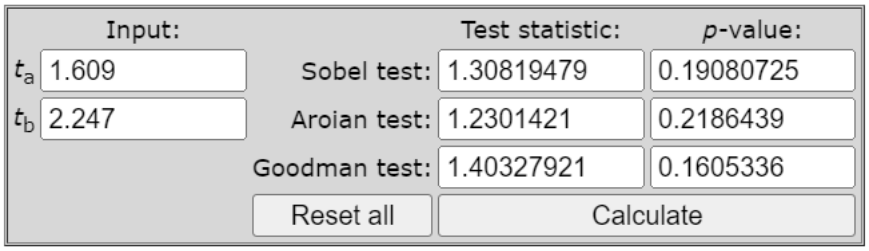

Figure 2-Sobel Test Results for Perceived Values, Customer Engagement, and Purchase Intention

Similarly, in order to testing the mediator effect of Customer Loyalty between the Perceived values and Purchase Intention via Sobel Test the same technique is used. In Figure 3 the Sobel Value is equal to 3.484 which is above 1.96 so the mediation effect is significant.

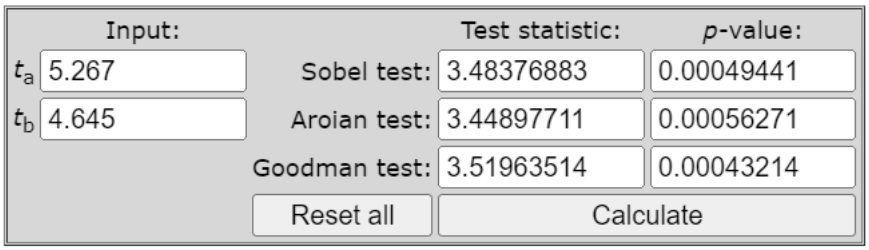

Figure 3-Sobel Test Results for Perceived Values, Customer Loyalty, and Purchase Intention

4.3 Discussion

In this section, the collected data got analyzed and the research framework was evaluated based on linear regression. In total, 50 respondents filled out the questionnaire. SPSS 27 was used to analyze the data. First, the demographic data of the respondents was presented. Later the validity and reliability of the data are discussed. The reliability of each item of the questionnaire is checked via the Cronbach Alpha measure. All the items have Cronbach Alpha higher than 0.700 which means they are reliable except Economical Value Item and Customer Engagement. The Cronbach Alpha was 0.590 and 0,618 respectively which means the reliability of these two items is doubtful.

After the reliability, the normality of the data was tested, as it is one of the fundamental assumptions of linear regression. The collected data for all of the items were fairly normally distributed -sufficient enough for the analysis- Quality Value item. This item got omitted from the model.

Next, the hypothesis of the research was tested and the correlation of the variables was analyzed via regression model. The proposed hypothesis by the researcher and the results of the tests are presented in Table 8.

Table 8-Summary of the Hypotheses and the Results After Testing

Hypothesis	Result
H1: customer engagement has a positive effect on purchase intention of mobile players in battle royale games	Approved
H2: loyalty to battle royale mobile game positively influence purchase intention.	Approved
H3: Perceived values are positively related to in-app purchase intention.	Approved
H3.1: Emotional values are positively related to in-app purchase intention.	Approved

H3.2: Social values are positively related to in-app purchase intention. H3.3: Quality values are positively related to in-app purchase intention. H3.4: Economical values are positively related to in-app purchase intention.	Rejected Unassessable Approved
H4: Perceived values are positively related to mobile game loyalty.	Approved
H5: perceived values are positively related to customer engagement among mobile game players.	Rejected

Hypothesis 1,2,3 and 4 is accepted based on the analysis and hypothesis 5 was rejected. Customer engagement, perceived values and customer loyalty proved to have direct effects on purchase intention. Also perceived values is has direct effect on customer loyalty. Next, as an additional test, the mediation effect of customer engagement and customer loyalty was tested between perceived values and purchase intention. Based on the Sobel test, there was no mediation effect of customer engagement between perceived values and purchase intention. Based on the Sobel test, the mediation effect of mobile game loyalty between perceived values and purchase intention is significant. All in all, based on the findings the modified research model is represented as Figure 4.

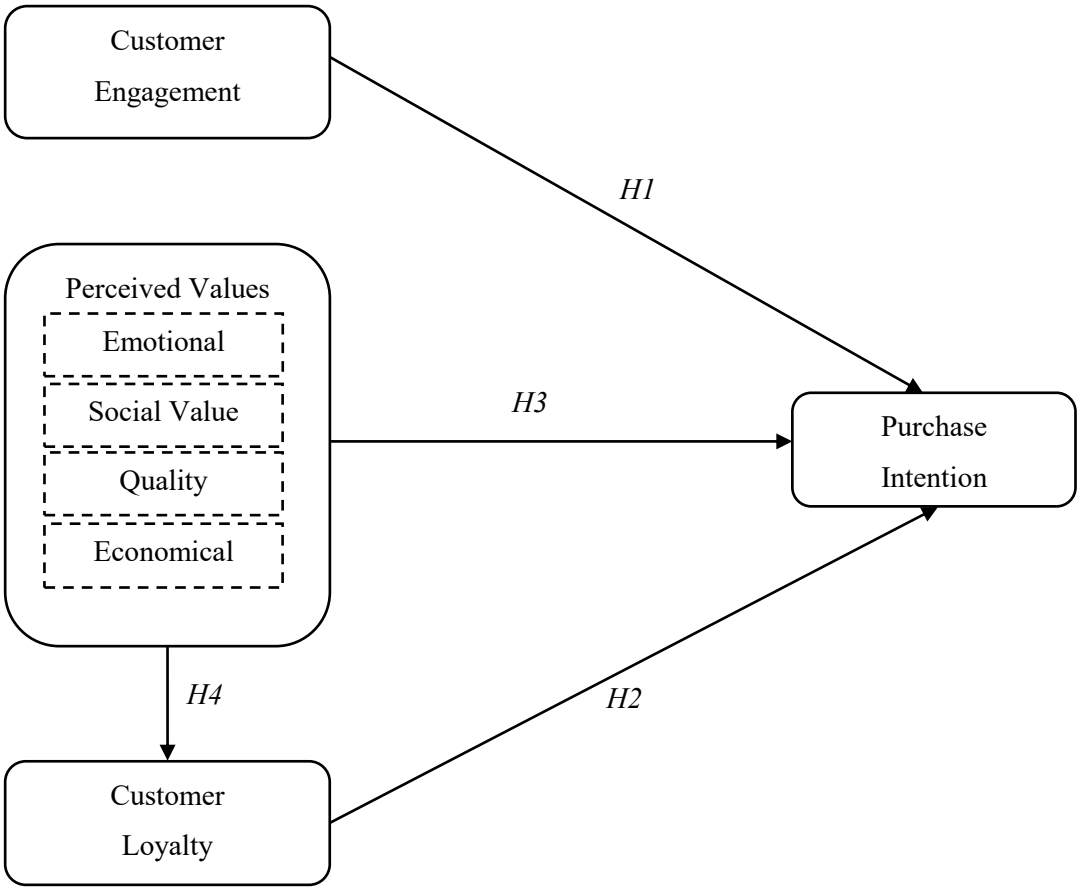

Figure 4-Research Framework after the Findings

5 CONCLUSIONS

This chapter states the theoretical contribution of this research and the managerial implications that can be used in practice. It also highlights the limitations of the research and it suggests topics for future research at the end of the chapter.

