



# **Universiteit Leiden**

## **ICT in Business**

Exploring the relationship between smartphone application's business models, usage and culture

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Date: 14/09/2014

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## Abstract

The aim of this study was to uncover the relationship between culture, smartphone application's business models and smartphone application's usage. The first step taken in the study was to identify the most successful applications in South Korea and the Netherlands. Using these results, the business models were mapped. The results showed that in both countries, there were discrepancies in business model.

The following step was to interview the Dutch and South Korean populace on their usage of smartphone applications. This was done by using the UTAUT2 questionnaire in a qualitative way, combined with questions concerning business models. The questions concerning business model were formed using the data found from the list of the most successful smartphone applications was compiled. The findings of this part of the study showed that successful applications are not used more than unsuccessful applications. There is no relationship found between being successful and usage. The data showed that usage of applications differ in both countries from each other.

After the interviews, the results were mapped to Hofstede's Cultural Dimensions. Four out of the six dimensions were found to have a relationship with business model and usage. Culture does seem to have an impact on smartphone application's business models and smartphone application's usage.

**Keywords:** Culture, Business Model, Hofstede's Cultural Dimension, Usage, UTAUT2

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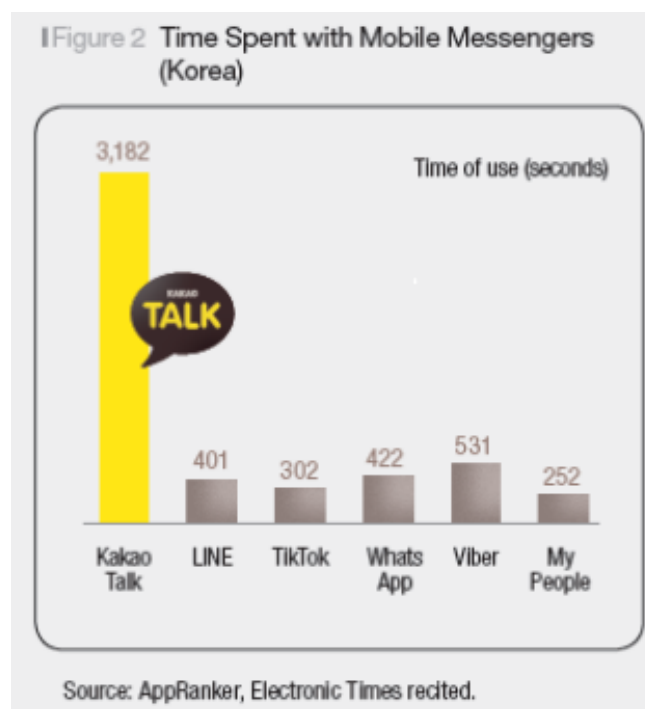
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## 1. Introduction

Mobile applications are increasingly influencing everyday life and business. Take the WhatsApp application for instance. WhatsApp is an application, which enables the sending of text messages to other WhatsApp users. Because of WhatsApp less people will be using SMS and the mobile carriers will be missing out on revenue. WhatsApp is very popular and has been topping the Apple app store list worldwide according to Distimo [1]. But this claim seems to be a stretch. In South Korea, WhatsApp is not very popular. Kakaotalk is the most popular and downloaded mobile messenger in South Korea. Kakaotalk is a Korean made, mobile text messenger and was released in 2010. Unlike WhatsApp, Kakaotalk is and was always free to download/use, on any mobile platform. It did not take long for Kakaotalk to overtake WhatsApp in South Korea. In 2012, more than 90% of mobile phone users in South Korea were using Kakaotalk [2]. Figure 1 shows the time spent on mobile messengers for the South Korean market. On average, the Korean mobile phone user spends 53 minutes on Kakaotalk. In comparison, the Korean mobile phone user spends 7 minutes on WhatsApp.

Figure 1 [2].



In China, WhatsApp is also not the most popular and most used mobile text messenger. And this is not because the Chinese government has blocked it. WhatsApp is available freely in the Chinese App store. The most popular mobile text messenger in China is Wechat [3]. Wechat was released in 2010 and grew rapidly. By 2012, they had more than 100 million users, though most were from Mainland China.

Even though the function of the three mobile text messengers are the same, their popularity differs a lot across the globe. WhatsApp was released in 2009 and became the number one text messenger worldwide. Kakaotalk and Wechat were released in 2010 and it didn't take long for them to overtake their respective domestic market each. Even with WhatsApp first mover's advantage, the domestic text messengers of South Korea and China managed to outperform WhatsApp. It is clearly visible that the application ideas were fit to the local market/culture. What could be the reasons of the differing popularity and usage worldwide, behind these applications with similar functions? One of the major differences between Kakaotalk and WhatsApp is that Kakaotalk is free to download and use. Wechat is also free to download while WhatsApp was paid to download and nowadays it has a yearly subscription of one dollar. A conclusion one can make is that the Chinese and Korean market might prefer a free app instead of pay to use. This however does not seem to translate back to the Western market where Kakaotalk and Wechat are also available for free but still are not growing as fast as WhatsApp. Another difference Kakaotalk has with WhatsApp is a different value proposition. With Kakaotalk, users can share photos, videos, voice messages and location. The app also enables free voice calls and group voice calls. A big feature of Kakaotalk is the ability to invite other users to play games together. Users then compete with each other over Kakaotalk and look at each other's high scores.



WhatsApp does not offer all of these features. It could very well be that the value proposition of Kakaotalk is more attractive to the Korean market than the Western market. It is for these reasons that we believe that the culture of South Korea has an impact on the success of the business model used by mobile applications. Likewise, the culture of the Netherlands has an impact on the success of the business model used by mobile applications.

This study believes that there is a relationship between the success of smartphone application's business models and culture. Certain business models will have more success in certain markets as is evident in the discrepancy in success of WhatsApp, Kakaotalk and Wechat.

Research in the area of culture and the relationship on m-commerce application's business models has not yet been done. The relationship between culture and the diffusion rate of mobile applications and smartphone acceptance has been done however by [4], [5], [6], [7]. Fife and Pereira (2003) have done a study on the factors that can account for the difference in diffusion rate of mobile data applications in particularly in South Korea, Japan and the United States [4]. The diffusion of innovation framework was applied to the three countries to better explain the difference in adoption rates of mobile data applications between countries. The United States usage of SMS has been relatively low compared to Asia and using the diffusion of innovation framework, an explanation is provided. While not specifically taking into account culture, [4] does show that diffusion of mobile applications differ per country.

Another study done by Biljon and Kotze (2008) goes further and specifically looks at cultural factors for mobile phone adoption and usage [5]. Using Hofstede's cultural dimensions model, the study investigated if culture does influence mobile phone adoption and use. The study was successful in identifying the relationship between culture and mobile phone adoption. The outcome of the study was a model that includes social influence as representative factors that influence mobile phone adoption and usage. In the model social influence encompasses the components of human nature and culture. Based on prior research, it can be concluded that there is a relationship between culture and the diffusion rate of mobile phones and mobile phone usage. Further research on the relationship and mobile phone applications is limited however. Jung and Nammee [8] have done a comparative cultural case study on applications from the iOS App Store. Their findings show that the distribution of mobile phone applications differs per country. The study also used Hofstede (1991) and Schwartz (1994) cultural models for the comparative case study and their findings suggest that there is a clear relationship between the mobile application's usage across countries and the culture of the countries based on Hofstede [9], [10], [11]. A factor in the model by [10] is intellectual autonomy and countries which score high on this dimension are also the countries in which educational apps and books are used and downloaded more. The study shows that a relationship exists between culture and smartphone applications and calls for further investigation.

Based on the observation of differing popularity and usage of similar applications in South Korea and the Netherlands, the relationship between culture and mobile phone's diffusion rate and the limited research done on m-commerce application's business models and culture, this paper aims to examine the relationship between the business model of smartphone applications and culture. It seeks to answer the question: **What is the relationship between culture and the success of smartphone application's business models and usage?**

The study will compare South Korea and the Netherlands. Can the relationship of the diffusion rate of mobile phones, which can be explained culturally, be translated to the smartphone applications? Can we explain why South Koreans prefer Kakaotalk to WhatsApp culturally? This study will list and compare the top grossing apps in South Korea and the Netherlands. From this list the business model will be extracted based on some aspects of the business model canvas [12]. The business models will be analysed and compared with each other. The study is aiming to explore whether there is a relationship between culture and the impact it has on the success of a business model. Using Hofstede's cultural dimensions model [11] and the UTAUT2 model [12], a relationship will be analysed between the business models of the applications, the usage of the smartphone applications and the cultural dimensions. Studies concerning smartphone applications, their usage and business models have not been done. The research area on smartphone applications is small. Previous studies were concerned with mobile phone adoption and usage or culture or the diffusion of mobile phones. This study moves away from looking into diffusion rates of mobile phones and culture. The next steps in this area of research are the smartphone applications themselves. This study is taking a wide perspective on smartphone applications. It takes into account the cultural perspective on usage of smartphone applications and preferences for business model.

The contribution of this study is to show if, how and which cultural dimensions effect the success of a business model of smartphone applications. This data could explain what business model works in which country and what cultural effects app developers and organizations need to take into account. This study should be interesting to a wide audience. This study aims to integrate the marketing perspective of smartphone applications with a cultural perspective.

## 2. Relevance

Prior research has been done on the diffusion rate of mobile phones [5], the diffusion rate of mobile applications [4] and the diffusion rate of mobile services in different countries [6]. Academic research has shifted from mobile phones to mobile applications (e.g. SMS). The next logical step is to research smart phone applications, research in this area is very limited. The contribution of this study is opening up new research areas concerning smartphone applications, culture and business models.

The second important contribution of this study is related to guiding development of smartphone applications cross-country. This data could explain which business model works in which country and what cultural effects organizations need to take into account. The study also aims to find out the relationship between usage of smartphone applications and the impact of culture on this usage. It could be seen that in the Netherlands, a country with high individualism, the usage of games is lower while in South Korea, games are played more. Because of these reasons, development of new smartphone applications could be guided by research in this specific area. The outcome of this research could help answer questions such as: Which business model works in South Korea and which in the Netherlands? What cultural differences impact the usage of smartphone application?

### 3. Scope

The scope of this paper is limited to establishing the relationship between culture and the success of smartphone application's business models. The study is looking at two countries: South Korea and the Netherlands. Looking at Hofstede's cultural dimensions, it can be seen that the Netherlands and South Korea are two very distinct countries. On almost every dimension, the two countries are very much opposites. Confucianism has shaped Korean culture while the Netherlands is a very individualistic society. These substantial cultural differences are needed to research whether business models are affected by culture. This study has chosen to only research the most successful application's business models.

Semi structured interviews will be conducted in this study to gather data. The sample size will be 24, 12 in South Korea and 12 in the Netherlands. The sample size will be limited to the age category of 16 to 34 in both countries. According to a global study [13], 86% the age group of 16 to 34 owns a smartphone in South Korea. It is for this reason; this study will limit itself to the age category of 16 to 34. The Netherlands has similar statistics with the ages of 12 to 45 owning a smartphone [17]. For the Netherlands, the ages 16 to 34 will be used as well.

## **4. Theoretical foundation**

In this chapter, the theoretical foundation of the research model will be discussed. Models related to business models, usage and culture will be studied and evaluated. With this data, the research model of this study will be synthesized.

The study has made some assumptions about the relationship between culture and smartphone applications. Out of these assumptions, four sub-research questions were formed:

1. What are the most successful applications in the Netherlands and South Korea?
2. What are the business models of the most successful applications in the Netherlands and in South Korea?
3. What is the relation between the successful applications and non-successful applications with respect to user acceptance and usage in different countries?
4. How can culture be related to the most successful smartphone applications and their business models in South Korea and Netherlands?

#### **4.1 What are the most successful applications in the Netherlands and South Korea?**

Success in this study is defined as follows: "An application which is part of the top 50 grossing applications in either South Korea or Netherlands, in Q4 of 2013".

To answer this sub question, a list of 50 top grossing smartphone applications will be extracted from Apple's App Store in both countries, which are in line with the sample criteria as previously described. The outcome of this part of the research is a better understanding of the most successful applications of the app store combined in The Netherlands and South Korea.

#### **4.2 What are the business models of the most successful applications in the Netherlands and in South Korea?**

This sub question will look into the applications, which are found in the previous sub question. The specific interest here is the business model. There are several frameworks for defining a business model. Krumeich et al (2012) have done a state of the art review on the various business model frameworks [34]. One of them is the business model reference framework. This is a reference model designed by the Federal Enterprise Architecture of the US Federal government. This model is function-driven. It describes the business operations of the Federal Government. The business reference model is not suitable for this study because it is function-driven. It describes components of the business and their processes. There are some other frameworks like the component business model by IBM and the industrialization of service business model. These are also not suitable for this study because it focuses too much on either processes or components of an organization. This study focuses on the ways smartphone applications provide value to the consumer. The organizational components are not relevant.



That is why, for the analysis of the business model, the business model canvas by Osterwalder [12] will be used. This framework captures the business model in the most suitable way for this study.

#### 4.2.1 Business model canvas

In this study, the term business model is used to express the way different smartphone applications create value. Osterwalder (2010) created a business model mapping model which exists of 9 building blocks [12]:

1. **Customer Segments:** Which segments are served?
2. **Value Proposition:** Which customer problems are solved through value delivering?
3. **Channels:** Through which channels is the value transferred?
4. **Customer Relationships:** What form of relationship with customers is created?
5. **Revenue Streams:** Result of the positive revenues created.
6. **Key Resources:** Which assets are required?
7. **Key Activities:** Which activities are performed?
8. **Key Partnerships:** Which activities are outsourced or outside the enterprise?
9. **Cost Structure:** What are the costs?

