Super Apps

Super desired or not?

An explorative study into the commercial potential of an Asian type ‘super app’ within the Netherlands.

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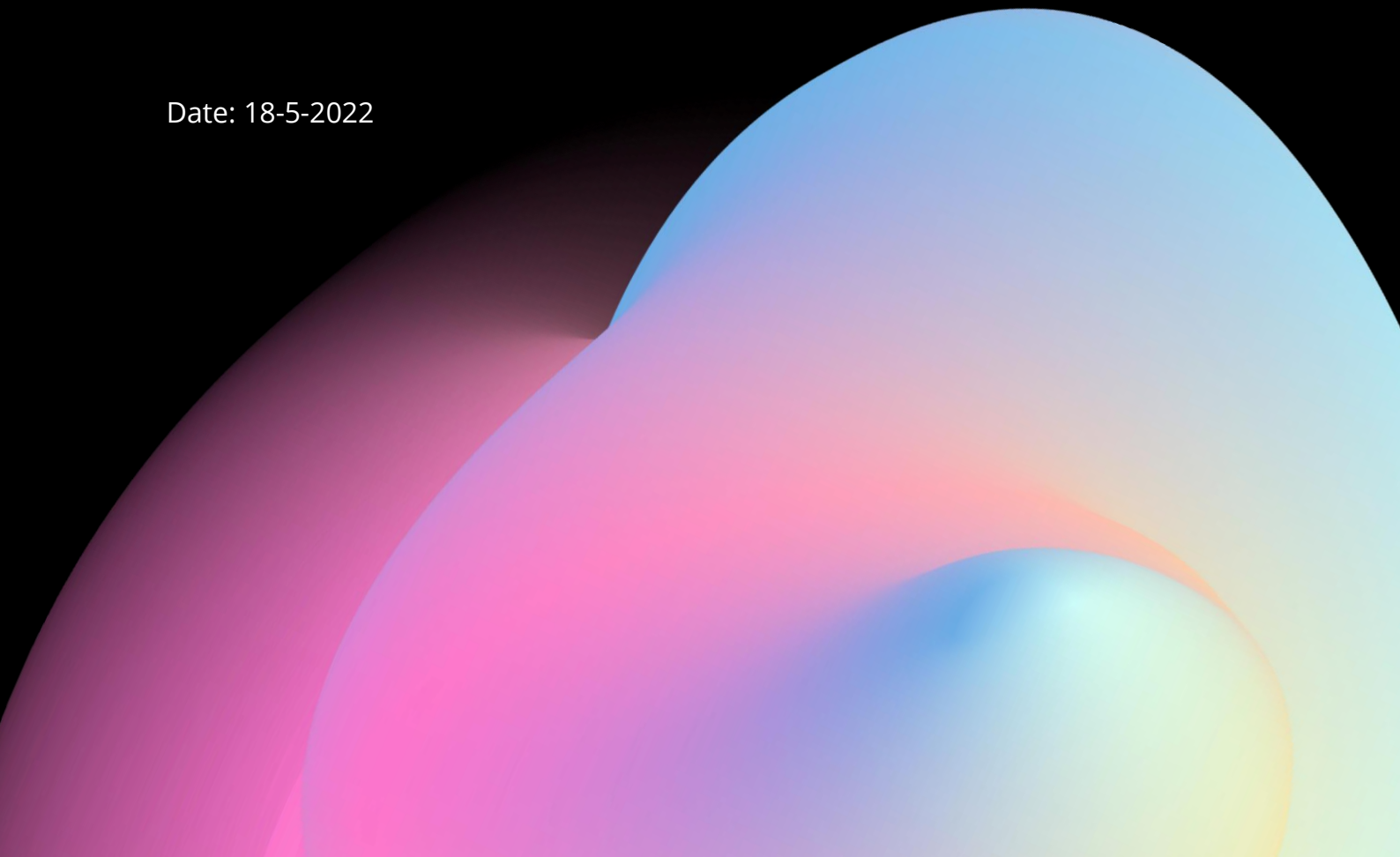

Abstract

This research is exploring grounds of a potential game changer in the mobile app industry, namely the super app. In Asian countries, this concept has proven itself to be successful, with apps as WeChat, Gojek and Grab. Although the environment the super apps sprung in was very different (an underdeveloped internet society, differences in culture, government and a lot of jobs being unfulfilled), is there a possibility that the Asian type of super app could be a commercial success in the Netherlands, despite the already available substitutes? This research explains commercial potential through the design thinking lenses of feasibility, viability and desirability. The theoretical framework is built upon the Technology Acceptance Model (TAM). The units of analysis consist of a randomly chosen sample of Dutch potential users. The collected data is analyzed through content analysis and the results show that there might be desirability for a super app in the Netherlands, but this depends on the following attributes: a super app should be safe (privacy), easy to use, useful and bug free (highly qualitative app). This paper contributes practical implications for entrepreneurs, app developers and managers for developing and launching a super app in the Netherlands. The theoretical implication is a revised theoretical framework, which is established for possible usage in future (quantitative) research in this topic.

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1. Introduction

1.1 Introduction to Super Apps

Effective smartphone usage is simply impossible without using various apps on the device, at least, in most countries. In China and other south-east Asian countries, most daily activities can be operationalized through one app. This type of app has been granted the name 'super app'. Examples of the largest super apps in the mentioned countries are WeChat, Gojek and Grab. "*It's a portal to the internet for a mobile-first generation*" (Gojek Super App, 2021). Super apps have shown great successes in Asian countries. E.g., WeChat (known as Weixin in China) has become part of daily life in China. The app has formed an immense societal impact: Whether you need to do the groceries, book an appointment or arrange a personal loan, all could be arranged and paid for with a built-in wallet of the app (Huang, 2017). WeChat has grown in users significantly the past years without signs of stopping with currently 1.2 billion monthly active users (Iqbal, 2020). This increased the amounts of smartphone and internet usage in China and created a shift from cash payments to online payments. Not only societies benefitted from super apps, but also the countries' economies and businesses. Small to medium sized businesses can easily exploit the high daily traffic of the apps and may have better chances of survival and growth (Bao, 2017). Tech giants also benefit from leaning towards super app ideas: in 2019, the average revenue per user (ARPU) of WeChat was around $11 (Iqbal, 2020), while WhatsApp reached an ARPU of $4 in 2020 (Page, 2020).