5.1 Theoretical Contribution

In this study, the effects of customer engagement, perceived values, and customer loyalty on the purchase intentions of mobile gamers in the battle royale genre are examined. Concepts of customer engagement, customer loyalty, and perceived values, and their relationship to the financial performance of gaming companies are well established in the literature, however, empirical research on online mobile battle royale games is scant. This master's thesis aims to fill this gap.

Based on the literature review in chapter 2, a research framework was proposed by the researcher (Figure 1). The findings state that customer engagement and loyalty are directly related to purchasing intentions in mobile battle royale games.

Perceived values as adapted from Sweeney and Soutar (2001), have four components; Namely, emotional values, social values, quality values and economical values. Emotional values and economical values are positively related to purchase intention; However, no significant relationship was found between social values and purchase intention. Perceived values also as one variable, mean of all four components, are positively related to the loyalty of mobile gamers however no significant relation was found between perceived values and customer engagement.

Another contribution of this study is the measurement instrument of the perceived values in the gaming context. As mentioned in the Methodology chapter, the items measuring quality value were not normally distributed while the other three components were. This might have different reasons and it is not easily justifiable based on the small sample, however, it can also highlight the fact that maybe Sweeney and Soutar's (2001) model has some limitations in the gaming industry. Sweeney and Soutar's (2001) study aimed to develop a scale to measure the perceived values but their study was based on durable products which are different from virtual goods that are sold in games. This highlights the fact that while the scale developed by Sweeney and Soutar (2001) is one of the most well-known scales and a valuable tool for measuring perceived values, it may not be the best fit for studies in a different context. The findings of this study reveal the need for

developing another scale that covers all aspects of perceived values specifically in the gaming industry so scholars can measure this concept more accurately.

In summary, this research showed that customer engagement, perceived values, and loyalty, that is well-discussed constructs in the literature but weren't empirically applied in the mobile battle royale genre, are positively related to the purchase intention of mobile gamers. Also, perceived values positively influence loyalty in mobile gamers but there is no relation between perceived values and the level of engagement in mobile gamers.

5.2 Managerial Implications

The findings of this research provide insights for game developers, mobile gaming companies, and managers working in this industry.

Findings suggest that the engagement of players leads to higher chances of purchasing inside the mobile game. Developers should continuously find a way in order to increase the engagement of the game with the players. Various ways are introduced in the literature to increase engagement among gamers. For example, improving the game experience is crucial in increasing positive player engagement. This involves making games more comprehensible, immersive, and enjoyable, which in turn increases the frequency and duration of gameplay, and helps to establish a lasting relationship between players and games. Furthermore, technical factors such as perceived control and ease of use are positively linked to customer engagement, and social interactions both online and offline are also key drivers of engagement (Kang et al, 2020, 86).

Findings suggest that the loyalty of players leads to higher chances of purchasing inside the mobile game. It is important for mobile gaming companies to consistently find methods to enhance player loyalty. Various ways are suggested by scholars in the literature. For instance, based on empirical evidence, it has been found that four distinct variables including game design, level of difficulty, player skill, and feedback all affect the state of flow experienced by players, and flow has been shown to have a significant influence on customer loyalty (Lee, 2006, 99).

Findings also suggest that how gamers perceived the emotional and economical values of the game, leads to higher chances of purchasing inside the mobile game and also enhances the loyalty of gamers toward the game. In this case, companies can manage ways to entice players' emotions by designing more exciting or attractive games, alongside offering reasonable prices, they can manage to boost the loyalty of their players and consequently, boost the in-app purchases of their games.

5.3 Limitations and Future Research Possibilities

This study provides some implications for research and practice, but it also has some limitations that can be solved for future research.

The first and most important limitation was the number of respondents to the questionnaire. The number of respondents was relatively small, and it projected certain restrictions for data analysis. For example, it restricted the analysis approach because the smaller the sample, the fewer statistical techniques to analyse the data. Rather than multiple regression technique, several simple regressions were used to check the correlation between each of the independent variables with the dependent variable. Several single regressions isolates the variables and doesn't take into account other independent variables while analysing. A bigger sample makes it possible to perform multiple regression and the results might be different in the sense that the strongness of the effect of independent variables on the dependent variable might change when their effects on each other are controlled. Moreover, a bigger sample increases the reliability of the findings and leads to more generalizable findings. Hence, One possible future research topic would be to increase the sample size and improve the statistical aspects of the study.

Second, the majority of respondents were from one Iranian Instagram community playing Brawl Stars and one American Discord community playing Call of Duty Mobile. However, battle royale mobile game players are worldwide. Also, data distributed to the players who are not geographically focused would lead to more realistic results. Therefore, other possibilities for future research are to assess how the findings are applied in different countries and what is the difference between the purchase intentions of players in different countries and investigating the role of culture on purchase intention, or, collecting the data which is more not geographically focused in one area.

Next, in this study, an online questionnaire was used to collect data and test the hypotheses. However, future research can use other methods in order to test the hypotheses and increase the accuracy of the findings. For example, statistical data or big data collected from major mobile gaming companies can be beneficial to assess the accuracy of this study.

Next, in this study, the customer engagement concepts were adapted by the Van Doorn et al. (2010) definition which focused only on behavioral aspects of customer en-

gagement. However, scholars have developed the idea beyond only behavioral manifestations and the term now is more multi-dimensional. Considering newer aspects of customer engagement would shed more light on the phenomena.

Finally, it is common to first conduct a qualitative study, and then test whatever is discovered in the qualitative study, with quantitative methods (Silverman, 2010, 32). In this study only three variables were investigated for impacting the purchase intention of the players: customer engagement, perceived values, and loyalty. However, other variables also influence purchase intention, and might as well influence the other variables in this study. Therefore, another future research could be considered a qualitative approach in order to understand the different variables that impact the purchase intention of mobile battle royale games. After that testing, the theory that emerged from the qualitative research with empirical methods within different contexts would be beneficial.

6 SUMMARY

Increasing access to the internet and smartphones has led to a great opportunity for developers to make mobile games and earn profits. Different types of mobile games have developed but one of the most popular types that have faced an excessive increase in the number of players is the battle royale genre. Most of the games in this genre use free-to-play with in-app purchases business models to earn profits. Customer engagement, perceived values, and customer loyalty are proved to influence the purchase intention of the gamers but the empirical evidence in the battle royale mobile games is scant. Hence, the question that this study is providing the answer to is "what are the effects of perceived value, customer engagement, and loyalty on the purchase intention of battle royale mobile gamers?"

Customer engagement refers to a customer's active participation in the value creation process, including behavioral (e.g. purchasing, word-of-mouth) and cognitive (e.g. attention, emotional attachment) dimensions. It is a two-way interaction that involves customers and firms mutually influencing each other's behaviors and decisions. Customer engagement is seen as an important factor in creating and maintaining a strong relationship between customers and firms, leading to increased sales and financial profits in different industries. In this study, behavioral aspects of customer engagement based on Van Doorn et al.'s (2010) study were investigated.

Perceived value refers to a customer's overall assessment of the benefits and costs associated with a product or service. Customers are more likely to engage in purchase behavior when they perceive the benefits to be greater than the sacrifices, resulting in a positive overall perceived value. In this study, four dimensions of perceived values (emotional, social, quality, and economical values) adapted from Sweeney and Soutar's (2001) study were investigated.