This study is about the 'influence of culture on the success of smartphone application business models'. The aim is to investigate respectively building blocks 1, 2, and 5 with the cultural perspective as addition to the building blocks. The choice for these blocks is because they are relevant to the subject and the context of mobile applications.

#### ***4.2.1.1 Customer Segments***

Customer segments in the context of this study are the Korean smartphone users and the Dutch smartphone users. The type of smartphone application is relevant as well to customer segment. A specific genre caters to a specific segment. Together these will be the customer segments.

#### ***4.2.1.2 Value Proposition***

This study is concerned with the different categories of value perceived by customers. In what way is value offered by the smartphone application to the consumer? For example, Vrechopoulos et al. (2002), identify that customers see value in good price/service ratio, comfort and independence of time and space [14]. The differences between the measures in The Netherlands and South Korea will lead to better understanding the influence of culture on the smartphone application domain.

#### ***4.2.1.3 Revenue Streams***

Different sort of revenue streams exist within the smartphone application market such as in-app purchases and buying before downloading. This study is concerned with finding the most common revenue streams and the differences between The Netherlands and South Korea.

The outcome of this sub question will be two ordered lists of business models in both countries. The data gathered in this part of the research will help, after sub-question 1, to distinguish both countries on the most successful applications and their business model.

#### **4.2.1.4 Remainder blocks**

##### **Channels**

The main method of application distribution is the Apple appstore. For a developer, this will be the only legal method to distribute an application. It will be the same for all developers. It is for this reason that the channel block of the business model canvas will not be taken into account. There are alternatives such as Cydia but these are illegal.

##### **Customer Relationships**

Because of the nature of the Apple app store, it is very difficult to maintain customer relations. An application is a mass product. The customer just downloads an app without looking who created it. An application is downloaded on the need of the customer. If the application does not do what the customer need, the customer switches to another application which does the same. It is for this reason, this building block cannot be used in the context of this study.

##### **Key Resources, key activities, key partnerships and cost structure**

These building blocks are concerned with the company. This study does not focus on companies alone. It focuses on the target audiences of smartphone applications in South Korea and the Netherlands. It also focuses more on the product than the company. Gathering data on key resources would not be relevant for this study. The key building blocks for the smartphone application's developers would most likely be the same for all. Data collected on this issue would be unusable. Another issue is that even if there was a need to use this data, a reliable source could not be found.

### **4.3 What is the relation between the successful applications and non-successful applications with respect to user acceptance and usage in different countries?**

This phase of the study will investigate the user acceptance and usage of applications in different countries. In the previous step a list of the most successful applications and their business models have been found. Prior research learns that there is a significant relationship between the factors of behavioural intention to use a technology and/or technology usage [15]. This behavioural intention is measured using the UTAUT2 model. The abbreviation UTAUT stands for unified theory of acceptance and use of technology. It is a technology acceptance model by Venkatesh et al.[15].

#### **4.3.1 UTAUT2**

The model attempts to explain the acceptance of the user of an information system and the usage of the system. This model has been used in several studies before. Koivumäki *et al.* studied the perception of 243 individuals in Finland towards mobile services and technology [31], Curtis et al. applied UTAUT to study the adoption of social media in the non-profit organizations [32] and Verhoeven et al. studied computer use frequency applying the UTAUT model [33].

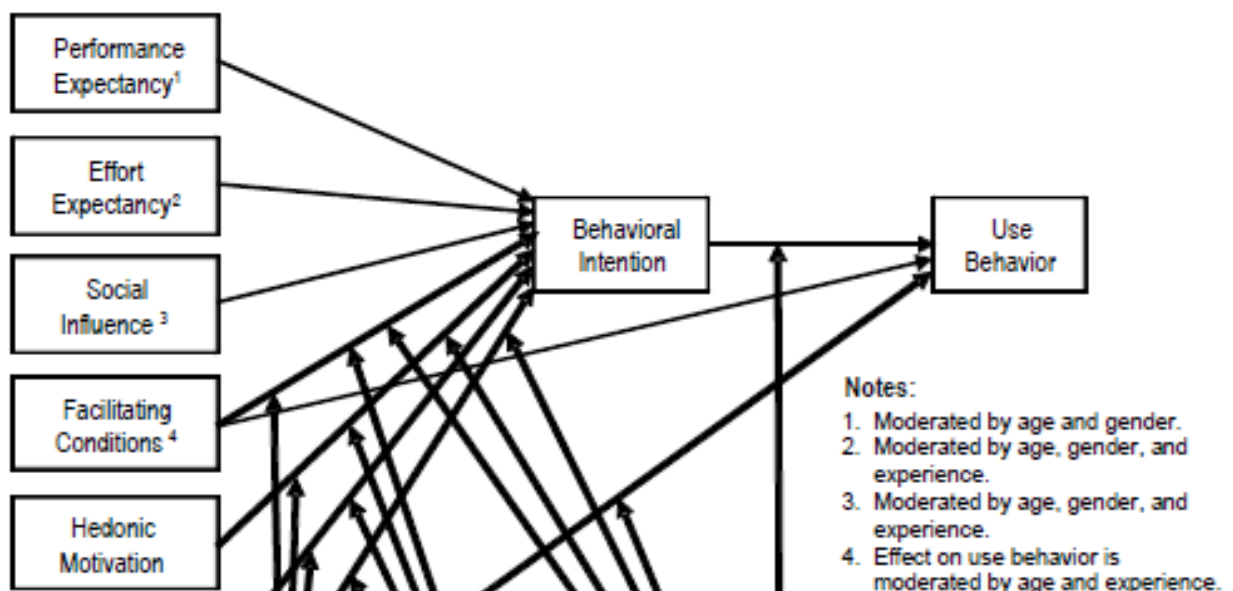
The explanation is done by seven key constructs of the model:

1. Performance expectancy
2. Effort expectancy
3. Social influence
4. Facilitating conditions
5. Hedonic motivation
6. Price value

## 7. Habit

Performance expectancy, effort expectancy, social influence and hedonic motivation are direct determinants of usage intention and behaviour. The performance a person expects out of a new technology and the effort one is required to put into it influence usage intention and behavioural intention. Social influence plays a role as well. The influence could be from a direct social network or the government enforcing a new technology.

Facilitating conditions also influences behaviour intention. Availability of resources, knowledge and support are essential to acceptance of new technology. Venkatesh et al.[15] found that especially older women were affected by facilitating conditions to accept and use a new technology. Price value addresses the impact of cost on the technology use of consumers. Habit has been identified as having both a direct effect on usage and indirect effect through behavioural intention. Together these constructs measure behavioural intention and user behaviour. These constructs are moderated by gender, age and experience. The entirety of the model can be seen in figure 2



**Figure 2: the UTAUT2 model [15]**

The UTAUT2 model, as described by Venkatesh et al. (2012), will be used to measure usage and acceptance. This is achieved by a standardized questionnaire developed specifically for the UTAUT2. This questionnaire has been modified for use in semi-structured interviews. After this phase, data has been collected on the usage and acceptance of the smart phone applications in both countries. The data will be different from both countries, because distinct applications are successful in each country. Combining the data from the previous sub questions, with the data gathered in this sub question, a cultural framework will be applied to explain whether culture impacts smartphone application's business models and smartphone application usage.

#### **4.4 How can culture be related to the most successful smartphone applications and their business models in South Korea and Netherlands?**

The final phase in the study will be analysing the differences found in the previous phase regarding smartphone applications using a cultural framework. The first step is to define culture. This study has chosen to use Hofstede's cultural dimensions model to define culture. This model has previously been used

by [5][6] and [8] in studies similar to this one. It is for this reason that this study has also chosen to integrate Hofstede's cultural dimensions model. Using other cultural models would lead to uncertainty.

#### **4.4.1 Hofstede's cultural dimensions theory**

Geert Hofstede defines culture as "The collective programming of the mind distinguishing the members of one group or category of people from another"[11]. Hofstede's six cultural dimensions are used to define culture. The six dimensions can be measured as well. The six dimensions are further explained below:

##### **4.4.1.1 Power Distance**

According to Hofstede, power distance is the extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally. [29]. In societies with a high power distance, the relationship between superiors and lower ranked members is very strict and formal.

#### **4.4.1.2 Individualism**

Hofstede defines individualism as follows: individualism on the one side versus its opposite, collectivism, is the degree to which individuals are integrated into groups.[29]. Moreover, Harry Triandis states that “collectivists are closely linked individuals who view themselves primarily as parts of a whole, be it a family, a network of co-workers, a tribe, or a nation”. Such people are mainly motivated by the norms and duties imposed by the collective entity. Individualists are motivated by their own preferences, needs, and rights, giving priority to personal rather than to group goals” [30]. Comparing South Korea to The Netherlands, the countries are total opposites. Where South Korea tends to be extreme collective, The Netherlands is extreme individualism society.

#### **4.4.1.3 Masculinity**

Hofstede's defines masculinity as follows: “masculinity stands for a society in which social gender roles are clearly distinct: Men are supposed to be assertive, tough, and focused on material success; women are supposed to be more modest, tender, and concerned with the quality of life. Femininity stands for a society in which social gender roles overlap: Both men and women are supposed to be modest, tender, and concerned with the quality of life”[27].

#### **4.4.1.4 Uncertainty Avoidance**

Hofstede's defines uncertainty avoidance as the extent a culture programs its members to feel either uncomfortable or comfortable in unstructured situations.[29]. It actually indicates to what extent a culture is programmed to feel relaxed (comfortable) in an uncertain situation.



#### ***4.4.1.5 Pragmatism***

Pragmatism can be defined as short term- or long-term orientation. This dimension was added after studies from Michael Bond in Hong Kong. He noted that the traditional four dimensions did not adequately map the Asian perspective on culture. Hofstede notes: "Long Term Orientation stands for the fostering of virtues oriented towards future rewards, in particular perseverance and thrift. It's opposite pole, Short Term Orientation, stands for the fostering of virtues related to the past and present, in particular, respect for tradition, preservation of 'face' and fulfilling social obligations" [27].

#### **4.4.1.6 Indulgence**

Hofstede's cultural dimensions theory has defined indulgence as follows: "indulgence stands for a society that allows relatively free gratification of basic and natural human drives related to enjoying life and having fun. Restraint stands for a society that suppresses gratification of needs and regulates it by means of strict social norms" [29].

#### **4.4.2 Cultural comparison tool**

To explore the six dimensions of a culture, Hofstede has created a questionnaire, to measure the score of groups on the six dimensions. The standardized questionnaire is called the VSM 2013. This questionnaire is intended not to map individuals but groups. The VSM questionnaire is only effective with a sample size of above 20:

"As the relationship is statistical, the samples per country should be of sufficient size. An ideal size for a homogeneous sample is 50 respondents. Sample sizes smaller than 20 should not be used, as outlying answers by single respondents will unduly affect the results" [25]

It is for this reason that this study will not apply the VSM questionnaire to the 24 interviewees. The sample size is too small. The data gathered in the previous steps of the research will be related with data gathered by Hofstede on the Cultural Index of each country. Hofstede has already applied the VSM questionnaire to many countries on a big scale. Out of this, a cultural comparison tool has been developed and is available on his website. Hofstede's cultural comparison tool holds data on South Korea and the Netherlands on each of the six dimensions. This data is up to date since 2010[27], [28].

These dimensions and their scores will be used to relate culture, smartphone applications and usage. Figure 3 is a representation of the tool. It shows a comparison of South Korea and the Netherlands on the six dimensions.

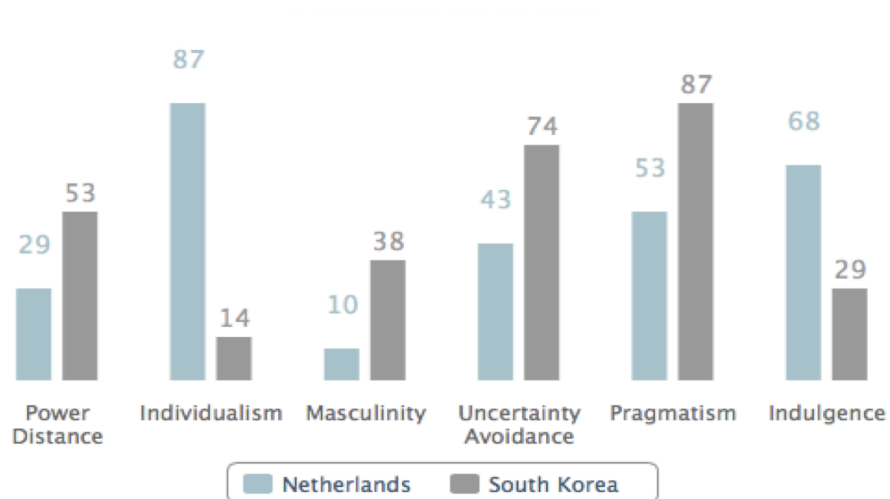


Figure 3: culture comparison tool[26],[27]

The differences will be explained briefly.

#### **4.4.2.1 Power distance**

As shown in figure 3 South Korea has a higher PD score than The Netherlands. This means that in South Korea's societies inequality is endorsed more than in The Netherlands by the followers and leaders. An example is found in the relationship between old and young. It is customary for the younger person to pour alcoholic drinks for the older person.

#### ***4.4.2.2 Individualism***

Comparing South Korea to The Netherlands, the countries are total opposites, the Netherlands scores an 87 while South Korea has a score of 14. Where South Korea tends to be extreme collective, The Netherlands is an extremely individualistic society. In an individualistic society the focus is on taking care of yourself first. Social networks are loosely knit frameworks. In collectivist societies, people are part of groups that take care of each other.

#### ***4.4.2.3 Masculinity/Femininity***

South Korea (38) scores higher than the Netherlands on masculinity (10) but not by much. This means that South Korean society is more competitive, ambitious and differentiated in gender roles than The Netherlands, which is slightly more on the feminine scale of this dichotomy. This means that gender roles are more fluid and the quality of life is the sign of success.