1.2 Absence of Super Apps in the West

As mentioned before, many parties (society, SME's and big tech companies) benefit of super apps. This may also be the case in western countries when super apps make their introduction. Western society is potentially missing out on many advantages a super app offers. Consumers in western countries do not have the same convenience as consumers in Asia, as they are able to enjoy the eco-system super apps offer which makes daily life easier in different respects. SME's and big tech have a probability to miss out on revenue, as was shown that super apps have a high ARPU. The reason for no dominating Asian-type super app in western countries may have various reasons. Rodenbaugh (2020), an Asian tech ecosystem passionate, wrote the following three relevant propositions: 1) "*It's tough to build a super app for a country with an established internet economy*" there is a big difference of society, economy, and culture between the countries the super apps originated in and the western world. While there was no established internet economy in Asia during the rise of their super apps, in the USA and Europe, most internet jobs were already being fulfilled. 2) "*To be a truly generalizable super app, you need to own your user's wallet.*" In Asian countries, most of society did not have bank accounts and digital payments were not used very often. Super apps changed this by offering solutions by implementing a digital wallet in their apps. This wallet is a key part of a super app. 3) "*Super apps need to have strong positive relations with the governments of the countries they operate in.*" Leaders and CEOs of Asian super app companies have tight relations with their governments or are even part of their governments. In the US and Europe,

antitrust laws prevent these situations. All in all, according to Rodenbaugh, the big difference lay in the context of societal development, economy, culture, politics, and these could be reasons for the absence of a dominating super app in the west. Nevertheless, big tech companies as Facebook, Google, Apple but also Uber, are slowly showing 'super app-like' developments.

1.3 Research Objective

This research is exploratory on the concept of super apps. This is still relatively under-explored in research, but the basis we already know on the topic is described in Chapter 2: Literature & Theory, and mainly concerns the development of the super app in the Asian environment: Verhoef et al. (2015), talked about the efficiency of omni-channel retailing, which is a feature of super apps. Schramm-Klein (2011) even mentioned omni-channeling is perceived superior over single channels and create higher customer loyalty. Chen et al. (2018), Huang et al. (2020), and Deluca et al. (2016), researched why and how the super app WeChat became part of China's society. It seemed China was in a perfect era for super apps to flourish.

A geographically based research gap is noticed in the development of super app literature: Super apps' history and effectiveness is researched in their domestic countries, but as mentioned previously, western big tech companies are also slowly exploiting the super app business model. Despite this, there is no published research for the potential of a super app in western countries. Therefore, the objective of this research is to add to

current base of knowledge on super apps by gaining understanding whether the concept of a super app could have commercial potential (from a company perspective), or even be a next disruption in the western mobile apps industry, despite the differences with Asian countries. This objective is approached through a Design Thinking lens. This is done by considering the following three spaces: desirability (user's perspective), viability (business perspective) and feasibility (technological perspective) (Chasanidou et al., 2015). The Design Thinking fundamentals are used because of the nature this research, which belongs to the category of design research, and the nature of the concept that is researched, which is innovative and thus appropriate to this theoretical perspective. This research focusses mostly on the desirability of an Asian type of super app within the Netherlands. The reason for this research to focus on desirability is that super apps have already proven themselves to be technically feasible and financially viable in Asian countries. The super app will be conceptualized, feasibility and viability will be explored through literature and the desirability will measured at the Dutch potential users by using the TAM (Davis et al., 1989) as basis. Based on all three spaces, commercial potential could be estimated. Based on the gained knowledge, practical implications are formulated for entrepreneurs, managers or app developers that inspire to develop and launch a super app.

1.3.1 Research Question

This research aims to achieve a greater understanding whether the super app concept could have success in western countries, just as shown in Asian countries, by building on existing scholarly and empirical work, and implementing the Design Thinking fundamentals and the TAM, from which theoretical and practical implications can be retrieved. Therefore, the research question is:

To what extent is there commercial potential for an Asian type of super app in the Netherlands, despite the differences of context with Asia?

- What exactly makes an app super?
- What factors influence commercial potential of an Asian type of super app in the Netherlands?
- Are super apps desirable, viable and feasible in the Netherlands despite the difference of context with Asia of societal development, economy, culture, and politics?

1.3.2 Academic Relevance

There is a general lack of scientific literature on the topic of super apps. The limited amount of scientific literature regarding super apps derives from the newness of the super app and it not being from a scientific background. This report will contribute academically in various ways. First, a concrete and stable concept for a super app will be defined through combining emerging knowledge. This will contribute to the research stream on mobile-app developments. Tang (2019) studied mobile apps in m-commerce and assessed the state of art for future research and identified directions for mobile-app studies and managerial implications. The research on super apps contributes to this study

in both ways. It contributes with new theoretical insights, such as the required features and the different ranges of possibilities of the super app, which together create a concept. Also, a theoretical model is provided that can be used for testing relations regarding desirability. The concept and the model could be used in further research within this context. (e.g., exploring the commercial potential of the super app in other countries). The research also contributes to the managerial implications by giving instructions (based on the results of this study) to businesses to increase the probability of successfully implementing the super app in western countries.

A highly important attribute of super apps is the digital wallet. Financial digitalization is a whole research stream on its own. This research uncovers the desirability of a digital wallet within a super app in the Netherlands. This builds on prior research such as Valverde et al. (2020), who explored the recent macroeconomic and microeconomic approaches to financial digitalization and the relationship between banks, FinTech and BigTech. Super apps is a potential turn financial digitalization might take.

The commercial potential of a super app is approached through the design thinking lenses feasibility and viability in the Netherlands are shortly explored while the interviews are based on desirability. These new insights might contribute to future (quantitative) research on the super app commercial in western countries. This builds further on the research of digital transformation. Urbach et al. (2018) researched how despite the challenges organizations face regarding digitalization, such as it being highly volatile, uncertain, and complex, they still manage to succeed in seizing opportunities it offered.