Customer loyalty is hard to define and there are different approaches for conceptualizing and measuring it, but in the gaming context, customer loyalty refers to the extent to which a player expresses an interest in mobile games and indicates their intention to continue playing them.

Based on the literature review and studies related to concepts presented in this study, a research framework consisting of five hypotheses was presented. To test the hypotheses, data were collected via an online questionnaire created by google forms. The online questionnaire was distributed in Facebook groups, Discord Channels, Telegram groups, and

Instagram pages that were directly related to mobile gaming and gaming. Overall, 50 participants responded to the call to fill out the questionnaire for educational purposes.

The data was analyzed via linear regression and the reliability of the data was tested via Cron Bach's alpha measurement. Also, the Sobel test was used to check the mediation effect between variables.

Of five hypotheses, one got rejected and four were approved. Based on the findings, theoretical and managerial implications are suggested. Based on the results of the analysis, customer engagement, perceived values, and customer loyalty proved to have direct effects on purchase intention in battle royale mobile games. Also, perceived values have a direct effect on customer loyalty. Another theoretical contribution of the study is identifying the mediation role of customer loyalty between perceived values and purchase intention. Besides, the findings proved that there is no significant correlation between perceived values and customer engagement. Lastly, the model used to measure perceived values was Sweeney and Soutar's (2001) model which was developed based on durable products. This study suggests that another scale should be developed to measure the perceived values in the gaming context because what is being sold in the games are virtual goods that are inherently different from tangible products.

Managerial implications of this study for the developers and mobile gaming companies are that designing, more exciting and attractive games, and offering more reasonable prices for the items, can influence values perceived by the players. Also by designing kind of a community within the game such as a chatroom or club, they can boost customer engagement. And game design, level of difficulty, player skill, and feedback all affect the state of flow experienced by players, and flow has been shown to have a significant influence on customer loyalty. Companies, by considering these variables into account can enhance purchase intention and gain more profits.

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APPENDICES

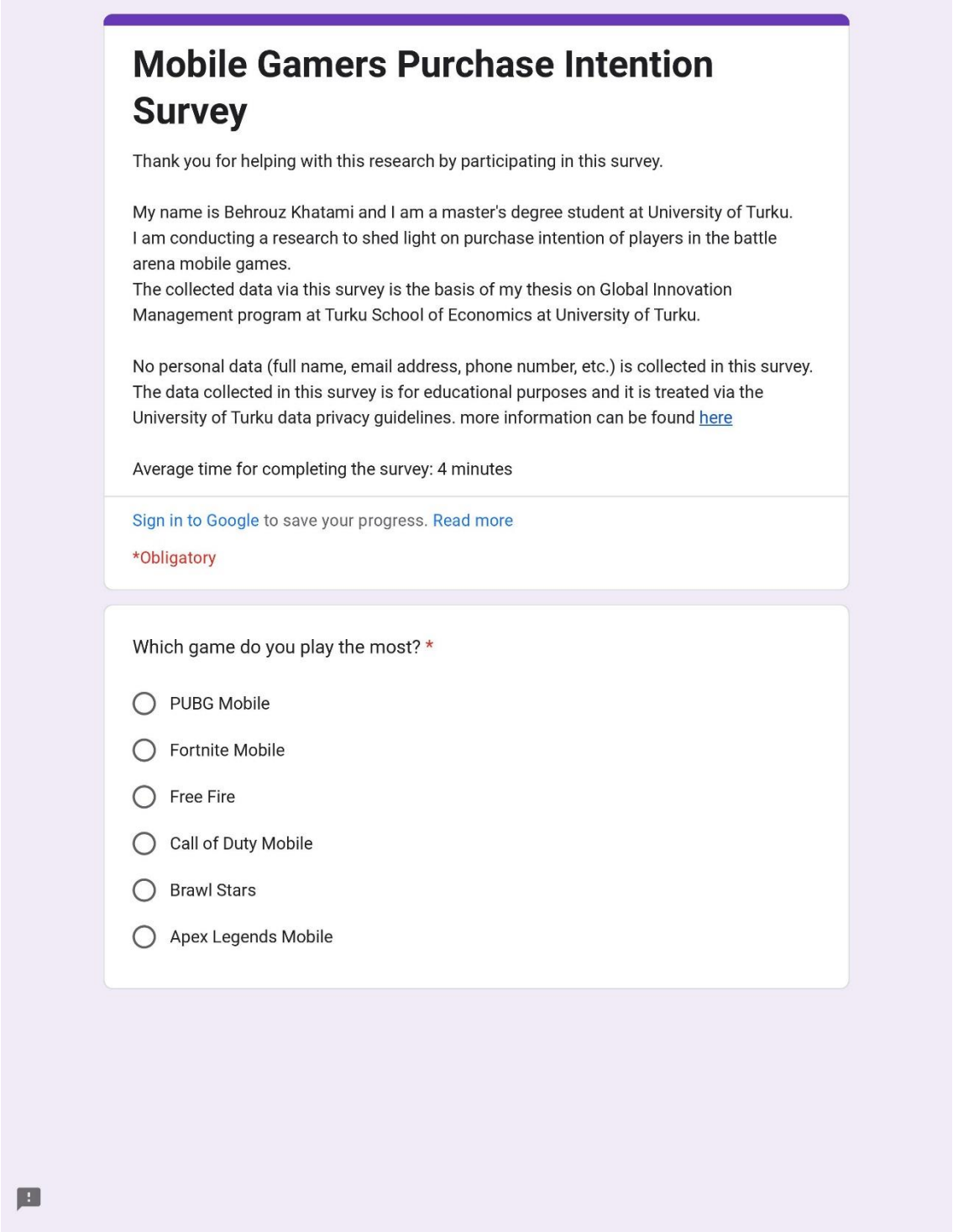
Appendix 1. Measurement Instruments

Questionnaire and measuring instruments

Construct	Variable Code	Item question	Adapted from
Perceived Values	PercValue		
Emotional value	EnValue		Sweeney and Soutar, 2001
	EnValue1	Playing the game is enjoyable.	
	EnValue2	Playing the game is pleasant.	
	EnValue3	Playing the game is exciting.	
	EnValue4	Playing the game is interesting	
Social value	SoValue		
	SoValue1	People who I appreciate like playing the game.	Sweeney and Soutar, 2001
	SoValue2	My friends would think playing the game is a good idea.	
	SoValue3	Playing the game improves the way I am perceived.	
	SoValue4	Playing the game makes a good impression on other people.	
Quality	QuValue		
	QuValue1	The game is of good quality.	Sweeney and Soutar, 2001
	QuValue2	The game is well made.	
	QuValue3	I believe that the game works reliably.	
	QuValue4	I think that the game works as I expect it to.	
Economic value	EcValue		
	EcValue1	All in all, the game offers value for money.	Sweeney and Soutar, 2001

	EcValue2	All in all, the game is a good product/service for the price.	
	EcValue3	All in all, the game is cheap.	
	EcValue4	All in all, the game is expensive. (reversed)	
Customer Engagement	CE		
	CE1	In the past 3 month, how long have you played this game per visit on average?	Van Doorn et al., 2010
	CE2	In the past 3 month, how many times have you played this game per week on average?	
	CE3	How long ago was your most recent game-playing?	
Customer Loyalty	MLoyalty	Reflective	
	MLoyalty1	This mobile game is my first choice.	Yang and Peterson, 2004
	MLoyalty2	I will continue to play this mobile game.	
	MLoyalty3	I am willing to say positive things about this mobile game to others.	
	MLoyalty4	If others want to play a mobile game, I will recommend this mobile game.	
	MLoyalty5	I will encourage friends and relatives to play this mobile game.	
Purchase Intention	PIntention		
	PIntention1	I predict that I will use money in the game in the future at least as much as I have used lately.	Bhattacherjee, 2001
	PIntention2	I intend to use money in the game at least as often within the next month as I have previously used.	