#### ***4.4.2.4 Uncertainty avoidance***

Both countries score relatively high. This means that both countries have rigid codes of belief and behaviour. They are also intolerant of unorthodox behaviour, thoughts and ideas. In societies like these, there is a need for rules, even if they don't work. The people have an urge to work hard and punctuality and precision are the norm. Security is an important element in both countries.

#### ***4.4.2.5 Pragmatism***

South Korea is known as one of the most pragmatic long term oriented societies. The score reflects this. Corporate South Korea is an example of pragmatism. Long-term orientation is favoured. Steady growth of market share and a higher own capital rate is favoured over quarterly profit. Companies are not here to make money every quarter for shareholders. They serve the stakeholders and society for many generations. Netherlands scores lower on long term orientation. These kinds of cultures adapt to the current situation. The truth is very much based on what is currently happening.

#### ***4.4.2.6 Indulgence***

Netherlands scores an 68 with means that the culture in the Netherlands is one of indulgence. Cultures classified with high indulgence have a tendency to exhibit a willingness to realise their impulses and desires. Enjoying life is highly valued. These cultures have a positive attitude and an optimistic view of life. South Korea scores low. Cultures, which score low on indulgence, have a pessimistic view towards life. They tend to control their impulses. Not much emphasis is put on leisure time.

## Research design

The goal of this research is to map the relationship between the culture of a country and the success of smartphone application's business models. The countries that have been selected are South Korea and the Netherlands. Research on this subject is limited. Therefore, a more explorative approach will be conducted in the beginning in order to examine the relationship. The first two sub questions are the exploratory part of the research. The goal of this part is to generate metrics and ordered lists, which will serve as datasets for further research. First, data will be collected on the top grossing smartphone applications in both South Korea and the Netherlands. This data is necessary to answer the first sub research question. This list will be used in the next step of the study. The second step consists of analysing the list on the basis of the business model canvas [12]. The analysis is thus focused on categorizing the apps and the business model per country. After these two steps, data has been collected on the top grossing apps and the business model behind these apps.

The next step is to look in any discrepancies between the business models of both countries. Are the business models very different or not? The third part of the research will be the mapping of usage of smartphone applications for each country. This will be done by semi-structured interviews, based on the UTAUT2 model and supplemented with business model questions. This data will then be coded in order to develop themes and theories about the usage for each country. The outcome is the usage of smartphone applications in each country mapped and explained.

The final step will be to explain the data that has been found in the previous steps, with a cultural lens. The definition of culture by Hofstede's cultural dimensions will be used. Is it possible to explain the preference in business model and the usage of smartphone applications using culture? If this is true, in what way does culture impact the success of smartphone applications business models?

Figure 4 shows the research design this study will use for finding a relationship between business models and culture. The purpose of this study is to find any existing relationship between culture and successful business models in the mobile applications (m commerce). The research design combines the UTAUT2 model and the Hofstede Cultural Dimensions model. As it is an exploratory research, any relationship that exists is within the scope of the study. Our special interest with this research is to find not only the relationship, but to combine the results of the study with the business models of the successful mobile applications as well.

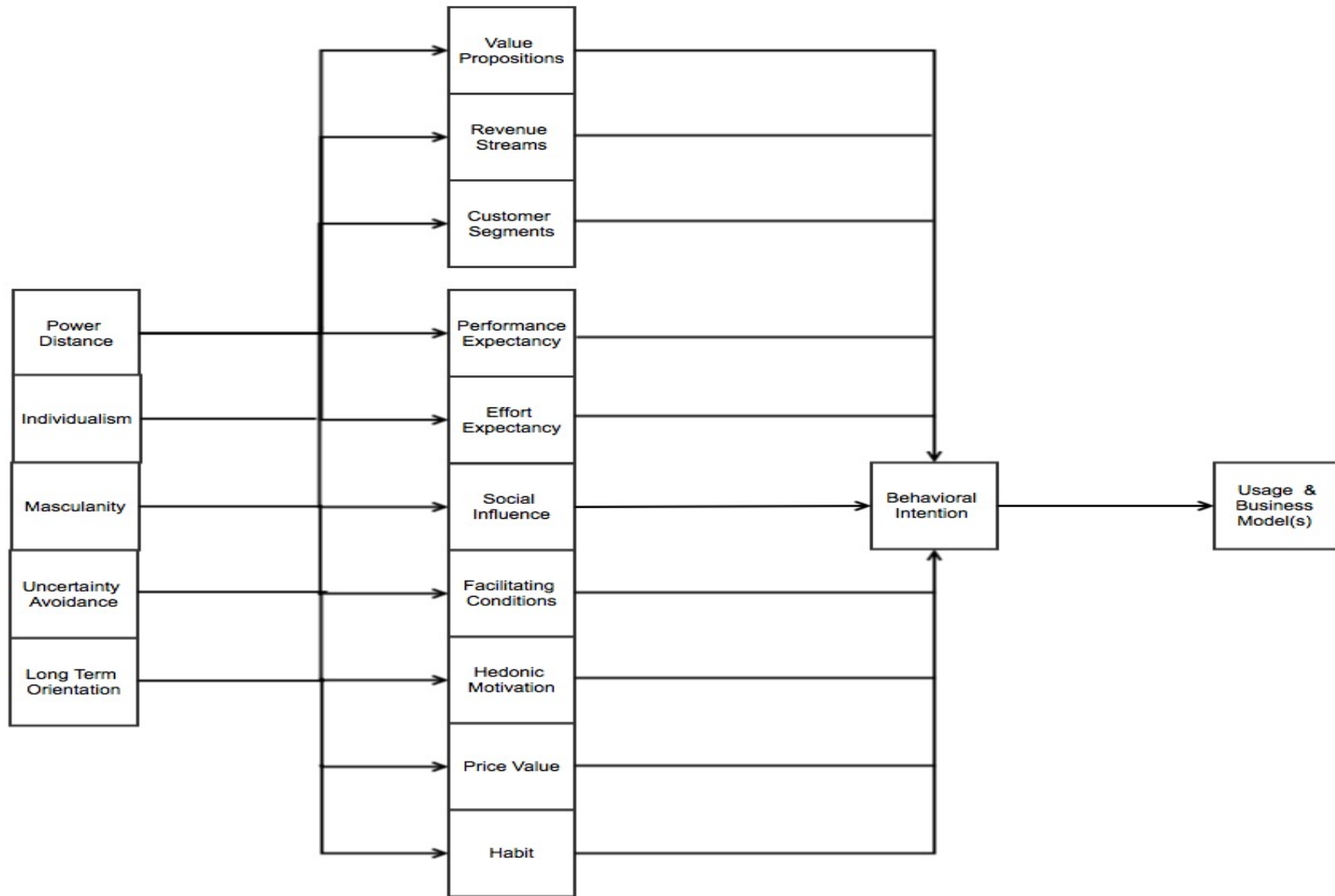


Figure 4: Research model.



## 5. Research methods

The research methods section follows from the problem statement, similar as how the research questions form from the literature review. In this chapter, the research method of the study will be described. First, the approach of the study will be explained. Arguments for the approach will be given. Then the sampling methods and interview methods will be discussed. Arguments for the chosen method will be justified. Finally, the method of analysis of the gathered data will be discussed. After this chapter, the researchers will exactly know which steps to take to get the data for the results

### 5.1 Qualitative approach

This study will take a qualitative approach. A qualitative approach has been chosen because of the exploratory intentions of the study. The question is to suggest whether a relationship exists, not to further quantify a relationship. It is not known whether there is one. It is for this reason that an exploratory, qualitative approach has been chosen.

The researchers in this study have made some observations on a particular phenomenon. The phenomenon that in different countries, different smartphone applications are popular even though they are practically the same. The research done here will investigate whether this phenomenon can be explained culturally. Quantitative research is meant to quantify a problem. It tries to see how prevalent a certain problem is by applying statistics to a large population. This can be done after this study has established a relationship between culture and smartphone application's business model.

## 5.2 Sample and sample size

### 5.2.1 Business models compilation method

A list of the 50 top grossing smartphone applications will be compiled from the Apple App-store in both countries. The idea behind the top 50 is that an assumption is made that the top 50 applications are used the most. The most relevant data will be gathered from these 50 applications.

The tool used to compile this list is called Distimo [18]. Distimo is a business intelligence company and analyst firm. They have developed a tool, which monitors what is called application intelligence. This tool gathers data about smartphone applications. It shows the application with information like, rank in the Apple App-Store, price, top in-app purchases, category, developer and other additional data. This study used the Distimo tool to analyse the top applications of Q4 2013. Using Distimo, the top ranking apps according to gross profit for Q4 2013 have been extracted. Success in this study equates by having a position in the top 500 grossing apps. The list of top 50 grossing apps have been divided by several aspects of their business model:

1. Price
2. Top 3 in-app purchases
3. Category
4. Label
5. Top 3 value propositions

After the selection and findings of the right prices, category and value propositions, the following metrics will be collected:

- The quartiles
- Mean
- All apps will be grouped per genre
- Labels will be given to applications in order to generalize
- Value propositions will be counted in order to use for analysis

### **5.2.2 Interviews**

The sample size for the semi-structured interview will be the largest age group of smartphone users in each country. The most meaningful information can be gathered by analysing the largest age group, which uses smartphone applications. In South Korea, in the age category of 16 to 34, 86 % owns a smartphone [13]. This is the largest percentage of smartphone users in the country and a sample from this population will be selected for the semi-structured interview. The same age groups and approach will be taken for the Netherlands.

### **5.2.3 Pilot interviews**

Pilot interviews will first be held in order to prepare for the interview. In each country, two persons will be used for the pilot interviews. The pilot is meant to assist this study to assess whether the interview questionnaire is flawed, is limited or has other unforeseen weaknesses. This will allow the researchers to adjust and revise the questionnaire prior to holding the interviews. The sample for the pilot interviews will be the same as for the real interviews [19].

#### 5.2.4 Semi-structured interviews

For the interview 12 subjects in each country will be interviewed. According to Guest, Bunce, and Johnson (2006), twelve interviews are sufficient in order to apply coding and generate themes from the data:

“Based on our analysis, we posit that data saturation had for the most part occurred by the time we had analysed twelve interviews. After twelve interviews, we had created 92% (100) of the total number of codes developed for all thirty of the Ghanaian transcripts (109) and 88% (114) of the total number of codes developed across two countries and sixty interviews.” [20]

Twelve interviews in each country will be sufficient to generate the themes using coding. The age groups that have been selected range from 16-34. This group has been further divided into 4 sub-groups. The distribution of the sub groups can be seen in table 1.

Table 1 show the distribution of the sample size.

Netherlands	Size	South Korea	Size
16-25 - Male	3	16-25 - Male	3
16-25 - Female	3	16-25 - Female	3
25-34 - Male	3	25-34 - Male	3
25-34 - Female	3	25-34 - Female	3

**Table 1: Distribution of sample**

### 5.2.5 Interview questions

The UTAUT2 model uses a quantitative survey to measure behavioural intention of usage [15] this study has used the UTAUT2 model as the foundation of the questionnaire. In order to use the UTAUT2 questionnaire for this study, the questions need to be redesigned to interview questions. Some research has shown that the questionnaires can be redesigned in a qualitative way [21]. Table 2 shows an example of how this was done. Table 2 has redesigned the questions for the performance expectancy construct for use in semi-structured interviews.

UTAUT Factor	Original quantitative question	Quantitative question applied to this study	Qualitative question
Performance expectancy	I find mobile Internet useful in my daily life.	I find smart phone applications useful in my daily life	Are smartphone applications useful in your daily life, explain how and why?

Table 2: From survey to interview questions

Not only will the UTAUT2 model be used as base for the questionnaire, the findings of the first step are important as well. The findings of the first step of this research, which is finding the top 50 successful applications and their business model, will be used for business model specific questions. Questions will be extrapolated from the data from that particular list to get more data relating to business models. The final interview questions can be found in appendix 1.

## 5.3 Interview analysis

### 5.3.1 First Cycle and Second Cycle coding process

In order to interpret the data from the interviews, coding has been used on the transcribed data. The process of coding as described in the Coding Manual for Qualitative Researchers by Saldaña [22] will be applied to the data gathered from the semi-structured interviews. Figure 5 shows the codes-to-theory model for qualitative research as described in the Coding Manual [22].

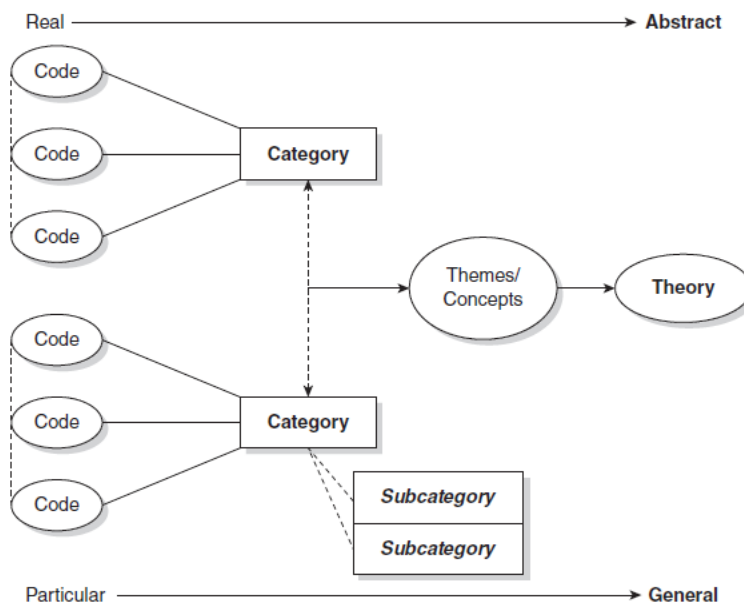


Figure 5: A streamlined codes-to-theory model for qualitative inquiry [23]

The semi-structured interviews will be transcribed. From the transcriptions, initial coding will be applied. This is called the First Cycle of coding. These are the first codes to be identified during the coding process. Coding is rarely done correct the first time. The First Cycle codes will range from simple words to short sentences and even to entire passages of text. It is necessary to re-code the data again in order to go from codes to category.