The researchers studied digitalization cases and identified three classes: digital disruption (making current activities more efficient through digitalization), digital business (designing new business model due to digitalization), and digital transformation (a technology-induced change in the entire enterprise architecture). Switching from using various apps to one super app is an act for efficiency and thus the research on super apps adds knowledge to digital disruption.

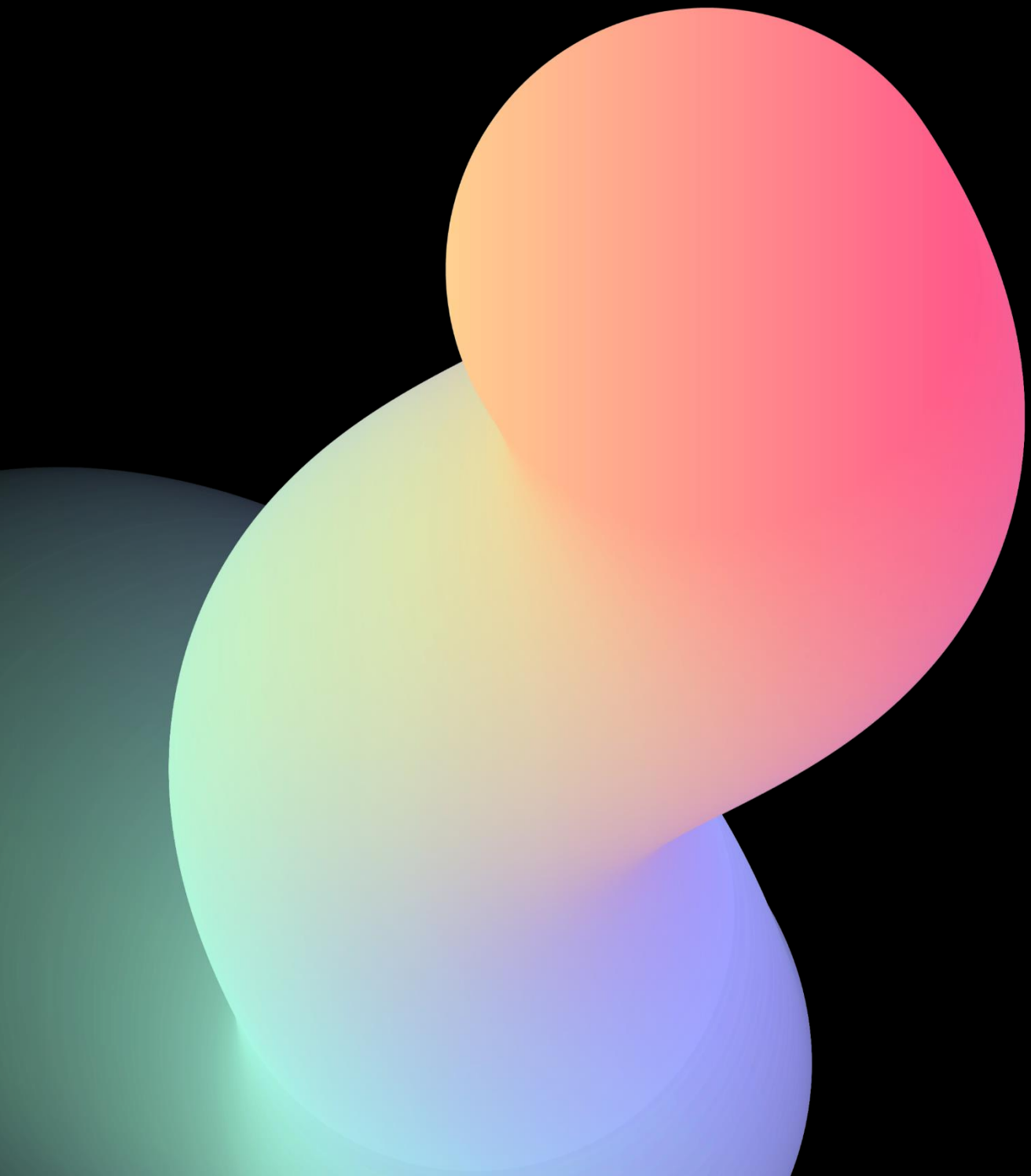
The TAM (Davis et al., 1989) is applied in this research, which gives results on the acceptance of a super app in the Netherlands and contributes new insights to the research stream of technology innovation. In similar IT context, The TAM has been used in predicting online shopping behavior (Vijayasarathy, 2004). During the research, Vijayasarathy added other predicting variables to the TAM, such as privacy and safety. Yu et al. (2004) Followed this example in using an extended version of the TAM for predicting user intention towards t-commerce, which is electronically mediated commerce using interactive television. Both research were successfully able to predict intention towards use by using the TAM and extending it with relevant variables.

1.3.3 Practical Relevance

This report delivers insights on the commercial potential of an Asian type of super in the Netherlands. These insights can be interpreted by businesses as a recognition of opportunity (or threat), which could then be further exploited for economic profits. The results could be used as a base for a change of course of business strategy. Businesses

could try to exploit the opportunity as a whole new product or choose to remove or add ‘super app’ features to their current services/software. This research outcome could also come out negative and may suggest that the Asian concept of super apps need to be adjusted to work in the Netherlands.

2. Literature & Theory



2.1 Super Apps

This section of the report contains a review on literature regarding the super app. Its objective is assessing literature on the concept of a super app to create a concrete concept.

2.1.1 Super App Features

By gaining a better understanding on the existing super apps' features, a clear concept could be formulated. Three large super apps from three different Asian countries, namely, China, Indonesia, and Singapore, are examined. The super apps from these countries are WeChat, Gojek and Grab respectively. The super apps are selected based on their successes and high valuation (> $10 billion). The collected data of the three mentioned super apps is compared by similarities and differences of features, which will result in a conceptualization of super apps.