Appendix 2. Online Questionnaire



Mobile Gamers Purchase Intention Survey

Thank you for helping with this research by participating in this survey.

My name is Behrouz Khatami and I am a master's degree student at University of Turku. I am conducting a research to shed light on purchase intention of players in the battle arena mobile games.
The collected data via this survey is the basis of my thesis on Global Innovation Management program at Turku School of Economics at University of Turku.

No personal data (full name, email address, phone number, etc.) is collected in this survey. The data collected in this survey is for educational purposes and it is treated via the University of Turku data privacy guidelines. more information can be found here

Average time for completing the survey: 4 minutes

Sign in to Google to save your progress. Read more

*Obligatory

Which game do you play the most? *

- ○ PUBG Mobile
- ○ Fortnite Mobile
- ○ Free Fire
- ○ Call of Duty Mobile
- ○ Brawl Stars
- ○ Apex Legends Mobile

Please respond to the following statements based on the game you have chosen above.

Guide:
1: Strongly Disagree
2: Disagree
3: Somewhat Disagree
4: Neither Agree nor Disagree
5: Somewhat Agree
6: Agree
7: Strongly Agree

Playing the game is enjoyable. *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

Playing the game is pleasant. *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

Playing the game is exciting. *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

Playing the game is interesting *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

People who I appreciate like playing the game. *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

My friends would think playing the game is a good idea. *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

Playing the game improves the way I am perceived. *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

Playing the game makes a good impression on other people. *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

The game is of good quality. *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

The game is well made. *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

I believe that the game works reliably. *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

I think that the game works as I expect it to. *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

Please respond to the following 4 questions based on items (seasonal passes, skins, boxes, etc.) offered for purchasing inside the game.

All in all, the game offers value for money. *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

All in all, the game is a good product/service for the price. *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

All in all, the game is cheap. *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

All in all, the game is expensive. *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

In the past 3 month, how long have you played this game per visit on average? *

	less than 10 minutes	10 - 30 minutes	30 - 60 minutes	1 - 2 hours	2 - 3 hours	3 - 4 hours	more than 4 hours
	○	○	○	○	○	○	○

In the past 3 month, how many times have you played this game per week on average? *

	0 - 1	2 - 3	4 - 5	6 - 7	8 - 9	10 - 14	15 or more
	○	○	○	○	○	○	○

How long ago was your most recent game-playing? *

	0 - 1 day ago	1 - 2 days ago	2 - 3 days ago	3 - 4 days ago	4 - 5 days ago	5 - 6 days ago	more than 6 days ago
	○	○	○	○	○	○	○

This mobile game is my first choice. *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

I will continue to play this mobile game. *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

I am willing to say positive things about this mobile game to others. *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

If others want to play a mobile game, I will recommend this mobile game. *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

I will encourage friends and relatives to play this mobile game. *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

I predict that I will use money in the game in the future at least as much as I have used lately. *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

I intend to use money in the game at least as often within the next month as I have previously used. *

	1	2	3	4	5	6	7	
Strongly Disagree	○	○	○	○	○	○	○	Strongly Agree

What is your age? (in numbers, for example: 27) *

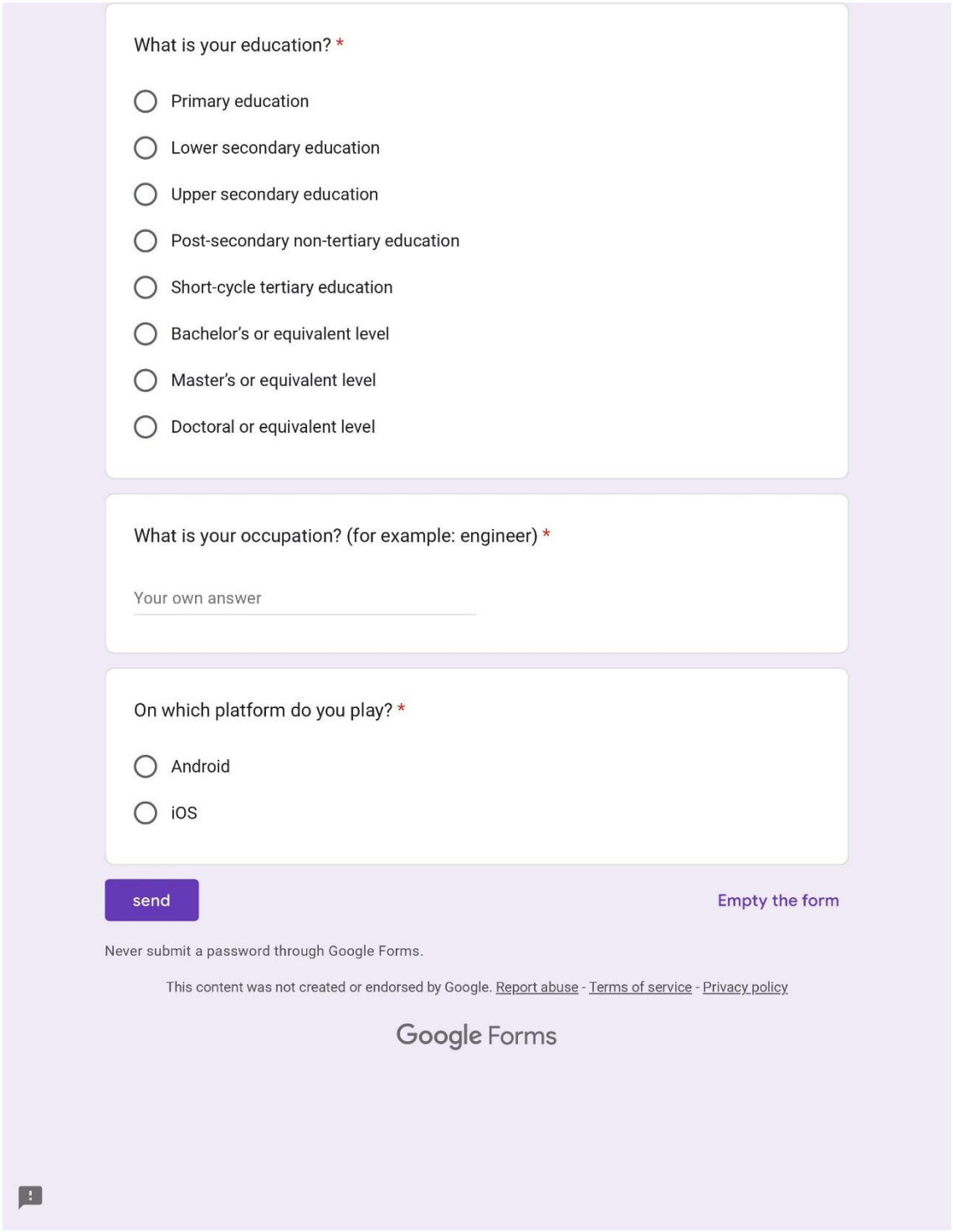
Your own answer

What is your gender? *

- ◯ Male
- ◯ Female
- ◯ Prefer not to say
- ◯ Sell: _____

Which of the following best describes your personal income? (In a year) *

- ◯ €0-€9,999
- ◯ €10,000-€24,999
- ◯ €25,000-€49,999
- ◯ €50,000-€74,999
- ◯ €75,000-€99,999
- ◯ €100,000+
- ◯ Prefer not to say