This is called the Second Cycle. In Second Cycle coding processes, the coded data can be the exact same units, longer passages of text and a reconfiguration of the codes found so far. An example of how coding is done is shown below:

I notice that the grand majority of homes have chain	1 SECURITY
link fences in front of them. There are many dogs	
(mostly German shepherds) with signs on fences that	
say "Beware of the Dog." [24]	

The one-word code to the right is called a descriptive code. The code security has been applied to the passage. After the first and second cycle of coding, categories will be developed from the codes. Data that forms the same pattern or is similar will become a category. For instance, we might see a lot of codes relating to social networking or contacting people. These passages will be coded with the label social behaviour. Eventually a category will emerge called social behaviour. The process of categorizing is a process, which is also done in a recursive way much like the First- and Second Cycle of coding. The final step is to go from category to themes. This study is investigating whether the usage of smartphone applications and their business models have a relationship with culture. The UTAUT2 model has several themes already. These are the Performance expectancy, Effort expectancy, Social Influence, Facilitating conditions, Habit, Hedonics Motivation, Price Value. The themes found during the coding process will be related to the UTAUT2 model for each country. Doing this, will map the usage of smartphone application in each country according to the themes. The aim is to show the major differences in usage. This difference in usage will be explained culturally using Hofstede's dimensions.

The two researchers will code the process together. The cycle of coding for the twelve interviews from the Netherlands will be done together. Out of this process, codes will be found and eventually categories. The same process will be done for South Korea. By doing this, distinct categories will be found for each country. Another cycle of coding will be done to fuse the categories together and to eventually perform one last cycle of coding to form themes, which can be applied to both countries.



## 6 Results

In the last chapter the research methods of the study were discussed. In this chapter the results found from the data analysis will be presented. First the data found from analysing the business models in South Korea and the Netherlands will be presented. Following from this, the data gathered and analysed from the interviews will be presented and using coding, the usage in both countries will be mapped. Finally, the data from the previous steps will be looked at with the cultural dimensions model from Hofstede.

### 6.1 The top 50 smartphone applications in South Korea and the Netherlands

In appendix 2 and 3, the lists of most successful applications on South Korea and The Netherlands can be found. Data has been gathered on both countries on their smartphone applications, the success of the applications and the accompanying business model. Analysis of the data shows quite different results for both countries. The data in the list has been categorized on:

- Rank of the application
- Price and top 3 in app purchases which are the revenue streams
- Genre
- Value Proposition

These metrics have been used on finding differences in business models and success. The data gathered so far has shown that there is a considerable difference amongst the business models of the smart phone applications in both countries. There are some applications that are popular in both countries and are ranked highly like Candy Crush Saga. Applications that are successful (both in the top 50 grossing apps list) in both countries are:

Application	Rank in NL	Rank in SK	Top in app purchase NL	Top in app purchase ZK
Candy Crush Saga	1	3	1. 0.99 2. 0.99 3. 0.99	1. 0.99 2. 0.99 3. 1.99
Clash of clans	2	14	1. 4.99 2. 9.99 3. 19.99	1. 9.99 2. 19.99 3. 4.99
The Simpsons Tapped out	18	47	1. 0.99 2. 4.99 3. 1.99	1. 0.99 2. 19.99 3. 9.99

The business models of these applications are the same. The differences lie in the in-app purchases, which show differences. Apart from these three applications, there are no other applications in the dataset, which are commonly successful in both countries. The differences in the business models will now be explained using the criteria mentioned above and parts of the business model canvas.

## **6.2 The discrepancies in business model**

### **6.2.1 South Korea**

#### **6.2.1.1 Genre**

The South Korean app market is overwhelmed with games. From the 50 apps analysed, only 7 were non-game genres. RPG's (role playing games), strategy games, sport games and puzzle games are the most successful genres in South Korea. The first three positions in the top grossing apps in South Korea are all for games for KakaoTalk, which on its own, is number 13. KakaoTalk and games related to it seem to be doing very well in South Korea, 23 out of top 50 grossing apps in Q3 2013 were games for KakaoTalk.

Categories	South Korea
<b>(1) Games - RPG</b>	<b>12</b>
Music	4
Games -Action	2
<b>(2) Games - Strategy</b>	<b>8</b>
Entertainment	1
Games- Card	2
Games - Arcade	3
<b>(3) Games - Sport</b>	<b>6</b>
Dating	1
<b>(3) Games - Puzzle</b>	<b>6</b>
Games -- MMORPG	1
Communication	1
Games - Simulation	1
Games - Board	1
Games - Adventure	1

Table 2: Apps grouped by genre (SK)

Table 2 shows the most popular genres in South Korea. It is not surprising that the top 3 consists of games. RPG games in particular are very popular (12 out of 50 apps).

#### **6.2.1.2 Revenue streams**

Apps in the top 50 grossing apps in South Korea are all freemium, this means that they are available initially for free, but do contain paid elements. These are called in-app purchases. The findings show that the average value of the top 50 grossing apps in-app purchases is worth \$18,96. The in-app purchases value is divided as followed (quartiles):

Minimum	0,99
1st quartile	4,99
2nd quartile	9,99
3rd quartile	19,99
Maximum:	99,99

#### **6.2.2 The Netherlands**

##### **6.2.2.1 Genre**

In The Netherlands, the top 50 apps are more divided between genres, although games do have a strong presence. Whereas in South Korea 14% of apps in the top 50 were non-games, in The Netherlands this percentage is much higher: 30%, more than double.

The top 3 genres in South Korea all exist of games whereas in The Netherlands navigation apps also seem to be popular amongst app users. Table 3 shows the application count per genre.

Categories	The Netherlands
Productivity	2
Communication	2
<b>(1) Games -- Adventure</b>	<b>9</b>
Dating	4
<b>(3) Navigation</b>	<b>5</b>
Weather	1
Games -- Words	1
Games -- Card	1
Games -- Action	2
<b>(2) Games -- Strategy</b>	<b>8</b>
Games -- Casino	3
Games -- Simulation	4
Fitness	1
Games -- Racing	1
Games -- Sport	3
Games -- Puzzle	3

Table 3: Apps grouped by genre (NL)

#### 6.2.2.2 Revenue Streams

In South Korea, no single app is paid in the top 50 grossing apps. In The Netherlands 13 apps are paid. Many games are freemium, this explains the high rate of free apps in South Korea. In The Netherlands only 3 game apps are pay to download. The average in-app purchase in The Netherlands is worth \$9,73. This is almost the half of the South Korean value (\$18,96). The in-app purchases are divided as follow:

Minimum	0,99
1st quartile	1,99
2nd quartile	4,99
3rd quartile	9,99
Maximum:	99,99

From this data, it can be concluded that 50% of the apps in South Korea are between the 0,99 and 9,99, whereas 75% of the apps in The Netherlands are between 0,99 and 9,99.

### 6.2.3 Value Propositions

In order to further highlight the differences, the value propositions of the applications have been categorized into labels. It can be seen that the business models show some similarities in the countries. In South Korea for instance, the RPG (role playing games) games are all multiplayer games in which there is a heavy focus on character building. The games are more along the lines of traditional console games, which require a higher time investment, than smartphone games. It is for this reason; the value propositions have been categorized into labels per country. The labels represent the abstract similarities the value propositions in each genre share. Each value proposition has been summarized according to similar elements:

#### 6.2.3.1 RPG

In South Korea, RPG games are very popular. RPG stands for role playing game. It is a type of game where one creates or chooses a character and can grow that character by doing quests. It is interesting to see that in the top 50 of the Netherlands there is not a single game in this genre or category. The 12 RPG games in South Korea are all multiplayer games. In these games one creates or selects a character and enters a fantasy world where the character can grow stronger by beating opponents. All of these offer the ability to play together with people or against people.

**Label South Korea:** Multiplayer online pvp or co-op role playing games



### **6.2.3.2 Strategy games**

8 apps are strategy games in South Korea. In The Netherlands, strategy games are also very popular. 8 apps are defined to be strategy games in The Netherlands. The value proposition of strategy games in South Korea does not drastically differ from the games in the Netherlands. All of the 9 games require the building of some sort object, village, army or animal. In the Netherlands, the value proposition of the strategy games is the same as in South Korea. The differences lie mostly in aesthetics and setting.

**Label South Korea and The Netherlands:** build, create an army, animal, city while competing against or playing with other players

### **6.2.3.3 Sport games**

There are 6 sport games in South Korea. 5 out of 6 of the games are baseball games. In the Netherlands there are 3 sport games, 2 of them in which the player manages a soccer team. In South Korea, 2 of the 6 games have this option but for baseball, while simultaneously letting people play the baseball games themselves. Concerning the value proposition, all of the sports games are online, only 1 sports games in the Netherlands is a game where the player controls the individual team members. The difference thus is that in South Korea sport games are more focused on controlling the player movement while in The Netherlands sport games are more popular for their simulation characteristics and management of a professional team.

**Label South Korea and the Netherlands:** Online sports game or Online sports team manager simulation

#### **6.2.3.4 Adventure Games**

Adventure games are not very popular in South Korea, just 1 app in the top 50, whereas in The Netherlands adventure games are the most popular genre. Adventure games in The Netherlands are mostly exploratory games, with funny aspects and adorable characters. 3 out of the 9 adventure games in The Netherlands do contain famous characters, such as Marvel's heroes and Simpsons.

**Label The Netherlands:** Exploratory and storytelling adventures with funny characteristics.

#### **6.2.3.5 Dating**

There is only one dating app in South Korea. In the Netherlands there are four dating apps. The value propositions of all dating apps are not very different. They can be best summarized as get matched with and meet new people. However, there are two applications in the Netherlands which are just extensions of the main dating website while the two other applications are the core apps for dating. The differences between these two applications and the others are that they are specialized. One is specifically for gay people meeting gay people while the other is meant to not only find a partner but also meet new friends.

**Label South Korea and The Netherlands:** Dating for singles.

#### **6.2.3.6 Navigation**

In South Korea, none of the apps in the top 50 is a navigation app. In The Netherlands 5 of the 50 apps are navigation apps, which makes it the third best genre for top grossing apps in The Netherlands. The value proposition of all the apps is similar; providing routes from A to B as best as possible.

**Label The Netherlands:** A to B as fast as possible

#### **6.2.3.7 Casino**

In South Korea, gambling is illegal. It is for this reason why there are no casino applications in the South Korean app store. In The Netherlands, there are 4 gaming apps with casino elements. They provide app users with slots and card games. They can take part of big tournaments worldwide or play against friends.

**Label The Netherlands:** Play different casino games and compete against other online players

#### **6.2.3.8 Simulation**

There is only 1 simulation game in South Korea. In The Netherlands, 4 apps have been labelled as simulation games. 2 of them are considered building a farm and adding friends to your farm and do some negotiations to gain experience and resources.

**Label The Netherlands:** Building, expanding and maintaining resources.

#### **6.2.3.9 Music**

South Korea has 4 music apps in the top 50 grossing apps. The music applications have in common in their value proposition that it is possible to stream music, watch HD video clips and each one of them has a social sharing aspect. The Netherlands does not have a music application in its top 50 but the closest to a popular music application would be Spotify. The value proposition of Spotify does music streaming but it does not have a social aspect.

**Label South Korea:** Music streaming and social sharing aspect

#### **6.2.3.10 Arcade**

There are three arcade games in the Korean app store and zero in the Netherlands. Two of the three arcade games involve running very fast towards the end of a level while avoiding obstacles. The multiplayer aspect in this game is integrated with KakaoTalk. The friends in KakaoTalk games are integrated in the high score lists. This allows players to compete with each other. The last game is a shooting game also integrated with KakaoTalk and also involves the same high score concept as the other 2 arcade games.

**Label South Korea:** competitive single player games for points with online high score leader boards.

#### **6.2.3.11 Puzzle**

South Korea has six puzzle applications. These are very similar concepts. The game offer the player to solve puzzles as fast as possible. The puzzles are either lining blocks of the same colours or shapes. The online aspect comes in the form of worldwide, among friends or nationwide high scores. Only one app is different. This Korean app is a collection of unique mini games.

The games are very different but the online aspect is similar to the other puzzle games. In the Netherlands 3 gaming apps are recognized as puzzle games (which also contain the nr. 1 app from all the 50 top grossing apps). They are all considered with moving bricks to breakdown the level and unlocking new levels.

**Label South Korea and The Netherlands:** Solving puzzles in minimum time, unlocking new content and leader boards.

The table below shows the different value propositions in each country summarized.

Value Proposition Label	South Korea	The Netherlands	Difference
Multiplayer online pvp or co-op role playing games	9	0	9
Solving puzzles in minimum time, unlocking new content and leader boards.	6	3	3
Competitive single player games for points with online high score leader boards	3	0	3
Build, create an army, animal or city while competing against or playing with other players	8	8	0
Online sports game	4	1	3
Online sports team manager simulation	2	2	0
Exploratory gameplay and storytelling adventures with funny characteristics	0	9	9
Dating for singles.	1	4	3
Play different casino games and compete against other online players	0	3	3
Building, expanding and maintaining resources.	0	4	4
Music streaming and social sharing aspect	4	0	4

The summarizing of the value propositions into labels allows the comparison of value proposition across countries. Genre and value proposition are inter-related. The RPG genre is not popular at all in the Netherlands, 0 games offer this value proposition in the Netherlands. Likewise, the music genre is not popular in the Netherlands. On the other hand, the adventure genre is not popular in South Korea. Only the strategy genre has equal footing in both countries. The music genre has presences in South Korea while there are no music apps in the Netherlands. Only the strategy and sport games are comparable in popularity across countries. These findings show us that there are differences amongst the value propositions cross-country.