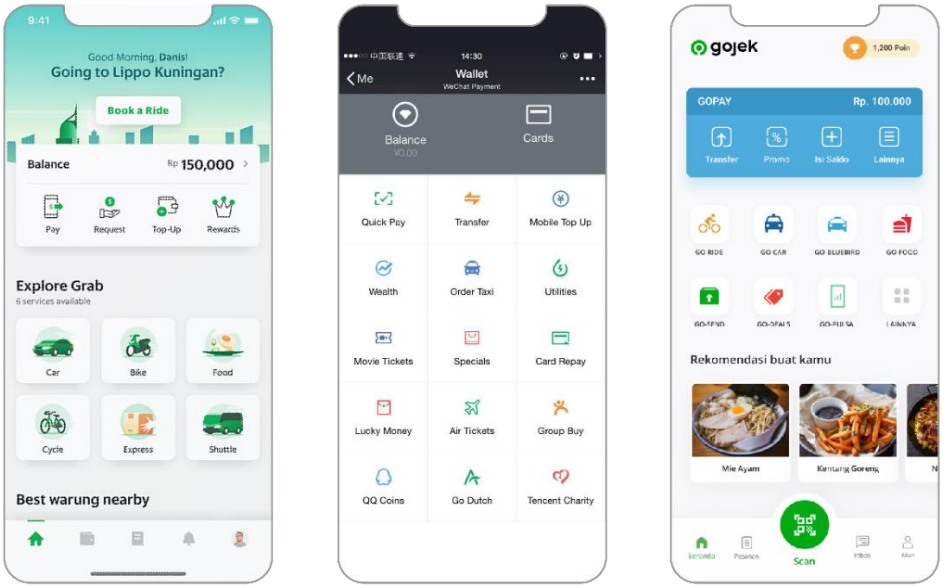


Figure 1. WeChat, Gojek & Grab UI (respectively)

2.1.1.1 WeChat

WeChat is the largest super app in China with more than 1.2 billion users (Thomala, 2020), with more than 800 million using the WeChat Pay function. WeChat was launched by Tencent in 2011 and has not always been a super app: It started off as a simple chatting app (Rodenbaugh, 2020). Tencent's market capital is said to be $537 billion in mid-May 2020 (Stancheva, 2021). There are many things one could do with WeChat. Figure 1 shows the WeChat app user interface (UI). All WeChat features (Huang, 2017) are listed in Appendix 1.

2.1.1.2 Gojek

Gojek started in 2009 in Indonesia with 20 motorbike drivers as a taxi service. With the years the taxi service was widely expanded, and more services were added. Grab is a super app with 29.2 million monthly active Indonesian users, 4.3 million users in Vietnam, 2 million users in Thailand and 0.8 million users in Singapore. More than 100 million monthly transactions are being executed via Gojek. The company has an estimated value of $11 billion (Smith, 2020). Gojek offers many different features/services via one app. These could be divided under the categories of *transport & logistics, food & FMCG, payments, news & entertainment* and *business* (Gojek, 2021). In Figure 1, the Gojek user interface (UI) is displayed. All Gojek features are listed in Appendix 1.

2.1.1.3 Grab

Grab started in 2012 as a taxi service company in Singapore and subsequently started adding more services. Grab currently operates in eight countries, which are Singapore, Cambodia, Indonesia, Myanmar, Thailand, Vietnam and the Philippines. The company currently has a valuation of over $15 billion (2021) (Reuters, 2021). Grab is a an omni potent app with many features. The UI can be seen in Figure 1. The features can be categorized in *transport, food, mart, express, pay, tickets, hotels, rewards, subscription, insurance and gift*s (Grab, 2021). The details are listed in Appendix 1.

2.1.2 Differences and Similarities

In this paragraph the previously mentioned features and properties of WeChat, Gojek and Grab are compared for their differences and similarities for both to create better understanding on super apps and to conceptualize them. The results of the comparison are displayed in Appendix 2. According to Rigby (2011), there has been a shift in retail from single to multi and omni-channel retailing. Omni-channel retailing can be defined as all available channels and customer touch points managed to provide efficient and effortless customer shopping experience (Verhoef et al., 2015). The difference between multi-channels and omni-channels is that the first emphasizes the importance of the channels whereas the second seamlessly integrates the channels. Super apps create value by bringing ease and efficiency into its user's life. It does this by allowing customers to access different daily activities/purchases with one app. Therefore, super apps are highly efficient

managers of different available channels and customer touch points. According to Schramm-Klein (2011), omni-channeling is perceived to be superior to single channels and create higher customer loyalty. Hence, it seems that the omni-channel feature of super apps could lead to higher probability of acceptance.

2.1.3 Origin of Super Apps

Knowledge on the origin of the super app and its environment, adds to a greater understanding of super apps. the largest super app, WeChat, originated in China. Why and how did this app become part of China's society and landscape and how did it get inseparable from its users (Chen et al., 2018)? To understand this, one should look at the last three decades in China. These years were in focus of industrialization, urbanization and modernization, which lead to an accelerated rising rate of efficiency and competition for businesses in China (Huang et al., 2020). In the past decade, the government implemented the "Internet Plus" action plan which stimulated the exploration of digital transformation. This exploration led to many ICT startups such as Alibaba, but also Tencent (WeChat's holding company). The rise of these the ICT startups resulted in tech giants revolutionizing everyday aspects of life, such as digitalizing of payments and transactions. These developments laid the foundation of an environment, ready for the super app WeChat, which launched in 2011. WeChat did not start off as a super app, but as a communication app. The extra features which were added later, fit perfectly in the environmental context the app was growing in; rise of tech and digitalization to make life

more efficient. WeChat's dominance could also be linked to Chinese culture: the social features of the app are more private which fit better in the Chinese 'guanxì' culture (Deluca et al., 2016).

It is WeChat's ability of adapting to the Chinese culture, making life easy with its features, but also, it's timing in history, which made the app a success. The context of WeChat's origin is similar to different super apps like Gojek and Grab. As is mentioned in the introduction, the development of many (south-east) Asian super apps took place during an underdeveloped internet society. Thus, it seems culture and historical context influenced the desirability of Asian super apps.

According to Zemlickiené et al. (2017), the situation on the market has the third highest impact on commercial potential and consists of different factors. Two factors are relevant to this study: *level of needs regarding potential product* and *level of readiness of market for the product.* In Paragraph 2.5: Desirability it is explained that problems solved by the super app are currently already being solved through different apps in the Netherlands. The development of the market was also very different of that of the Asian markets. The level of need and readiness are thus still unknown and debatable.