What is your education? *

- Primary education
- Lower secondary education
- Upper secondary education
- Post-secondary non-tertiary education
- Short-cycle tertiary education
- Bachelor's or equivalent level
- Master's or equivalent level
- Doctoral or equivalent level

What is your occupation? (for example: engineer) *

Your own answer

On which platform do you play? *

- Android
- iOS

send

Empty the form

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Google Forms

Appendix 3. Demographic Data

Age

N	Valid	50
	Missing	0
Mean		21.44
Median		18.50
Mode		18
Std. Deviation		6.893
Range		37
Minimum		13
Maximum		50

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	13	1	2.0	2.0	2.0
	15	4	8.0	8.0	10.0
	16	4	8.0	8.0	18.0
	17	7	14.0	14.0	32.0
	18	9	18.0	18.0	50.0
	19	1	2.0	2.0	52.0
	20	2	4.0	4.0	56.0
	21	5	10.0	10.0	66.0
	22	2	4.0	4.0	70.0
	23	2	4.0	4.0	74.0
	24	2	4.0	4.0	78.0
	26	2	4.0	4.0	82.0
	27	1	2.0	2.0	84.0
	29	2	4.0	4.0	88.0
	30	1	2.0	2.0	90.0
	32	2	4.0	4.0	94.0
	34	1	2.0	2.0	96.0
	37	1	2.0	2.0	98.0
	50	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	10	20.0	20.0	20.0
	Male	39	78.0	78.0	98.0
	Prefer not to say	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

Income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	€0-€9,999	24	48.0	48.0	48.0
	€10,000-€24,999	3	6.0	6.0	54.0
	€100,000+	1	2.0	2.0	56.0
	€25,000-€49,999	2	4.0	4.0	60.0
	€75,000-€99,999	2	4.0	4.0	64.0
	Prefer not to say	18	36.0	36.0	100.0
	Total	50	100.0	100.0	

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor's or equivalent level	9	18.0	18.0	18.0
	Doctoral or equivalent level	1	2.0	2.0	20.0
	Lower secondary education	1	2.0	2.0	22.0
	Master's or equivalent level	9	18.0	18.0	40.0
	Post-secondary non-tertiary education	3	6.0	6.0	46.0
	Primary education	7	14.0	14.0	60.0
	Short-cycle tertiary education	4	8.0	8.0	68.0
	Upper secondary education	16	32.0	32.0	100.0
	Total	50	100.0	100.0	

Occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-	2	4.0	4.0	4.0
	.	2	4.0	4.0	8.0
	Agriculture in animal production	1	2.0	2.0	10.0

	Artist	1	2.0	2.0	12.0
	barista	1	2.0	2.0	14.0
	Campers	1	2.0	2.0	16.0
	Consultant	1	2.0	2.0	18.0
	Content Creator / Influencer	1	2.0	2.0	20.0
	Data Analyst	1	2.0	2.0	22.0
	Data Scientist	1	2.0	2.0	24.0
	Designer	1	2.0	2.0	26.0
	driver	1	2.0	2.0	28.0
	EMT Paramedic	1	2.0	2.0	30.0
	Engineer	2	4.0	4.0	34.0
	Engineering student	1	2.0	2.0	36.0
	gamer	1	2.0	2.0	38.0
	Gxgnn	1	2.0	2.0	40.0
	High school student	1	2.0	2.0	42.0
	Manager	1	2.0	2.0	44.0
	Martial Arts instructor.	1	2.0	2.0	46.0
	Mobile Game Marketing and publishing	1	2.0	2.0	48.0
	Motion designer	1	2.0	2.0	50.0
	Nurse	1	2.0	2.0	52.0
	physician	1	2.0	2.0	54.0
	Private school professor	1	2.0	2.0	56.0
	Programmer	1	2.0	2.0	58.0
	Recruitment agent	1	2.0	2.0	60.0
	Software engineering	1	2.0	2.0	62.0
	Student	14	28.0	28.0	90.0
	Teacher	1	2.0	2.0	92.0
	Technology-related work	1	2.0	2.0	94.0
	Unemployed	1	2.0	2.0	96.0
	University student	2	4.0	4.0	100.0
	Total	50	100.0	100.0	

Platform

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Android	34	68.0	68.0	68.0
	iOS	16	32.0	32.0	100.0
	Total	50	100.0	100.0	

Mobile Game

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Apex Legends Mobile	1	2.0	2.0	2.0
	Brawl Stars	11	22.0	22.0	24.0
	Call of Duty Mobile	34	68.0	68.0	92.0
	Fortnite Mobile	2	4.0	4.0	96.0
	PUBG Mobile	2	4.0	4.0	100.0
	Total	50	100.0	100.0	

Appendix 4. Linear Regression Diagrams and Model Summaries

Hypothesis 1: Effect of Customer Engagement on Purchase Intention

H1: *customer engagement has a positive effect on purchase intention of mobile players in battle royale games.*

H0: *customer engagement has not a positive effect on purchase intention of mobile players in battle royale games.*

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.309[a]	.095	.076	1.91627

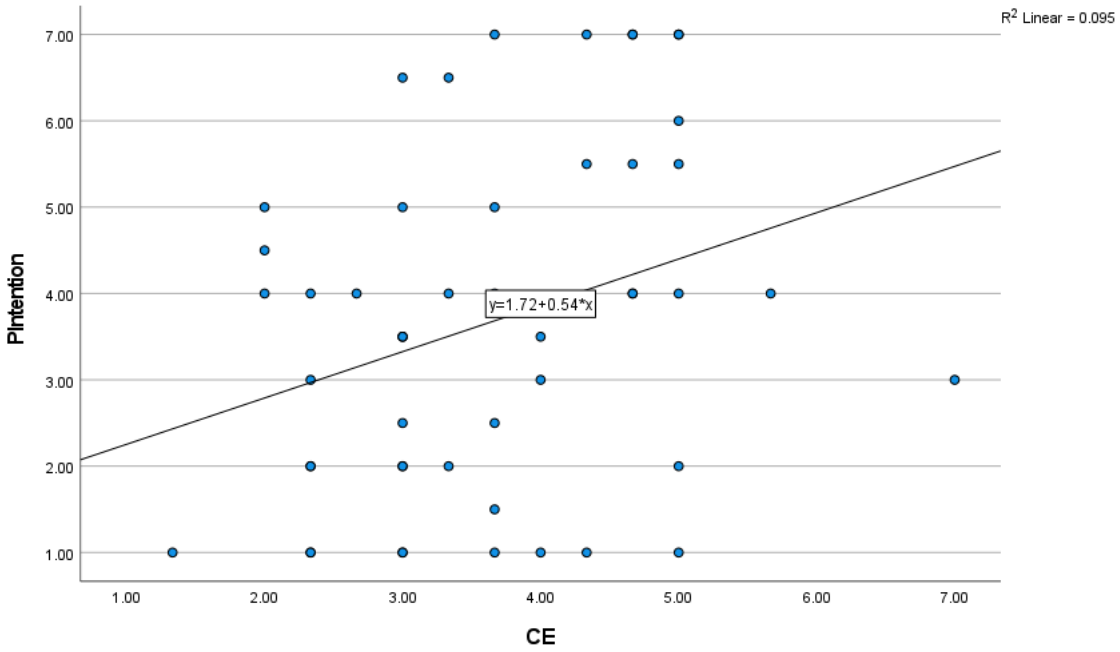
a. Predictors: (Constant), CE

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.717	.910		1.886	.065
	CE	.537	.239	.309	2.247	.029

a. Dependent Variable: PIntention

The P value on this test is equal to 0.029 which is below than 0.05. This means that the correlation between customer engagement and purchase intention is significant and the Null hypothesis is false.