### 6.3 Findings summarized

The first part of this study is concerned with finding the discrepancies between the most popular apps (top grossing) in South Korea and The Netherlands. Our findings show that there are differences across countries concerning business models of the smart phone applications and their popularities. The main findings are listed below:

#### 6.3.1 Revenues

- The value of an in-app purchase of South Korea is worth almost double the value of The Netherlands.
- No games in South Korea are paid to download, whereas in The Netherlands 3 games are paid to download.
- No app in South Korea is paid to download, whereas 13 apps are paid to download in The Netherlands.
- 50% of in-app purchases in South Korea is between \$0,99 and \$9,99. In The Netherlands this percentage is 75%.
- South Koreans are willing to pay more for in app purchases but are not willing to pay for apps.

#### 6.3.2 Genres

- Only games are in top 3 genres in South Korea, whereas in The Netherlands also non-game apps are popular (e.g. navigation is in the top 3 genres).
- The following genres are popular in South Korea but not in The Netherlands: RPG games, music apps, puzzle games, sport games.
- The following genres are popular in The Netherlands but not in South Korea: adventure games, navigation, dating, and casino games.
- The strategy genre is popular in both countries.



### 6.3.3 Value Proposition

- There are only 3 applications in both app stores, which are successful cross-country.
- There are only 2 value propositions where there is no difference between countries.
- The remaining value propositions show enough differences cross-country to be explored further. The value proposition of RPG games seem to be more attractive to Koreans while the adventure value proposition is more attractive to the Netherlands.
- 23 out of top 50 grossing apps in Q3 2013 were games for KakaoTalk

## **7. The mapping of usage in South Korea and the Netherlands**

The previous chapter showed the main discrepancies in business model off the most popular apps in South Korea and the Netherlands. In this chapter, usage will be mapped using semi-structured interviews in South Korea and the Netherlands. Furthermore, coding will be used to analyse the data from the interviews.

### **7.1 Korean coding result**

The twelve interviews have been transcribed. Using coding, recurring themes have been found. Appendix 4 shows the dataset of the interviews. The dataset also shows the process for finding and constructing the themes. The main themes that have been found for Korea are:

1. Need fulfilment
2. Productivity/efficiency
3. Social
4. Functional convergence
5. Games
6. Habitual usage
7. Apps

### 7.1.1 Need fulfilment.

Need fulfilment is a recurring theme found throughout the twelve interviews in Korea. The theme describes what need a smartphone applications fulfils, what need is important and what value is most important in a smartphone application. An application has to fulfil a purpose like acquiring information, reading, watching videos, be helpful like an alarm clock and provide value. The table below shows the subcategories, which eventually helped form, this theme:

Theme	Subcategory	Count
	Entertainment	11
	Browsing the internet	7
	Acquiring information	8
	Reading	3
	Convenience	18
	Searching information	4
<b>Need fulfilment</b>		<b>51</b>

The theme showcases what the respondents want out of a smartphone application. They want it to fulfil something. It has to support them in their daily life. It has to help them communicate faster. Or it has to provide convenience. When asked the question: Have you ever made an in-app purchase, the subjects answers reflected the theme:

*"It is not necessary. I don't feel the need to buy anything when I use an application. I don't want to spend my money on these non-existent objects. I also see no need for it. Kakaotalk has emoticons, which can be bought, but I feel they are useless. It comes with enough emoticons. There are free applications, which have the same functions like in app purchase types of application."*

During the interviews, the respondents mentioned they only bought or downloaded applications that fulfilled a certain need. It becomes very clear that the Koreans interviewed did not just download anything. It has to fulfil a specific purpose. Even for free applications, the need of an application was taken into consideration. Support in daily life and supporting daily needs is mentioned quite often and is categorized under this theme.

Comparing this theme with results from The Netherlands, it seems that in The Netherlands more people tend to download applications without purpose. On the question "Do you make blind downloads?" an interviewee from The Netherlands answered: *"Yes for example, App of the Day or Apple free apps each week, I just download them."* On this question 8 out of 12 interviewees answered that they did download blindly for different purposes. In South Korea only 3 out of 12 interviewees download blindly.

### 7.1.2 Productivity efficiency

This theme is related to several aspects of productivity relating to smartphone applications and their usage. Phrases and constructs such as save time; efficiency, handy and productivity were mentioned throughout the interview. Smartphone applications do both increase and decrease the productivity of the Koreans and many cases specifically mention they use smartphone applications to save time. Some examples:

*"To save time for searching information. If I search information through the Internet, I need a pc. Using my smartphone I can save time. Other applications also allow me to save time like my diary application. I don't need to carry around an object and I always have my diary with me in the form of a phone. Saving time is the most important for me."*

*"Efficiency, in the sense, I can spend my time efficiently without my pc. I value saving money and time. My 2 most used apps are ticketlink and tmon. Ticketlink allows me to order tickets using my smartphone and tmon shows what I can buy for a discount."*

The subcategories that have helped find this theme are showcased in the table below:

Theme	Subcategory	Count
	Efficiency	9
	Save time	8
	Social networking apps increase productivity	4
	Apps both increase and decrease my productivity	6
	Efficiency	9
<b>Productivity</b>		<b>27</b>

Smartphone applications should contribute to the productivity of the respondents. There was a lot of mention of transportation apps, navigation apps, alarm clocks, notes, and dictionaries. The aim of these applications is to be more productive. It is interesting to note that although these are widely used applications, they became apparent later during the interviews. They have become natural to use, which is why they are not mentioned when the question was asked, which applications do you use the most. The purpose is clear, all of these apps contribute to the productivity of the interviewees through saving time by navigation or checking subway times on an app or by recording notes on the smartphone.

Comparing this theme to The Netherlands, it is interesting to see that productivity also plays a big role in app usage in the Netherlands. Same kinds of results are shown there.

### 7.1.3 Social

This is so far the most important theme that occurs. It has to do with many aspects of the term social. All of the twelve interviewees mention contacting and staying in touch with friends as important to them. All of them value contacting friends. It is then not strange to see that the most used application by all interviewees is KakaoTalk. All of interviewees highly value the social aspects of smartphone applications and especially when it directly concerns their friends/family. An interesting aspect of this theme is social pressure. An example quote of an interviewee will demonstrate social pressure:

*“Well, all my friends were using melon and buying stuff in it and that is also why I decided to give it a try. It is because my friends did it.”*

Social pressure has several dimensions. Kakaotalk for instance, is only used because others are using it; this is also the same case for Facebook. This makes sense because messaging apps and a social network site requires others. But it can also be observed that the interviewees use a certain application because someone in their social network uses it. Whether it's through an invite or a recommendation, there is some social pressure happening to use a certain app.

The table below shows the composition of the theme.

Theme	Subcategory	Count
	Social networks	22
	Social networking	23
	KakaoTalk	36
	Connect with other people	6
	Contact other people	8
	Staying in touch with friends/maintaining relationships	28
	Making appointments	4
	Contacting services	7
	Social pressure/peer pressure/ others using it/ need people to use it	28
<b>Social</b>		<b>162</b>

Social network applications are used in varying ways. On the question: What kind of applications do you use the most, everyone responded with social networking apps. These apps are used to maintain relationships. Some respondents noted that they have a busy life and using KakaoTalk or Facebook is a way of catching up and making friends. They are also used for work related issues. One respondent noted that due to her role as vice president of a club, Facebook and KakaoTalk are the main ways to contact the 400+members. The social network applications are also used to make appointments. It is worthy to note that some respondents are also slightly negative towards social networking apps. They feel distracted by it or they feel a need to answer messages or their friends/family will be upset.



#### 7.1.4 Functional convergence

The smartphone is a versatile device. Through its applications, it can be used for many things. It can function as an alarm clock, a diary, a calendar and many more things. It has replaced the functions of other devices. In Korea, the smartphone is used in this way. Some interviewees intended to replace their pc completely through the smartphone.

*“Because I don’t use my pc, I use the applications that I use as a replacement. Replacements of daily things in my life. I like that the smartphone can replace my notebook, calendar, laptop and mp3 player at once.”*

This is also the meaning of functional convergence: the convergence of the function of several devices into the smartphone. This is a theme that is recurring throughout all of the data examined. In some cases people do not realize this is happening. But it can be seen that the interviewees use their smartphone in many ways, which replace other devices. Videos are watched on the smartphone, music can be streamed, articles can be read, and navigation can be done on it. It serves as the focal point to maintain social relationships according to the interviewees.

This theme is not very different to results in The Netherlands. Although, people in The Netherlands say that their smartphone applications are important for their daily life, not many mentioned that they see the smartphone as a replacement for other devices, such as a PC. One interviewee mentioned that he uses the smartphone applications only to do quick work and the PC / laptop is really required to do work such as assignments for school. Another interviewee said that smartphone games should be simple, because for complex games there is the console.

### 7.1.5 Games

The theme game is concerned with everything surrounding games such as playing games, their usage, paying for games and the types of games mentioned and preferred. The table below shows the codes that eventually became this theme:

Theme	Subcategory	Count
	Addiction	10
	Don't want to wait to play	3
<b>Games</b>		<b>13</b>

During the interviews, there were some responses in which the interviewees indicated that addiction is major reason not to play games:

*"I avoid games I find fun because I get addicted like tiny farm"*

*"Most games are very interesting to me but I don't want to get addicted."*

The major findings in this theme are that games are avoided because of addiction. In general, it can be said that most interviewees actually have an interest in games but because of addiction and not enough time, games are avoided. People choose to use their spare time for either social networking or entertainment, which does not include games. Games are used by a few respondents (4) but even then sparsely. Games are also a distraction and decrease productivity. One respondent used games to relieve stress. When it comes to making in app purchases in a game, only a few respondents were enthusiastic about this. The responses below illustrate this behaviour:

*"I don't want to wait in a game to play again and I want to play instantly. I can't wait long and that is why I get addicted and do in app purchases. It is also the reason why I get out of the addiction fast."*

*"Yes I have done an in app purchase. I have done it for games. I am one of those people who spend too much time in games. I would rather earn money offline and use it online."*

In The Netherlands, people do not really play games on their smartphones. In South Korea, we see that people play games to pass time, but in The Netherlands people do not tend to use their smartphone to pass time, but more for pressing issues like productivity. The issue of addiction towards games is not known in The Netherlands.

### 7.1.6 Habitual usage

Habitual usage in the context of this study has to do with the usage of smartphone applications. Habit can be described as habitual usage of smartphones, everyday usage, daily usage, functional usage and usage out of boredom. Most of the respondents made it clear that their smartphone usage has become a habit and even a few called it an addiction. The things that made their smartphone usage a habit was two-sided process, which 10 out of 12 respondents mentioned. The first side is what can be described as functional usage. Many apps that are used like an alarm clock, a dictionary or a calendar are applications that the respondents feel like they have to use because it supports them in their daily life. Because they use it in their daily life, it has become a habit. The other side comes from social networking. All of the respondents use their phone for social networking and it has come to a point where even if there are no notifications, the interviewees still check their applications. The table below shows the categories that formed this theme:

Theme	Subcategory	Count
	Habitual usage	12
	Use it everyday	8
	Daily usage	6
	Daily functional usage	6
	Daily boredom usage	4
<b>Habit</b>		<b>36</b>

### 7.1.7 Apps

The table below shows the subcategories, which formed this theme:

Theme	Subcategory	
	fun/enjoyable	10
	free alternatives	8
	always a free alternatives	5
	prefer free	5
	try before using it	3
	never paid for an app	3
	don't want dating apps	6
	not fun but functional	4
<b>Apps</b>		<b>44</b>

This theme is concerned with apps, the process of whether they would pay for an app, why they would prefer a certain business model to another and why they use apps. Only two respondents call all apps fun. The rest of the respondents make a distinction between fun apps they use and none fun apps. Search engines, calendar apps and all functional apps are not enjoyable to use. Social networking apps and game are enjoyable. Eight out of twelve interviewees prefer free applications. Their response is that there is always a free alternative for whatever they want. They have never found a reason to buy an application. These respondents also would like to try an app before buying it. Nine out of twelve applicants also have never paid for an application. Some of the responses explain this further:

*"I prefer free applications. The reason is simple. Up until now, there is always a free application to the ones, which are paid. There are many different kinds of*

*apps, which fulfil the same purpose. There might be better ones that are paid but if I can find a simple one, which does the same, I am satisfied."*

*"I prefer free applications. Because free applications offer me the same thing paid applications do. I can always find a navigation application for Korea for free, a text messenger for free and a music app for free. I have never paid for an application."*

*"It depends what the application does but I do prefer in app-based applications. I have to give it a try before using it. If I would pay for an application, I at least want to try it. I never paid for an application. Once my sister bought a game and I played with her and that is the closest I came to paying for an application."*

Only three respondents have ever paid for an application. The theme is also concerned with the preference for certain apps. There is not a consensus on the liking for certain types of games or apps even. All of the twelve interviewee use Kakaotalk

In The Netherlands, 8 out of 12 interviewees said that they did one or more in-app purchases. The main reason for doing in-app purchases is that they can unlock extra features that they like, but also they say that they will look for free alternatives and download a free application if this is available.

## 7.2 The Netherlands coding result

In this section, the transcribed interviews for the Netherlands will be analysed. In appendix 5, the transcription of the twelve interviews and their codes can be found. The main themes that have been found for The Netherlands (NL) are:

1. Value
2. Personal
3. Feeling
4. Apps
5. Buying / downloading

### 7.2.1 Value

The table below shows the codes (subcategories) for the theme Value.