2.1.4 Conceptualization of the Super App

Appendix 2 shows a clear overview of each available feature of the three examined super apps. We can see that WeChat has all features available. This is because WeChat has a different approach than Gojek and Grab: WeChat allows third parties to add their own

service within the app, while Gojek and Grab only allow third parties to facilitate their services. Features that are available on all three super apps are in bold and are put down as main super app features. Based on the examination of these super apps we could conceptualize super apps with the following paragraph:

A super app allows its users to use many different features through highly efficient omni-channel management. It can let third parties contribute to broaden the proposition of the super app, or to facilitate the existing one. The main features of a super app are a build-in wallet, taxi service, food delivery, product delivery, postal service, insurances, investing, discounts, gifts, cinema tickets and business solutions for third parties. A super app may also have a carpooling service, moving service, healthcare service and the availability of booking appointments, booking hotels, streaming movies/series and various subscriptions. Furthermore, super apps could have the following features: messaging, social features, accessing media/news, games, e-commerce, booking flights and more third party added services to broaden the super app's proposition.

2.2 Commercial Potential in the Netherlands

In this research, we view commercial potential through a business design thinking lens. It suggests that successful innovation or commercial potential is a result of the combination of a viable, feasible and desirable technology/service. To make a product work, companies must ensure that the product/service is technologically possible (feasible), profitable or

more profitable than the current solutions (viable) and accepted in the current market (desirable). See Figure 2 for a visual presentation of this theory.

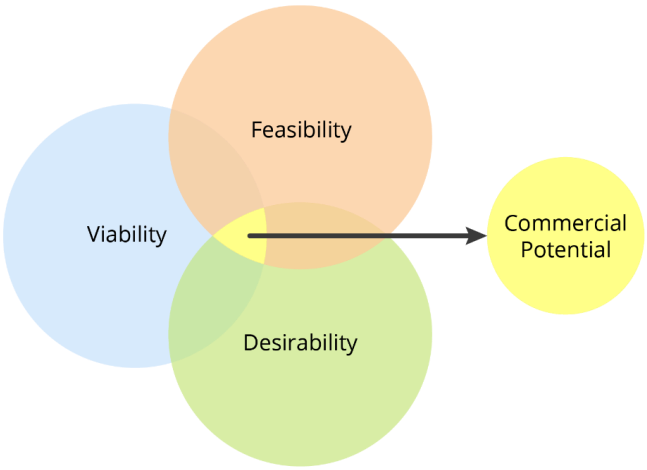


Figure 2. Business Design Thinking Lenses

Companies that want to introduce the super app concept to their existing product or as a whole new product have to take in mind the following: to make sure of feasibility, companies must combine current services, add new services and also be prepared for higher complicity of management of operations and legal affairs. For a super-app to be viable, the ARPU (average revenue per user) must be higher than the current situation. Companies must consider possible higher operational costs. What really makes a super desirable for consumers is the user-friendly eco-system and large variety of services. Are super apps desirable by consumers despite the already available substitutes (separate apps) and privacy concerns? In Figure 3, the research model is visualized. The constructs are further explained in the following paragraphs.

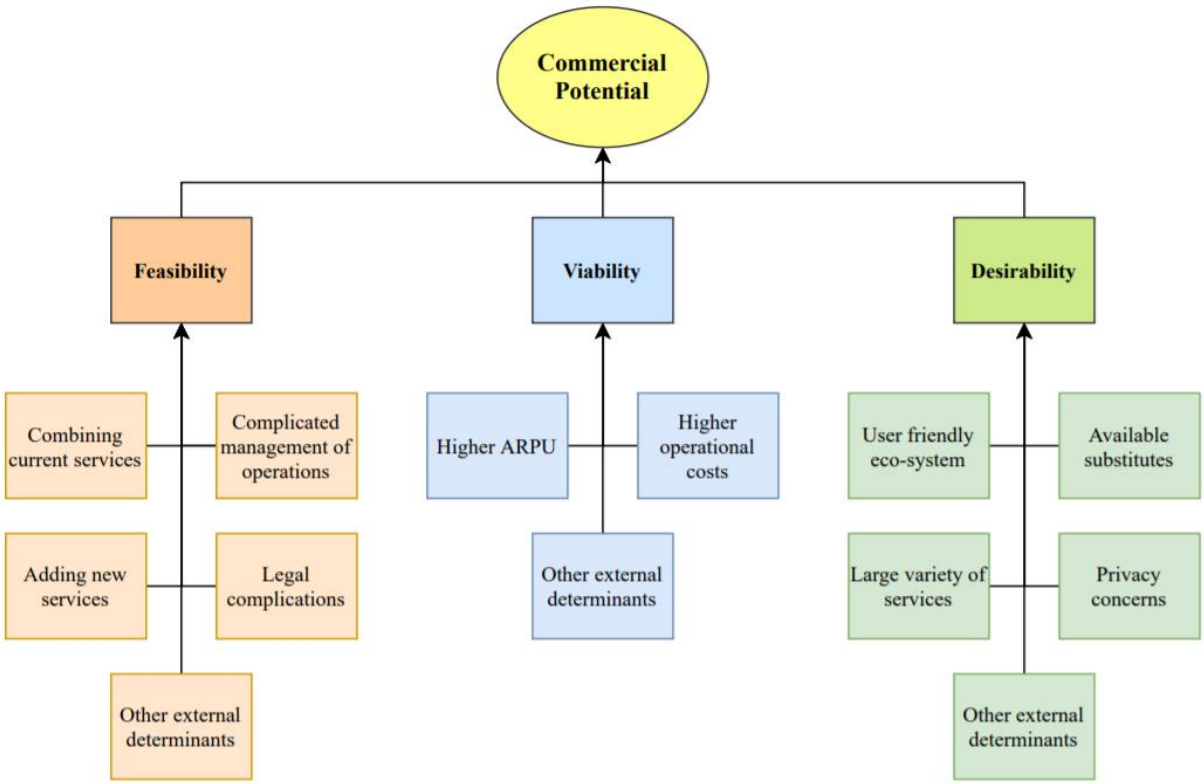


Figure 3. Commercial Potential Research Model

According to Zemlickiené et al. (2017), the following factor groups influence commercialization of technologies: situation of the market, value for the consumer, financial environment, competitive environment, technology features, competence of technology developers, legal environment, circumstances relating to inventors and institution's internal policy. The full explanation is seen in in Appendix 3. Zemlickiené et al. (2017) ranked the previously mentioned factor groups based on their significance (impact). These can be seen in Table 1.