Hypothesis 2: Effect of Mobile Loyalty on Purchase Intention

H1: *loyalty to battle royale mobile game positively influence purchase intention.*

H0: *loyalty to battle royale mobile game not positively influence purchase intention.*

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.557[a]	.310	.296	1.67328

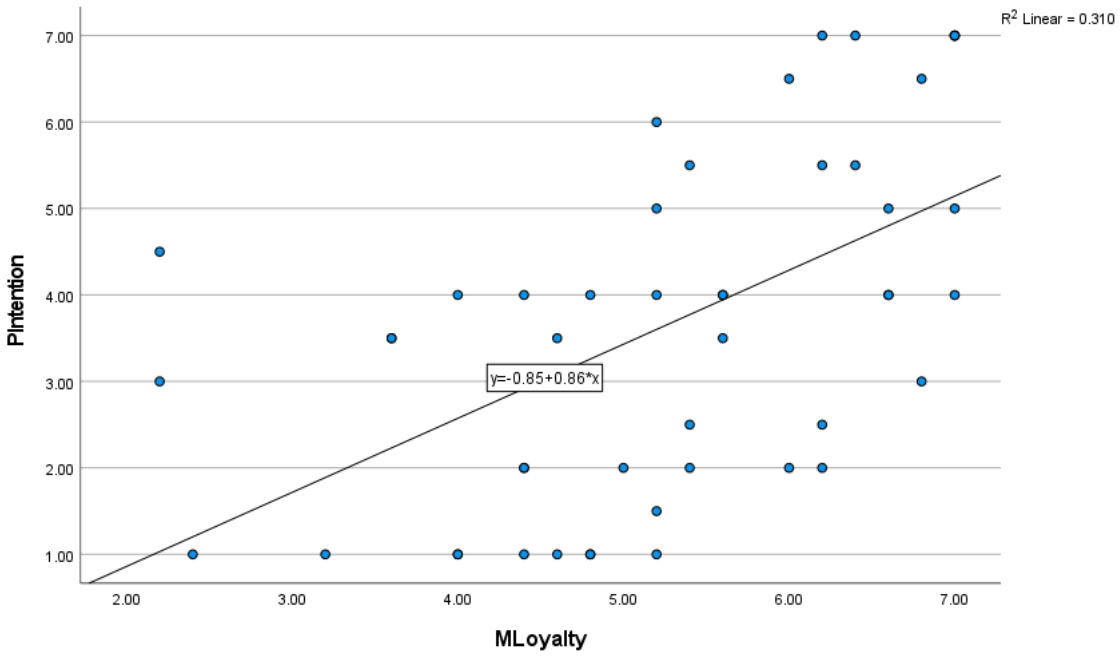
a. Predictors: (Constant), MLoyalty

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Co-efficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.853	1.002		-.851	.399
	MLoyalty	.857	.184	.557	4.645	.000

a. Dependent Variable: PIntention

The P value on this test is smaller than 0.001 which is below than 0.05. This means that the correlation between mobile loyalty and purchase intention is significant and the Null hypothesis is false.



Hypothesis 3: Effect of Perceived Values on Purchase Intention

H1: *Perceived values are positively related to in-app purchase intention.*

H0: *Perceived values are not positively related to in-app purchase intention.*

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.414[a]	.172	.154	1.83368

a. Predictors: (Constant), PercValue

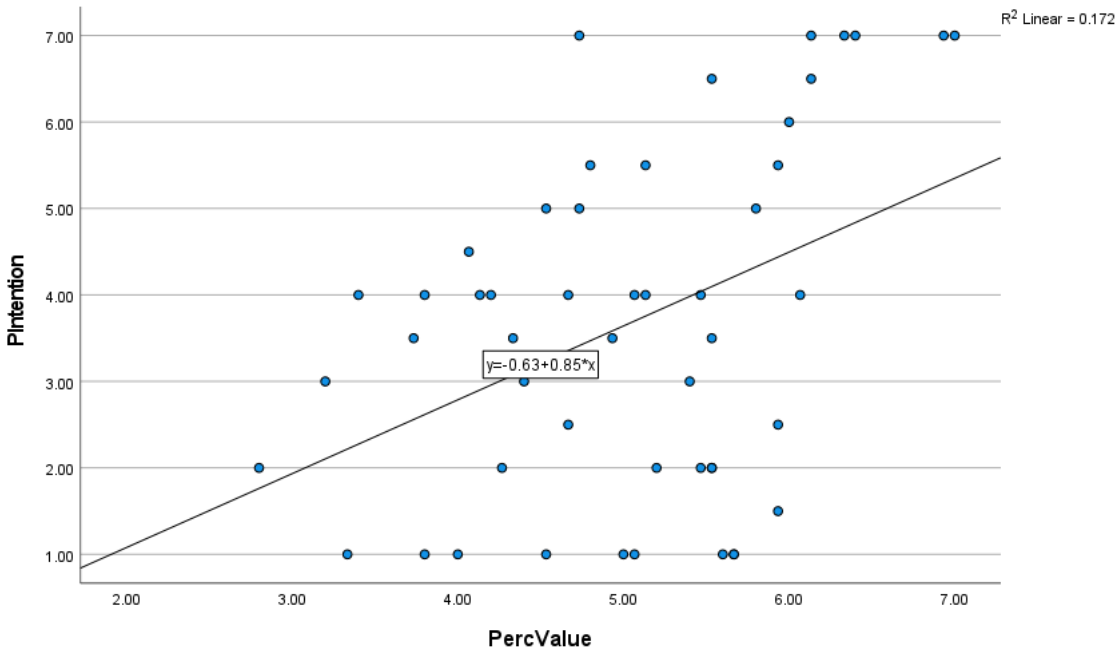
Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Co-efficients Beta	t	Sig.
1	(Constant)	-.629	1.388		-.453	.652

PercValue	.854	.271	.414	3.152	.003

a. Dependent Variable: PIntention

The P value on this test is equal to 0.003 which is below than 0.05. This means that the correlation between perceived values and purchase intention is significant and the Null hypothesis is false.