Theme	Subcategory	Count
	Add value	9
	Do things faster	4
	Communication	7
	Fastening things up	3
	Easy to perform / use	16
	Functionality	3
	Decrease productivity	5
	Productivity increase	3
	Easy Navigation	4
<b>Value</b>		<b>54</b>

This theme has to do with value adding activities for smartphone app users. Most important characteristics identified are that the app has to perform easily and should be easy to use; also it should add value to daily life or for the user's life in general. Asking people what a good reason is to use an application respondents replied with answers like;

*"It should be fastening thing up what I do in my daily life or make it more easy to perform."*

*Another respondent answered: "Simplify life, work more efficient. Quality of life increase."*



In the Netherlands it seems that people expect an application to add value to their daily life. They expect apps to simplify their life and help them with gather information or other important things. This means that smartphone apps have a very important role in people's life in The Netherlands. The importance of smartphone applications, adding value in people's life, is also very much seen in the answers on the question: Are you addicted to using these smartphone applications? Seven of the twelve respondents answered that they are addicted to the applications they use.

*One respondent said: "I think that I am addicted in the sense that if you take my smartphone, it will be very hard for me to be productive."*

*Another respondent answered: "Well, I think if you will get my smartphone I will be in problem in life, so yes."*

People in The Netherlands seem to use their smartphone as an extend for their life and everything within it. Because of this, people tend to have a habit to use their smartphone applications and when you take away the smartphones their life will be significantly different. In South Korea, there is a bigger focus on social networking then just value adding when it comes to smartphone applications. The social network applications are the main focus for the Koreans. Value adding, like in the Netherlands is the second focus of smartphone applications.

#### 7.2.2 Personal

Theme	Subcategory	Count
	Important to my life	15
	Friends and family	23

	Daily life	5
<b>Personal</b>		<b>43</b>

Another theme that is important to the interviewees is Personal. Interviewees answered many times that friends and family are very important to them. For example a relative/friend can recommend an application. One respondent replied on the question about if he/she is influenced by anyone:

*"Very much by friends and family. I think our apps almost sync. This is because we play the same things and do the same things. "*

Another very important aspect of the Personal theme is that many interviewees answered that apps are important in their life or in their daily life. This is very much in line with what has been said before about addiction. People in The Netherlands see the smartphone as an extension of their self.

In comparison, these results do not differ much from South Korea. Friends and family are important as well to the South Koreans. But the magnitude differs between the two countries. For instance, the Dutch respondents use social networking applications to quickly contact friends or family to make appointments. In South Korea, these applications are a way of maintaining relationships. It goes further than just quickly contacting someone.

### 7.2.3 Feeling

Theme	Subcategory	Count
	Fun	3
	Entertainment	3
	Like the app	4
	Like	6
	Enjoyment	4
	Disturbing	5
<b>Feeling</b>		<b>25</b>

Another theme that came to attention was Feeling. People in The Netherlands tend to have a feeling towards application, this goes further than just like or dislike (although Like is a feeling that was mentioned a lot). People have positive feelings towards applications in general. One interviewee said, *"It does make me feel relaxed and enjoyable when I use my smartphone applications"*.

The negative point of smartphone application that rose from interviewee's point of view is 'disturbing'. Disturbing has to do with the feeling of doing something that you are not meant to do. An example is that an interviewee said he gets disturbed during studying because he got so many notifications of messages. Relating this with the South Korean results, there is little mention of respondents reacting to an application with as varied emotions as in the Netherlands. There are no people who feel relaxed when they use an application. There is a distinction being made between fun and non-fun applications. Being disturbed can be applied to South Korea as well. The same process of interruption because of messages, happens in South Korea as well.

#### 7.2.4 Apps

Theme	Subcategory	Count
	Banking	3
	Calendar	3
	Mail	8
	Social	7
	Design	10
	WhatsApp	8
	Productivity	10
	Facebook	5
	Messaging	5
	News	4
<b>Apps</b>		<b>63</b>

It is a given that this theme would be found. Some interesting insights were revealed during the analysis (coding) of the interviews concerning this theme. Many people answered their question giving examples of WhatsApp and Facebook. These apps are indeed very popular in The Netherlands. More interesting is that many interviewees talked about productivity and design.

In general, the interviewees said that they use productivity apps, some of the interviewees don't play games, and the smartphone applications installed are purely to increase productivity. On the question "Which application do you use the most?" an interviewee answered; *"Productivity applications, because they truly add value to my life."*

Six out of the twelve respondents used their smartphone mostly for productivity applications. Three out of twelve use only productivity applications. Another important and interesting finding is that design seems to be the choice of smartphone applications for our interviewees in The Netherlands. On the question "What is a good reason to use an application?" a interviewee answered; *"The design. I like nice apps. Off course they have to provide something, but that's the main purpose, beside that I would download apps really much faster if they provide good design."*

This theme was found in South Korea as well although different categories were found. Again, the main difference between usages of apps comes in where the focus lies. In the Netherlands, the focus is on productivity apps, in South Korea on social networking applications.

### 7.2.5 Downloading/buying

Theme	Subcategory	Count
	Worth buying	3
	Free alternative	9
	Know how much you spend	3
	Review app	5
	Unlock features	8
	Free apps	5
	Hide advertisement	3
	Review app	5
<b>Downloading / Buying</b>		<b>41</b>

The theme downloading/buying concerns the opinion of interviewees on buying or motives to buy applications. Many interviewees used “free alternative” as a reason for not buying applications or downloading applications with in-app downloads. In many cases, there is a free alternative to achieve the same than the application you want to buy.

On the question, "What is a reason to buy in-app purchases", an interviewee answered; *"Well, I don't really buy in-app purchase, but if I would buy it for myself, it must be because the offering of a great extra feature that I cannot get for free somewhere else."*

Also several other times, interviewees said that unlocking extra features, mostly features that are important to them, are the main reason to buy in-app purchases or application purchase in general. But, even though people like to have free applications and do avoid paying, eight out of twelve interviewees said that they do download in-app purchases. Main reason for this is to unlock new features or to hide advertisements.

The South Korean respondents share the preference for free alternatives as much as the Dutch interviewees. Eight out of twelve interviewees prefer free applications. A major difference is that more respondents in the Netherlands did in app purchases. In South Korea this was only four.

### 7.3 Results applied to UTAUT2

The UTAUT2 questionnaire has been used as the base for the semi-structured interviews. Because of this, the themes that have been found during the coding process can be categorized under each of the UTAUT2 model's component. For instance, under performance expectancy, questions were asked in what degree the smartphone applications will help the interviewee in their daily lives and what they expect concerning performance. For South Korea, the themes social, need fulfilment and productivity were a common theme. In the Netherlands, these are the themes Value, Personal and Feeling. By categorizing the themes under each UTAUT2 component, the usage for each country is mapped. Figure 1 show the themes mapped to each UTAUT2 construct. Effort Expectancy and Facilitating Conditions have been removed from the results and will not further come into discussion. This decision has been made because these subjects are not relevant to the context of the study. Regardless of this, questions concerning these two constructs were asked during the interviews. The data from these questions were not usable and further cemented the decision to not take them into account.



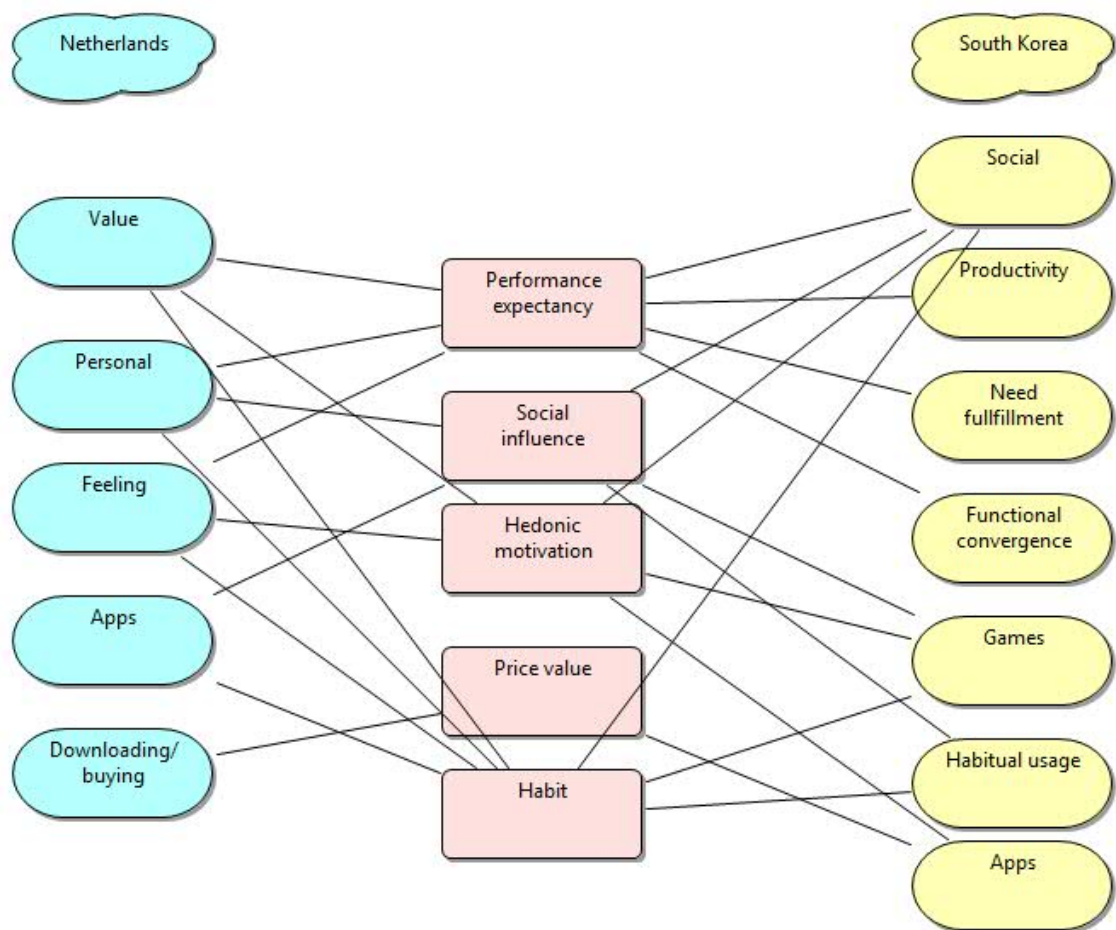


Figure 6: themes mapped according to the UTAUT2 model.

### **7.3.1 Performance Expectancy**

For The Netherlands, the themes Value, Personal and Feeling are of importance for Performance Expectancy. People expect from their smartphone application that they make them productive and also that it is easy to use. The theme Personal in performance expectancy is mainly because people said in their answers that smartphones applications are important for their (daily) life. Because of this combination, the Feeling theme describes that people feel enjoyment and happiness using their applications.

In South Korea, the themes social, need fulfilment and productivity are themes, which can be found under performance expectancy. The usage of smartphone applications in South Korea, are first of a social nature. The second is productivity. Finally, the Korean user expects a smartphone application to fulfil a certain need. Functional convergence is also a theme found under performance expectancy. What can be seen, is that the Korean users uses the smartphone in ways, which are intended to replace the PC and other devices.

### **7.3.2 Social Influence**

The theme Personal reflects what the people in The Netherlands say about social influence. They use smartphone applications for contacting Friends & Family and for things they do in their daily life. Also, the theme Apps is important. WhatsApp and Facebook are apps that people are talking most about. These apps facilitate the socializing process in many kinds.

What can be seen is that the themes social, games and habitual usage are of importance for South Korea. In South Korea, the respondents are influenced by their social networks for the usage of applications. The interviewees are influenced by friends, family and other smartphone application users concerning application usage and selection. The Korean respondents also developed a habit of using their smartphone applications because of their social network. There is a constant need to check social networking apps even though there is no notification. Games are also used in a social context.

### **7.3.3 Hedonic Motivation**

The themes Value and Feeling do relate to Hedonic Motivation. People in The Netherlands said that they enjoy using smartphone applications because it helps them achieve things; it is easy to use and enables socializing.

Using applications in a social way is what makes apps fun. This is the stream of thought for the Korean user. This is also the reason why hedonic motivation is linked to the theme social. The average Korean respondent makes a distinction between fun apps and non-fun apps. Fun apps always relate to social networking apps or games. Non-fun apps are applications that fulfil a need.

#### **7.3.4 Price Value**

Price Value is present in the Download/Buying theme. Many people in The Netherlands say that they almost always find an application that is free to use. But, they are not really against buying. If a feature or application is necessary for any reason or relevant enough for their (daily) life, they will consider buying it. 11 out of 12 interviewees had spent some money on applications. Four of them even 50 euro's or more in their lifetime. In South Korea, apps is linked with price value. It is like in the Netherlands related to preference for apps and in app purchases.

#### **7.3.5 Habit**

Habit can be found in the themes Value, Personal, Feeling and Apps. Because of the increase in productivity and easiness in use of the smartphone applications, the positive feelings like enjoyment and happiness gets enhanced. This causes that people do not only create a habit towards smartphone app usage, but sometimes also addiction. In South Korea habit is related to habitual usage, social and games. Because social networking is the main reason to use an application, it becomes a habit to the Korean user. The non-functional applications also become a habit.

#### 7.4 Common themes

It can be seen that some themes in both countries are very similar to each other. By cross coding, using the themes in one country and applying them to another, common themes are formed. These common themes have then been applied to the UTAUT2 model. This process has led us to a clearer mapping of usage in both countries.