Rank	Name of factor groups	*Sfng. g. f., q_j*
1	Value for the consumer (B)	0.178
2	Competitive environment (D)	0.155
3	Situation on the market (A)	0.139
4	Competency of technology developers (F)	0.138
5	Financial environment (C)	0.105
6	Technology features (E)	0.104
7	Circumstances relating to the investor/s (H)	0.072
8	Legal environment (G)	0.065
9	Internal policy of the institution (I)	0.043

Table 1. Factors ranked (Zemlickienė et al., 2017)

The factors from Table 1 could be divided into the three design thinking lenses by their characteristics. In the feasibility lens, the following factors could be placed: competency of technology developers (4th), Technology features (6th), legal environment (8th) and internal policy of the institution (9th). The factors financial environment (5th) and circumstances relating to the investor/s (7th) could be placed in the viability lens. In the desirability lens, value for the consumer (1st), competitive environment (2nd), situation on the market (3rd). Based on the distribution of the factors by the three lenses, it might be that desirability has the highest influence on commercial potential in comparison to feasibility and viability, because the three highest factors are divided onto desirability.

2.3 Feasibility

Regardless of super apps proving themselves to be feasible in Asian countries, this section explores the feasibility of a potential super app in the Netherlands.

The reason for this exploration is the differences with Asian countries in terms of societal development, economy, culture, and politics. Considering feasibility to reach a conclusion on commercial potential is of high importance. Referring to Business Design Thinking spaces (Figure 2), feasibility is a must for commercial potential. According to Hall (2007), a feasibility study consists of TELOS, which is an acronym for Technological, Economic, Legal, Organizational and Scheduling. This section discusses the technological, organizational, and legal aspects of super app feasibility.

2.3.1.1 Technical feasibility: combing current services and adding new ones

According to Bause et al. (2014), feasibility has two main examination aspects: economic feasibility and technical feasibility. A technical feasibility study mostly resembles the design process of the product because it results in various ideas and concepts that solve technical problems. *"The task of technical feasibility examination means to evaluate whether a technical issue is solvable, and the solution is viable under given objectives and boundary conditions without regards to economic factors"* (p. 478). A company that intents to launch a super app should examine the technical feasibility to combine its current services into one app or a user-friendly eco-system. If the company offers a limited number of services/products, it should be prepared to add new services/products to

reach the point of value of a super app, namely offering many services under one umbrella. What is clear based on other (Asian) companies offering super apps, is that these all have a main service from which they built a reliable customer base, to which with time, new services were introduced.

The difference in terms of technical feasibility between the Netherlands and Asian countries is limited, because environmental factors that influence the availability of tech or software little to none.

2.3.1.2 Preparing the organization: complicated management of operations

Combining existing services and adding new ones might add to the complication of managing operations. Companies should be aware that changes in organization are of necessity. Dewhurst et al. (2011) identified three pain points that organizations face as a result of new growth initiatives. These are: (1) “stifling structures”, which concerns the flexibility of the organization, which could be managed by deploying a new business unit and team. In the case of super apps this would refer to position a new team on each newly added service; (2) “unscalable processes”, which concerns preparing organizational processes for growth. In the case of super apps, services as customer service might need a whole new architecture to support new customer needs derived from the increased number of services. (3) “unprepared people”, which concerns the readiness of employees, who in the case of super apps, must be extraordinary ready for radical organizational and operational changes. Arranging the right organizational structure to realise a successful

super app might be harder in the Netherlands than in Asian countries, because of higher wages and a tight labor market. Dutch companies might have to search for other solutions such as nearshoring.

2.3.1.3 Legal complications

Managing and storing data of users is of high importance. Companies must make sure that user data is stored safely and according to legal terms. Using data in corrupt ways or dealing with leaks could have massive legal consequences for the company. Safely storing and managing data is more relevant to super apps than non-super apps because the many services a super apps offers and the wallet system. In this regard super apps must manage more activities in the day-to-day life of an end consumer. Leakage in such data could thus have enormous impact in the privacy of the consumer. In the Netherlands, data protection has become highly prioritized in the past years. Data protection is regulated on EU level with the GDPR, which is not present in Asian countries.

Combining current services, adding new ones, creating a higher satisfaction rate and making managing data safe priority does come with financial costs which impact the viability of the super app. This is elaborated further on in the following paragraph.

2.4 Viability

Just as super apps have proven themselves to be feasible in Asian countries, they have done the same for viability. As mentioned earlier, for a super app to have commercial potential, it must be viable as well as feasible and desirable (Figure 2). Viability is thus of high importance. Because the focus of this research is not viability, an assumption is inducted for this research. Viability encompasses the economic feasibility (Bause et al., 2014) of a new product, which is part of TELOS (Hall, 2007). This section discusses financial attractiveness of the changes in revenue and costs a business would face after transitioning to a super app model.

2.4.1.1 ARPU

In the introduction of this report, the following is mentioned: "*in 2019, the average revenue per user (ARPU) of WeChat was around $11, while WhatsApp reached an ARPU of $4 in 2020.*" ARPU is highly relevant to the topic of companies intending to introduce a super app. This is mostly because super apps start off as a single service, from which a customer base is built, where thereafter new services are introduced under the same app. The increased ARPU is occurring through offering new propositions to the existing customer base, resulting in higher revenues. Companies that are planning to initiate a super app should take the ARPU of their current offered service(s) and compare it with the potential ARPU changing to a super app could generate. The turning point for these companies would thus be a higher ARPU.

2.4.1.2 Higher operational costs

Besides ARPU, companies should consider potential higher operational costs. As mentioned in the previous paragraph, management of operations might become more complicated, which could add to the operational costs. Introducing new services also require investments for both development and marketing these services.

For a super app to become viable, companies must thus take in account the difference of their current ARPU with the potential, increases in operational costs as a result of more complicated operation management and investments costs of introducing new services.