Testing Hypothesis 3.1

H1: *Emotional values are positively related to in-app purchase intention.*

H0: *Emotional values are not positively related to in-app purchase intention.*

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.402[a]	.161	.144	1.84489

a. Predictors: (Constant), EnValueMean

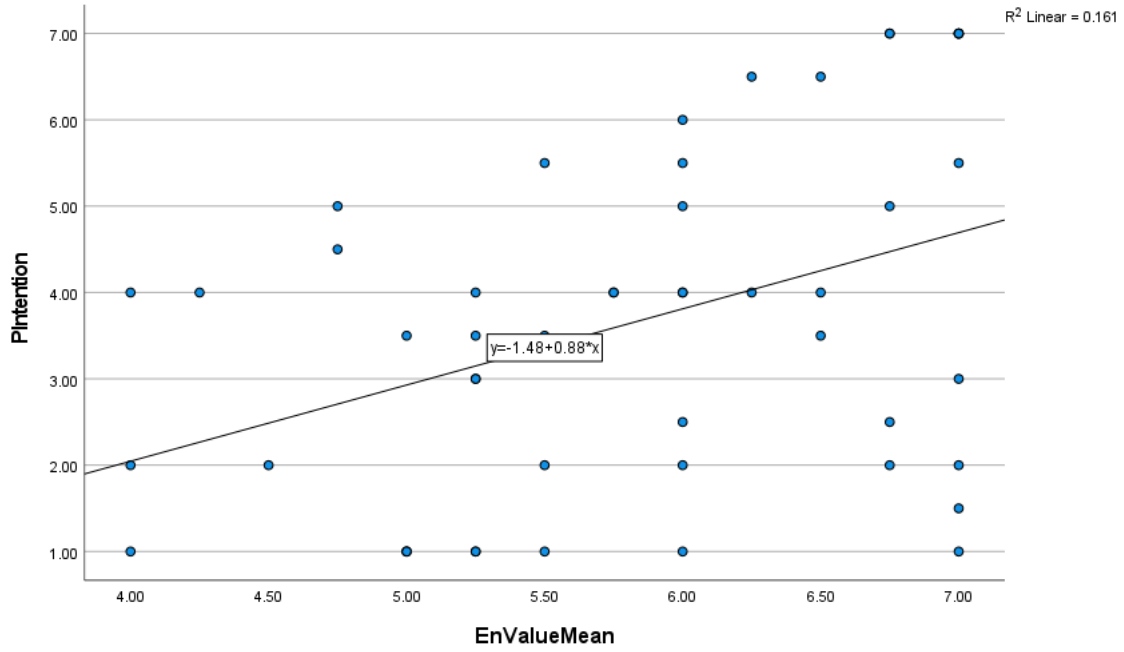
Coefficients[a]

Model	Unstandardized Coefficients	Standardized Co-efficients	t	Sig.

		B	Std. Error	Beta		
1	(Constant)	-1.485	1.716		-.865	.391
	EnValueMean	.883	.290	.402	3.039	.004

a. Dependent Variable: PIntention

The P value on this test is equal to 0.004 which is below than 0.05. This means that the correlation between emotional values and purchase intention is significant and the Null hypothesis is false.



Testing Hypothesis 3.2

H1: *Social values are positively related to in-app purchase intention.*

H0: *Social values are not positively related to in-app purchase intention.*

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.274[a]	.075	.056	1.93718

a. Predictors: (Constant), SoValueMean

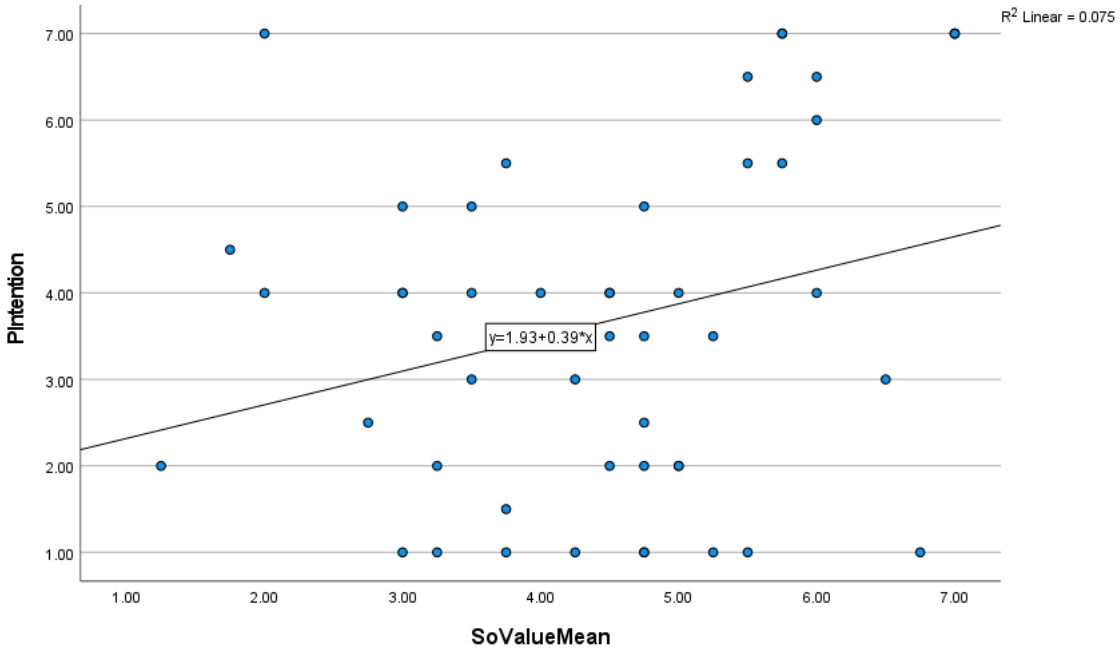
Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.928	.922		2.091	.042

SoValueMean	.389	.197	.274	1.978	.054

a. Dependent Variable: PIntention

The P value on this test is equal to 0.054 which is not below than 0.05. This means that the correlation between social values and purchase intention is not significant and the Null hypothesis is true.



Testing Hypothesis 3.3

H1: *Quality values are positively related to in-app purchase intention.*

H0: *Quality values are not positively related to in-app purchase intention.*

Since the collected data is not normal for quality measure, it is not possible to test this hypothesis with linear regression.