South Korean themes	The Netherlands themes	Common themes
Need fulfilment	Value	Need fulfilment
Productivity	Personal	Productivity
Social	Feeling	Social
Functional convergence	Apps	Feeling
Habitual usage	Downloading buying	Apps
Games		Downloading buying
Apps		Games
		Habitual usage

The theme Value is the same as need fulfilment and productivity. An app adds value by making people more productive or by fulfilling a need such as providing entertainment. Social has been combined with personal. When looking at personal, the categories, friends and families are recurring. It shows a lot of similarities with social and therefor has been combined with personal. Functional convergence has been removed altogether. This is because after recoding, its occurrence is not very strong. Downloading/buying has become a common theme as well, together with apps, games and habitual usage.

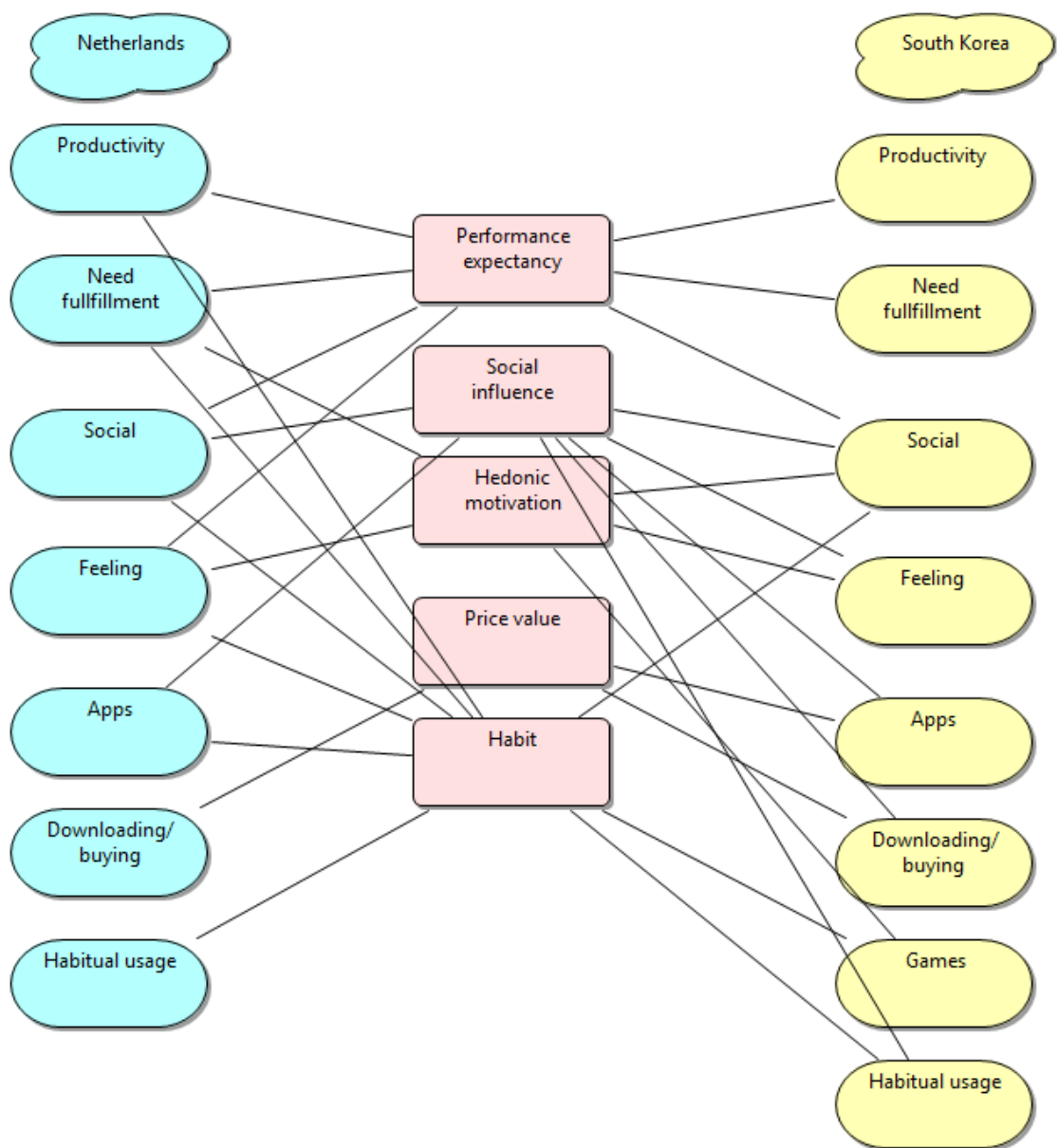


Figure 7: Common Themes

Figure 7 shows the common themes applied to the UTAUT2 model. There are many similarities between South Korean findings and The Netherlands. That is also the reason why in the context of our study, it is possible to make common themes. There are some differences in the models, for example; Feeling is part of Performance Expectancy in The Netherlands and Games does not play a role in the findings of The Netherlands, but is of importance for South Korea. This model shows the differences and similarities on the same scale and will be the basis for further conclusions.

## Findings summarized

The second part of this study is concerned with the mapping of usage in South Korea and The Netherlands. Our findings show that there are similarities and differences across countries concerning usage. The main findings are listed below:

- In both countries, none of the most successful applications that have been found by this study are used.
- In both countries the most used applications are the ones that fulfil a need or are social networking applications.
- An application being successful does not translate to a higher user acceptance rate in both countries.
- People tend to buy applications only when it's necessary and when it provides good value.
- People are very much concentrated, as in many markets, to find the cheapest way of doing 'business'.
- There is a major focus on social networking in South Korea
- Also games tend to have a role in South Korea, but in The Netherlands people do not really use their smartphone to play games, but more to be productive.
- In The Netherlands, respondents tended to have stronger emotions towards applications.



## 8. Culture, business models and usage

In the previous chapter, the data gathered from the semi-structured interviews in South Korea and the Netherlands has been analysed. Coding was applied to find common themes in the usage of smartphone applications and business models in both countries. The data showed a unity within the same country but some discrepancies between countries. In this chapter, the data from the previous steps will be looked at with a cultural point of view. Hofstede will be used to explain cultural differences and their implications on the usage of smartphone applications in The Netherlands and South Korea

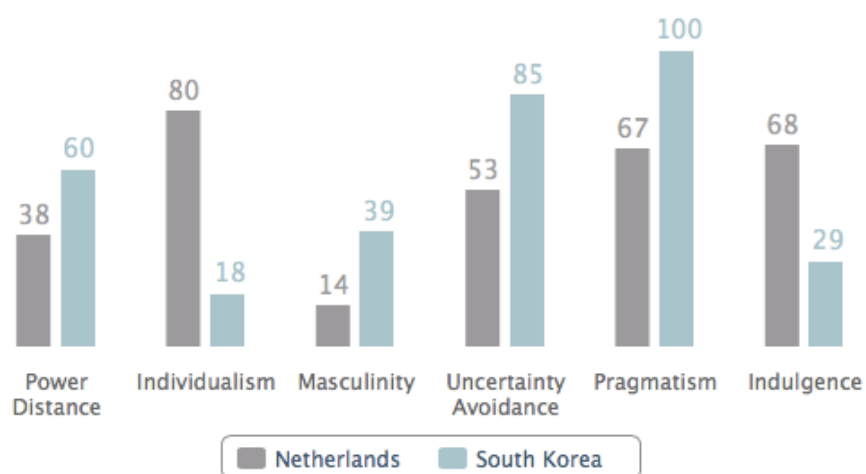


Figure 8: Culture Index

## **8.1 Uncertainty avoidance**

The extent to which the members of a culture feel threatened by ambiguous or unknown situations and have created beliefs and institutions that tries to avoid these.

### **8.1.1 The Netherlands**

The Netherlands scores 53 on this dimension and thus seems to exhibits a slight preference for avoiding uncertainty. Countries exhibiting high uncertainty avoidance maintain rigid codes of belief and behaviour and are intolerant of unorthodox behaviour and ideas. In these cultures there is an emotional need for rules (even if the rules never seem to work) time is money, people have an inner urge to be busy and work hard, precision and punctuality are the norm, innovation may be resisted, security is an important element in individual motivation.

### **8.1.2 South Korea**

At 85 South Korea is one of the most uncertainty avoiding countries in the world. Countries exhibiting high uncertainty avoidance maintain rigid codes of belief and behaviour and are intolerant of unorthodox behaviour and ideas. In these cultures there is an emotional need for rules (even if the rules never seem to work) time is money, people have an inner urge to be busy and work hard, precision and punctuality are the norm, innovation may be resisted, security is an important element in individual motivation.

### 8.1.3 Business model and culture

Uncertainty avoidance is a dimension that returns in the usage of the 24 interviewees. In both countries, the findings differ. In the top 50 most successful applications in the Netherlands, there are four dating applications. Even though this does not mean it is used most, it tells us there is slightly more interest among the Dutch population for these kinds of application. The Netherlands scores a 53 for uncertainty avoidance. The score for uncertainty avoidance in South Korea is 85. During the interviews with the Koreans, they showed a strong dislike for dating applications. They found it strange to meet strangers like this. This is directly related with uncertainty avoidance. The score for uncertainty avoidance is high in South Korea and this is reflected in their reluctance to use dating apps. This is one example of the dimension of uncertainty avoidance in Korean culture. The same is true for the Netherlands, their score is 53. This is also relatively a high score but out of the 50 most successful applications, it can be seen that four are dating apps. They are less wary than the Koreans of uncertainty avoidance but not by much. The top 50 most successful applications for South Korea only contains one dating app. The data for usage reveal to us that all of the South Koreans would never use a dating app.

#### 8.1.4 Usage and culture

The theme Buying / Downloading is related to uncertainty avoidance. On the question “Do you ever make a blind download or purchase of a smartphone application?” 8 out of 12 interviewees in The Netherlands answered that they did or still do download blindly. This can be by looking into the top free apps, or looking at featured apps and downloading them for the fun, because they like it or design. In South Korea however, a far less amount (2 out of 12) answered that they do download blindly sometimes. The main reason is that they do not trust the application and want to know how others think about it and if they really need it in their (daily) life. This is again uncertainty avoidance at play.

In The Netherlands, people tend to buy easily and feel more relaxed about it than in South Korea. The theme Feeling seems to play more of a role to purchase in-app or download a new application than in South Korea. One interviewee said that they would buy in-app purchase because “if I really like something...I would buy”.

Even though there are differences between the two countries on Uncertainty Avoidance, some similarities can be found. In both countries, the calendar applications are used quite often. The usage of calendar applications is in direct contact with Uncertainty Avoidance, because they keep reminding the user of daily activities, chores and appointments.

## **8.2 Indulgence**

The extent to which people try to control their desires and impulses.

### **8.2.1 The Netherlands**

With a high score of 68, the culture of the Netherlands is clearly one of indulgence. People in societies classified by a high score in indulgence generally exhibit a willingness to realise their impulses and desires with regard to enjoying life and having fun. They possess a positive attitude and have a tendency towards optimism. In addition, they place a higher degree of importance on leisure time, act as they please and spend money as they wish.

### **8.2.2 South Korea**

With a low score of 29, South Korean society is shown to be one of restraint. Societies with a low score in this dimension have a tendency to cynicism and pessimism. Also, in contrast to indulgent societies, restrained societies do not put much emphasis on leisure time and control the gratification of their desires. People with this orientation have the perception that their actions are restrained by social norms and feel that indulging themselves is somewhat wrong.

### **8.2.3 Business model and culture**

It is interesting to see that in the top 50 most successful smartphone applications, in South Korea, the in-app purchases are nearly double in value compared to the Netherlands. There are mostly games in the top 50 as well. This is surprising because South Korea scores very low on indulgence. In a society where not much emphasis is put on leisure time, applications, which are high on indulgence, do well. The South Korean respondents mention getting an addiction as reason to avoid game applications. A possible reason for this comes from the business model of the games.

As an example, the RPG genre can be used. All of the games are free; in order to advance in the game in-app purchases have to be made. And because the Koreans are very indulgence-averse, this type of business model will work. One interviewee mentioned that she quit games because she was spending too much time on them. An in app purchase was made for an item in game. There was a very low chance to get this item in game and that is the reason why this item was purchased.

#### **8.2.4 Usage and culture**

The themes that can be related to Indulgence are Need Fulfilment, Feeling and Habitual Usage. The findings of this show that the respondents in South Korea try to control their desires and impulses. On multiple questions, the respondents said that they do not download game applications because of addiction. There is a fear of getting addicted to games. Some of the respondents are already addicted to their smartphone applications. The respondents did admit this. This addiction is not seen as negative. It is the game addiction, which is seen as negative.

In The Netherlands this is not the case, people download applications and do it because they like it or think that they will enjoy using it. The respondents from the Netherlands download applications blindly because they only think it will be a nice to have application. Respondents in The Netherlands have said that they are very much addicted to smartphone applications, but none of them said that it is bad to be addicted to it. It is seen as a normal thing and part of life, and they are happy with the fact that smartphone applications give them enjoyment, ease their life and allow them to be more productive.

### **8.3 Individualism**

The degree of interdependence a society maintains among its members.

#### **8.3.1 The Netherlands**

The Netherlands, with the very high score of 80 is an Individualistic society. This means there is a high preference for a loosely knit social framework in which individuals are expected to take care of themselves and their immediate families only. In individualistic societies offence causes guilt and a loss of self-esteem, the employer/employee relationship is a contract based on mutual advantage, hiring and promotion decisions are supposed to be based on merit only, management is the management of individuals.

#### **8.3.2 South Korea**

South Korea, with a score of 18 is considered a collectivistic society. This is manifest in a close long-term commitment to the member 'group', be that a family, extended family, or extended relationships. Loyalty in a collectivist culture is paramount, and overrides most other societal rules and regulations. The society fosters strong relationships where everyone takes responsibility for fellow members of their group. In collectivist societies offence leads to shame and loss of face, employer/employee relationships are perceived in moral terms (like a family link), hiring and promotion decisions take account of the employee's in-group, management is the management of groups.