2.5 Desirability

Understanding whether there is a demand for a super app in the Netherlands is of high importance to answer the research question. Based on the desirability of the super app we could draw a conclusion on the commercial potential. This is because desirability is one of the three business design thinking spaces (Figure 2). To measure the desirability of a super app we must consider different influences. The measurement of desirability is further explained in the following paragraph.

A super app targets end-consumers to become users of their platform for them to use their services. This report thus focusses on consumers for measuring desirability. Desirability might be affected by the value for the consumer (large variety of services and friendly eco-system), already available substitutes and privacy concerns.

2.5.1.1 Value for the consumer: large variety of services and friendly eco-system

According to Zemlickiené et al. (2017), the value for the consumer has the highest impact on commercial potential and consists of the following factors: *value planned to be offered to the final consumer*, *respond of target consumers to product concept* and *uniqueness level of the value given to the potential user of technology*. Value creation for the customer is interrelated with many company activities, even including ethical and humanitarian activities (Mostenska & Bilan, 2015). Shet et al. (1991) introduced the "theory of consumption value". According to these authors, a consumer's decision to purchase a product or service can be described as a function of multiple "consumption value dimensions."

The value planned to offer through a super app is extensive because of the offering of many different solutions (Appendices 1, 2 & 4). Doing this in a user-friendly eco-system is the main value proposition of the super app. The respond of target consumers to product concept is yet unknown and will be this report's main research. The uniqueness level of the value given to the potential user of technology is debatable and further elaborated on in this paragraph. The value for the consumer consists of the large variety of services and the friendly eco-system. Therefore, the following two propositions are developed: '*Large variety of services has a positive effect on perceived usefulness (**P1**)* and 'U*ser friendly eco-system has a positive effect on perceived ease of use (**P2**)*'. The research is based on these propositions.

2.5.1.2 Available substitutes

According to Zemlickiené et al. (2017), the competitive environment has the second highest impact on commercial potential and consists of the following factors: *predicted technology's existence duration, ability to copy technology* and *intensity of competition*. The predicted technology's existence duration is still unknown, there is an ability to copy the technology because software can only be protected through copyright and the competition intensity in the Netherlands is high. The features of the super apps seen in Appendix 2, are already made available in the Netherlands by competitors. The difference with the countries these super apps operate in is that these users can access all these feature through one app, while in the Netherlands (as many other western countries) every app/website/business offers one or few features. The reason for this is the context and timeframe the developments of these apps. WeChat arose in a country where internet usage was still very low and many features, accessible through different apps, already existed in western countries.

In Appendix 4, it is seen how many apps/websites/companies are needed in the Netherlands to access all features that WeChat only delivers. The table shows that WeChat's features are already available in the Netherlands, but it takes at least 17 different apps/websites/companies to fulfill these features. The table really represents the amount of value WeChat can create as a super app. The need of 17 apps/websites/companies to fulfill all of WeChat's features, but also the fact that all the

features are already accessible in the Netherlands (for a long time) is considered while researching the desirability of the all-in-one super app. The *uniqueness level of the value given to the potential user of technology* thus seems debatable. According to Lee et al. (2014), attributes such as free app offers, high initial ranks, investment in less-popular (less-competitive) categories, continuous quality updates, and high-volume and high-user review scores have positive effects on apps' sustainability. The researchers thus found that less competitive app categories contribute to the apps' success. This strategy does not align with the idea of the super app. The researchers also found the following: *"By offering highly divergent product lines, firms can satisfy consumers' desire for variety seeking and meet customer needs in a manner superior to competitor's product offerings"* (p136). This on the other hand, does align with the super app strategy. Based on these debatable concerns, the following two propositions are put forward: '*Available substitutes has a negative effect on perceived usefulness (**P3**).*' And '*Available substitutes has a negative effect on perceived ease of use (**P4**).*' The research of this article is based on these propositions.

2.5.1.3 Privacy concerns

To develop a real super app, the company that offers this solution must oversee the customer's payment methods. This means a super app includes a wallet to/from which money could be deposited/withdrawn and from which payments could be made within the super app. Offering many services in different fields and owning the customer's wallet

might lead to privacy concerns. To what point are Dutch users willing to give their information, daily activities and financial activities to a commercial company. The problem is that previously, payments were made through an independent financial provider such as a bank, and that services were received from different companies/sources. With a super app, all these attributes are created under one umbrella, which means one commercial company has access to all the information of a user. The acceptance of this and even allowance from the government due to legal issues really marks the difference between Asia and the Netherlands in terms of culture, politics, law, etc. it seems that privacy concerns might have a negative effect on the desirability. According to Lebo (2019), privacy is reported to be one of the largest concerns for consumers in the USA. Privacy concerns usually arise from three distinct dimensions: *collection* of personal data, *control* over the use of personal information by firms, and *awareness* of privacy practices and how personal data are used (Malhotra, Kim, and Agarwal 2004; Smith, Milberg, and Burke 1996; Stewart and Segars 2002). Therefore, the following two theses are proposed: '*Privacy concerns has a negative effect on perceived usefulness (**P5**)*' and *'Privacy concerns has a negative effect on perceived ease of use (**P6**).*' The research of this article is based on these propositions.

2.6 Measurement of Desirability

As mentioned in the introduction, this research will focus on the desirability. This is because super apps have already proven themselves to be viable and feasible in Asian countries. The constructs regarding feasibility and viability in Figure 3 are explained in the

past paragraphs through literature. From this point this paper will further elaborate on desirability.

To measure the desirability of a super app in the Netherlands, the TAM is used. It was developed with two objectives in mind, namely for "*theoretical insights into the successful design and implementation of information systems*", and "*provision of theoretical basis for a practical "user acceptance testing" methodology that would enable system designers and implementors to evaluate proposed new systems prior to their implementation*" (Davis et al., 1989). Mainly the second objective (user acceptance testing methodology), is of high relevance to this research. The new proposed system (super app) could be evaluated on its potential before implementation, which is this research' objective. The original TAM formed by Davis et al. in 1989 can be seen in Figure 4.