Testing Hypothesis 3.4

H1: *Economical values are positively related to in-app purchase intention.*

H0: *Economical values are not positively related to in-app purchase intention.*

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.364[a]	.133	.115	1.87607

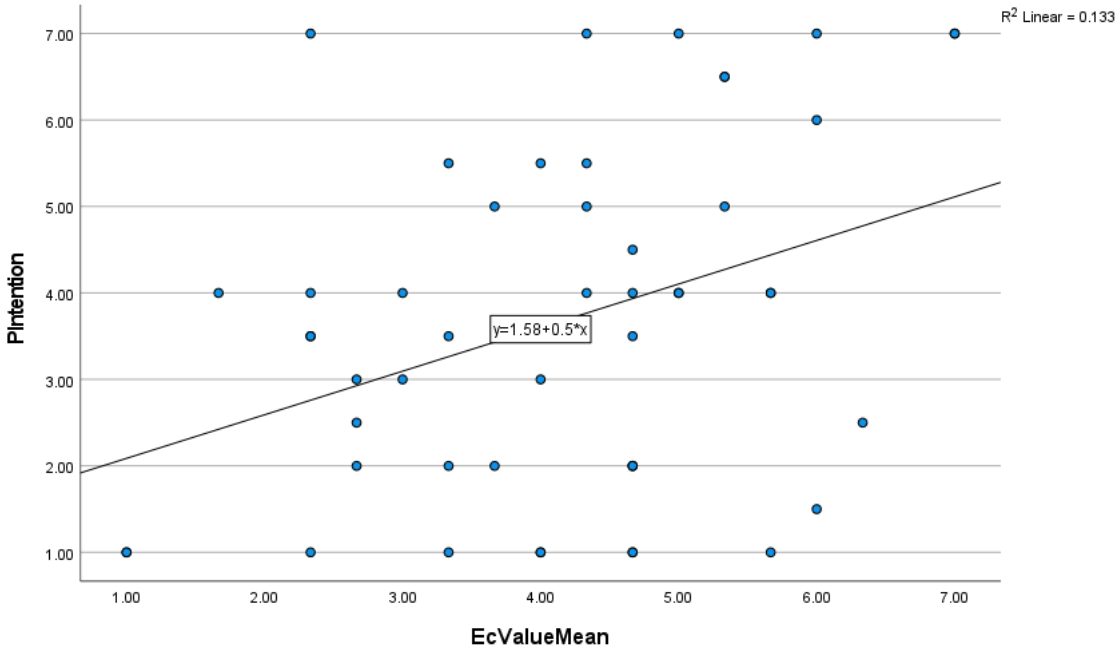
a. Predictors: (Constant), EcValueMean

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.583	.814		1.944	.058
	EcValueMean	.504	.186	.364	2.711	.009

a. Dependent Variable: PIntention

The P value on this test is equal to 0.009 which is below than 0.05. This means that the correlation between economical values and purchase intention is significant and the Null hypothesis is false.



Hypothesis 4: Effect of Perceived Values on Mobile Game Loyalty

H1: *Perceived values are positively related to mobile game loyalty.*

H0: *Perceived values are not positively related to mobile game loyalty.*

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate

1	.605[a]	.366	.353	1.04252

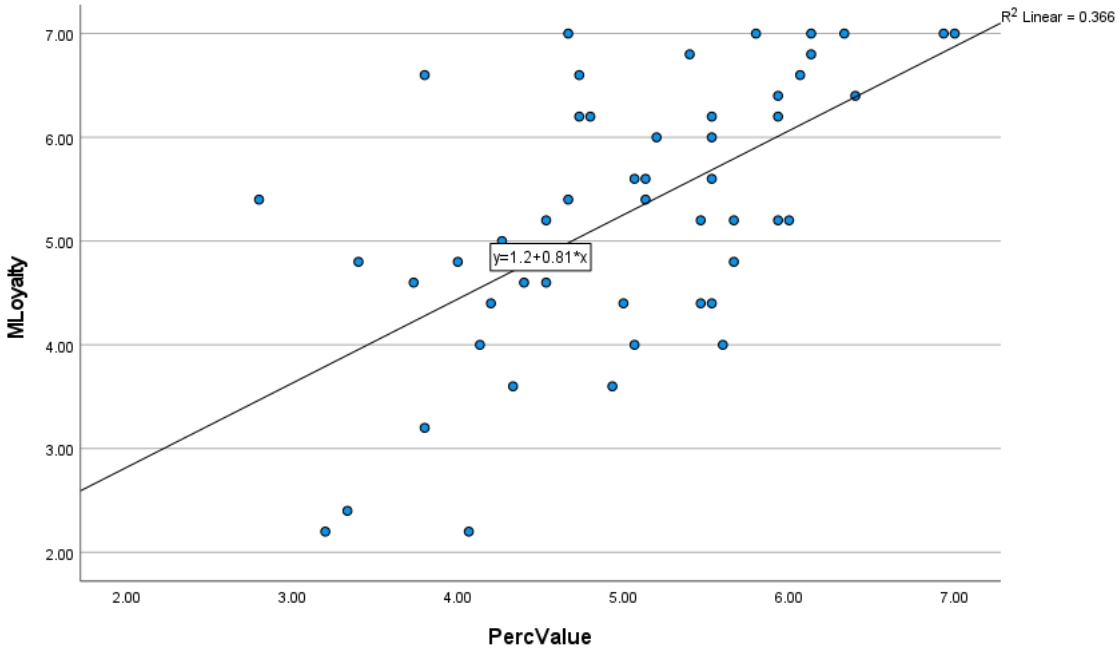
a. Predictors: (Constant), PercValue

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.196	.789		1.515	.136
	PercValue	.811	.154	.605	5.267	.000

a. Dependent Variable: MLoyalty

The P value on this test is smaller than to 0.001 which is below than 0.05. This means that the correlation between perceived values and mobile game loyalty is significant and the Null hypothesis is false.



Hypothesis 5: Effect of Perceived Values on Customer Engagement

H1: *perceived values are positively related to customer engagement among mobile game players.*

H0: *perceived values are not positively related to customer engagement among mobile game players.*

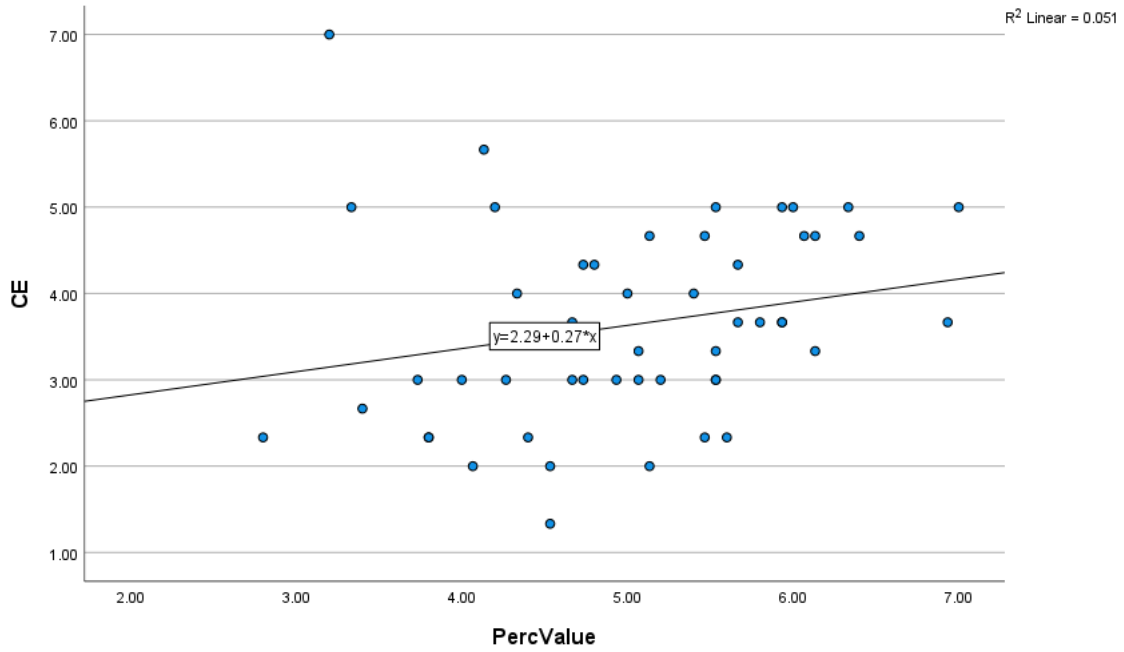
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.226[a]	.051	.031	1.12834

a. Predictors: (Constant), PercValue

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Co-efficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.289	.854		2.680	.010
	PercValue	.268	.167	.226	1.609	.114

a. Dependent Variable: CE

The P value on this test is equal to 0.114 which is not below than 0.05. This means that the correlation between perceived values and customer engagement is not significant and the Null hypothesis is ture.