### 8.3.3 Business model and culture

Looking at the applications that are popular in The Netherlands, it can be seen that there are many applications, which are focused on individual usage. It is the individual who uses the application only. Applications such as weather, productivity, navigation and fitness applications are in the top 50 applications in The Netherlands. All of these applications are made for the individual himself. When we take a closer look on social applications in the top 50, it can be seen that the dating applications are for Need Fulfilment. An application such as Badoo is not there to socialize with friends and family, it is designed to get in contact with strangers. Many games are based on individuals too, for example Candy Crush, which is the number 1 application in The Netherlands, is made for short time leisure for the individual. This is related with the high score of individualism in the Netherlands. Applications with a strong focus on the individual are used more. Even the usage of social apps is fuelled by individual needs like making appointments. In South Korea, social networking applications are used more for keeping oneself updated on their social network, maintaining relationships and chatting. This is related with South Korea's low score on individualism and high score on collectivism.

22 out of 50 applications in the top 50 of the most successful applications of this study are games for Kakaotalk. Games designed for KakaoTalk are meant to make inviting friends or family or playing with friends or family easier. This is in stark contrast with games in the Netherlands, which are either single player games, or games with high scores. There are games in which one can play with friends or against them but this is a considerable smaller amount than in the Netherlands and it differs from the social aspects in South Korea.



#### 8.3.4 Usage and culture

The results show that in The Netherlands people like to have applications that help them in their daily need. For example, students tend to download, and even buy, applications that support their study. On the question “What is a good reason to use an application”, most of the interviewees (10 out of 12) answered that it should in one way or another provide value for daily life or simplify life. These applications are very much individualistic, and based on need of one person. This is also the case for South Korea but in comparison to the Netherlands, the social applications are used more than productivity applications. South Koreans use these applications as well but they are described as not fun. Social networking apps like Facebook and KakaoTalk are the most fun to use. South Korea scores very low on individualism but very high on collectivism. This is reflected in their usage of smartphone applications.

Social applications such as Facebook and WhatsApp are also used in The Netherlands, but they use it differently than in South Korea. For example, one interviewee said that he uses WhatsApp also to do business and another one said that WhatsApp and other social applications are handy to have fast contact. These answers are very much central to the application user. In South Korea, the focus lies on social networking. KakaoTalk is not used the same way as WhatsApp in the Netherlands. Facebook’s usage differs as well. The social networking apps are used to maintain relationships.

## **8.4 Pragmatism**

How people in the past as well as today relate to the fact that so much that happens around us cannot be explained.

### **8.4.1 The Netherlands**

The Netherlands receives a high score of 67 in this dimension, which means that it has a pragmatic nature. In societies with a pragmatic orientation, people believe that truth depends very much on the situation, context and time. They show an ability to easily adapt traditions to changed conditions, a strong propensity to save and invest, thriftiness and perseverance in achieving results.

### **8.4.2 South Korea**

At 100, South Korea scores as one of the most pragmatic, long-term oriented societies. Notion of the one and only almighty God is not familiar to South Koreans. People live their lives guided by virtues and practical good examples. In corporate South Korea, you see long term orientation in the, higher own capital rate, priority to steady growth of market share rather than to a quarterly profit, and so on. They all serve the durability of the companies. The idea behind it is that the companies are not here to make money every quarter for the share holders, but to serve the stake holders and society at large for many generations to come.

### **8.4.3 Business model and culture**

There does not seem to be a strong relationship between pragmatism and the business model of smartphone applications. The data of this study shows that there is neither a positive or negative relationship between the business models of smartphone applications and pragmatism.

#### **8.4.4 Usage and culture**

There is a lot of hesitation among the Korean respondents to do blind downloads. They truly download only what is needed and what actually will be used. They have a long-term orientation on smartphone application usage. It is for this reason that blind downloads are not done. This long-term orientation has to do with pragmatism, which has to do with long term- short term orientations. South Korea scores a 100 on pragmatism and their usage of smartphone applications or rather, their hesitance to just download applications like in the Netherlands, reflects this.

In The Netherlands, respondents choose their applications more impulsively and ad-hoc. An example is when an application makes it on the main page of iTunes or because they read about it on the newspaper.

#### **8.5 Unused Dimensions**

Two dimensions of Hofstede's model have not been used. These are the power distance dimension and the masculinity /femininity dimensions. There were no relationships identified between the data of this study and the dimensions. Power distance is defined as the extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally. This dimension is not reflected in usage or business model as defined and analysed by this study. The same is true for masculinity/femininity.

## **8.6 Findings summarized**

In our study, findings can be related to 4 of the 6 dimensions presented in the Hofstede Cultural Dimensions Model. Uncertainty Avoidance, Individualism, Indulgence and Pragmatism. The findings suggest the following:

### **8.6.1 Uncertainty Avoidance**

- Respondents in The Netherlands seem to base their decision more on feeling and download without discriminating.
- South Koreans do not seem to download something unknown.

### **8.6.2 Individualism**

- The data suggest that in The Netherlands, the usage and business model of applications are based on the needs of the user.
- South Korean seem to show more usage of applications with social aspects in them, to tie strong relationships with friends and family.

### **8.6.3 Indulgence**

- South Koreans try not to get addicted to games.
- Dutch respondents tend to download more on feeling.

### **8.6.4 Pragmatism**

- Relationship between business model and culture cannot be established
- The data suggest that Dutch smartphone user downloads what it needs or likes now.
- The Korean smartphone user seems to download what it will use in the future.

## 9. Conclusion

This study aimed to investigate whether there was a relationship between culture and the success of smartphone applications business model in. In order to investigate this, a comparison was needed between two countries with different cultures. South Korea and the Netherlands were chosen. The first step to investigate the relationship was to make a list of the top 50 grossing smartphone applications in each country. The business models of each smartphone application were mapped. The aim was to see if different countries were attracted to different business model. The data suggested that there were differences in preferences in business model and there were discrepancies between business models.

After this, the researchers aimed to further investigate the connection between culture and smartphone application business model. This was done by holding interviews in each country about the usage of smartphone application. Twelve interviews were done in the Netherlands and twelve in South Korea with the intent of mapping smartphone applications usage. On this data, coding was applied to uncover theories about the usage of smartphone applications in both countries. The researchers identified several themes, which occurred in both countries, and some which were unique. These themes returned in the business models of the top 50 smartphone applications as well. For instance, a lot if not all of the applications in South Korea had a strong social aspect. In the Netherlands, this did not seem to be the case, according to the found data. There was a good mix of different applications. The data did suggest that there were differences in preferences for business model in both countries and differences in usage.

The final step was to investigate whether this was because of culture. Using Hofstede's cultural dimensions model, the relationship between culture and the success of a smartphone application's business model became evident. The usage and business models of the smartphone applications show a relationship with culture. The main research question was: "What is the relationship between culture and the success of smartphone application's business models?" The findings of this study revealed that there are four dimensions, which suggest that there is a relationship with smartphone application's business model and usage. The most successful applications in both countries reflect these four cultural dimensions in their business model and their usage.

The first dimension is Uncertainty Avoidance. Respondents in The Netherlands seem to base their decision more on feeling and downloading without discriminating. The results from South Korea suggest that they prefer to not download something unknown. This seems to be in line with the Cultural Index by Hofstede, which shows a greater Uncertainty Avoidance index for South Korea.

The second dimension is Individualism. In the Netherlands, the data show that the usage and business model of applications are based on the needs of the user. The conclusion was drawn that social networking applications are used for individualistic needs. The usage of applications in South Korea seemed to be more focused on the theme social. According to the data found during the coding of the South Korean interviews, the main point is maintaining relationships. This difference seems to be in line with the Cultural Index by Hofstede, in the dimension, individualism.

Indulgence is the third dimension. The data from this study shows that South Korean respondents try not to get addicted to games, whereas Dutch respondents show almost no fear of addiction. The South Koreans also seem to actively try to avoid certain applications, which will get them addicted while this behaviour is not found in the data for The Netherlands. These results suggest that South Korean population are stricter with themselves. This could be because South Korea scores low on indulgence on the Cultural Index compared to the Netherlands.

The fourth dimension is Pragmatism. For this dimension, a relationship between the smartphone's business models and culture could not be established with the data gathered and analysed. On the other hand the data analysed showed some evidence for relationship between usage and culture. The Dutch smartphone user seems to download what it needs or likes now, whereas the Korean smartphone user seems to download for what is needed right now or what is needed in the future.

Two dimensions could not be used. These are the power distance- and masculinity/femininity dimensions. One of the reasons for this could be because the data is insufficient. Other methods or interview questions might be needed to measure these relationships. A relationship could not be found or was very weak. On an abstract level, the findings seem to be in line with the dimensions as represented by Hofstede's Cultural Index. An example is individualism on which South Korea scores 18 and the Netherlands scores 80. This is reflected in the data found in this study.

In the Netherlands, the data suggests that there is a smaller focus on social applications and a bigger focus on productivity application. In South Korea, the data shows that almost every game has a strong social aspect. In the Netherlands, the social aspect of games seems to be very limited compared to South Korea and most games are focused on the individual. Getting high scores and beating everyone else seems to fit the individualism dimension according to Hofstede. Playing together with your friends, in an online world populated by other players and other friends seems to fit the description of collectivism. On indulgence, both countries are almost opposite of each other. The Koreans do not seem to give into addiction while in the Netherlands this does not seem to be an issue



## **10. Discussion & Future Research**

This chapter will look at the weaknesses this study has. It will look at the implications this study brings. Lastly, some suggestions for further research is offered

### **10.1 Limitations**

We acknowledge some limitations of the study, which could be the basis of future research. The study was focused on the age group 16 to 34 in both countries. The UTAUT2 model argues that usage and acceptance of new technology is moderated by age, gender and experience. This study takes these three into account by interviewing 12 males and 12 females in the age group of 16 to 34. There are other age groups which use smartphone applications as well (>34). This study does not take them into account. Taking them into account would have given more results and insight on the older age categories in both countries.

Age differences and gender differences were not taken into account in the data analysis phase of this study. The reasoning for this is that the sample size per age category (3 per age category) is too small to draw conclusions.

There are some limitations because of the definition of success this study adopted. This study has only mapped the top 50 grossing smartphone applications to discover the relationship between culture and successful smartphone application business model. By having a less commercial oriented approach, the top free applications could also be taken into account together with the top 50 grossing.

During the research, an assumption was made that the most successful application would also be used in some way. This was not the case. The study uncovered that the most used applications are the ones that fulfil a need or which provides daily value to the user. This was a very interesting finding and a good base for further research. One could try to find reasons why top-grossing applications are not used more than other applications and how they still manage to make more money than other applications. Further research could focus on this dichotomy.

## **10.2 Implications**

### **10.2.1 Usage implications**

The outcome of this study seems to suggest that there is a relationship between culture, smartphone applications business models and their usage. Developers can use this data to guide smartphone applications development to make their applications appeal to a wider audience. Developers should keep in mind that certain business model might work in one country but not the other. Developers should take into account the cultural differences and guide their application development to take these into account. When developing an application for the Netherlands, it is good to take into account that the smartphone users, as described by the results of this study, are more individualistic. A focus on competitiveness for the Netherlands could be more effective than for South Korea. The Netherlands also scores less than South Korea on Uncertainty Avoidance and Indulgence, which means that the triggering of instant emotions might be an important factor for marketing the application.

Usage factors should be taken into consideration as well. When is an application used the most? The answer to this question differs from country. There is a difference when where and why the smartphone is used the most. The data of this study suggest that Dutch smartphone users look more for productivity while the Korean smartphone user seems to place a greater importance on social networking.

### **10.2.2 Business model implications**

The top grossing applications in South Korea are all free. This should be taken into account when releasing an application in South Korea for a certain price. The chance of succeeding commercially increases for South Korea when an app is free and comes with in app purchases. The Dutch smartphone user is less averse to price. Games are very popular in South Korea. Games with Kakaotalk integration seem to do better on average. For developers this could be a great advantage to leverage their app to a big customer base.

Many respondents in both countries suggested that they always look for a free alternative to a paid application. Developers should seriously take into account the possibility for a "lite" version of the application, which the users can use for free. This way the developer can lock the user into the application. The data of this study suggest that the users will purchase the paid version sooner with this tactic

### **10.3 Future research**

Because a study like this has not been undertaken before, there are many areas for future research. For example, this study has data which suggest that a relationship exists between culture, smartphone applications business models and usage. Future research should focus on quantifying this relationship.

Future research could focus only on the usage aspect. Surrounding usage, there are many aspects which influence usage such as political aspects and technological aspects. South Korea has the highest smartphone usage saturation in the world. The findings in this study explain this phenomenon using culture.

But there might also be political and technological influences which drives this saturation. This also has implications for smartphone applications. Currently, the South Korean government is researching 5G. In what way do these other aspects influence smartphone applications and their business model? There are applications in South Korea which require a continuous connection.

More countries should be included in future cross cultural studies on this subject. By including more countries, the impact of culture would have become more apparent and stronger. For example, a comparison of four countries could be done in the future to further uncover the relationship. Further research could also be focused on researching the usage of both countries but with a focus on age and gender differences.

This study has taken a commercial look towards smartphone application and usage. During our study, there were many instances where respondents claimed they never bought applications. They seemed to have no interest in buying applications even if they enjoyed it. This group could be researched further on their behaviour. A study like that could result in very interesting insights for commercial and non-commercial oriented applications

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## 12. Appendix

**Appendix 1:** Interview questions

**Appendix 2:** List of the 50 top grossing smartphone applications in South Korea

**Appendix 3:** List of the 50 top grossing smartphone applications in the  
Netherlands

**Appendix 4:** South Korean interview transcripts

**Appendix 5:** The Netherlands interview transcripts