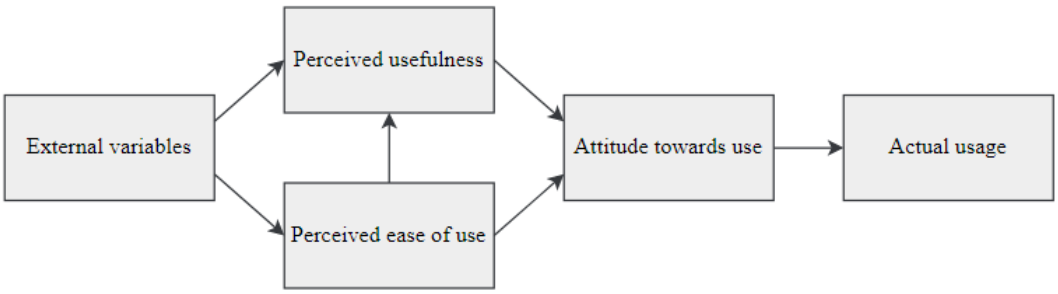


Figure 4. Original Technology Acceptance Model (Davis et al., 1989)

The model consists of the following variables: *External variables, perceived usefulness, perceived ease of use, attitude towards use, intention to use* and *actual usage.* The *external variables* are external influences influencing *Perceived Usefulness* and *Perceived Ease of Use*. *Perceived usefulness* (the perception of the user of whether a system could

improve job performance) and *perceived ease of use* (the perception of the user of whether the use of the system is free of effort) are cognitive responses to the *external variables* and key determents of *attitude towards use*, which is an effective response. *Attitude towards use* again positively effects *intention to use*. *Perceived ease of use* positively effects *perceived usefulness*, which is also a determent of *intention to use*. Eventually, the *intention to use* (whether the user is intending to use the system for its value bringing properties / technology acceptance) is the determent of *actual usage*, which is the behavioral response.

2.7 Propositions

The research of this report is designed through the implementation of the TAM. The model is implemented by measuring each of the variables except *actual usage* (Thus, *external variables, perceived usefulness, perceived ease of use a*nd *attitude towards use*). *Actual usage* is not included in the theoretical framework because this variable is not yet measurable. The *attitude towards use* will represent the desirability. This means that this research will understand a high/low degree of *attitude towards use* as an indicator to a high/low *desirability*. Measuring the *attitude towards use* is therefore the objective of using the TAM.

When measuring the acceptance of an Asian type of Super App, we consider two external variables: *Privacy concerns* and *Available substitutes*. The reason for choosing only these two is because this research' highest point of interest lays in whether there is a desirability

in the Netherlands for super apps just as in Asia, despite the differences in context. The reason for this is since there is already a proven desirability in Asia for super apps, it is sensible to consider only the differences, such as upcoming of internet, the usage of online banking, the political system, culture and norms and other aspects, mentioned in Paragraph 2.1.3. Privacy is perceived very differently because of cultural and political differences and there are no available substitutes in Asia when super apps rose, which is not true for the Netherlands.

The construct *Privacy concerns* measures to what point Dutch users are willing to give their information, daily activities and financial activities to a commercial company, and its effects on perceived ease of use and usefulness. The construct derives from the privacy concerns literature (Milne and Boza, 1998), which was also used in the model of Eastlick et al. (2006).

The construct *Available substitutes* measures to what extent Dutch users are willing to switch from the apps they currently use, which separately offer all services a super app offers, to an actual super app, and its effects on perceived ease of use and usefulness. This construct is based on the widely used economic concept of availability of substitutes: "*The more possible substitutes there are for a given good or service, the greater the elasticity. When several close substitutes are available, consumers can easily switch from one good to another even if there is only a small change in price. Conversely, if no substitutes are available, demand for a good is more likely to be inelastic.*" Lumen (n.d.). The perceived ease of use is considered by the *user-friendly eco-system* a super app

offers. This construct measures the Dutch user's perceived ease of use of a user-friendly eco-system.

The perceived usefulness is measured through the *large variety of services*. This construct measures the Dutch user's perceived usefulness of a large variety of services under one app. The research model used for researching desirability is represented in Figure 5. This model integrates the previously discussed attributes of super apps that might have effect on its desirability into the TAM. The model itself has been validated many times and has no need of testing.

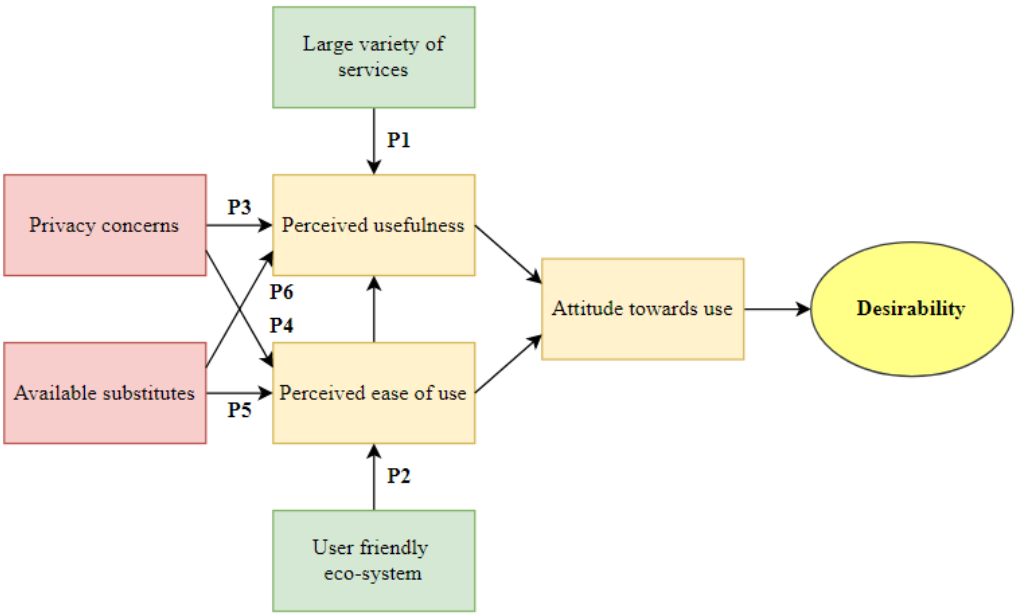


Figure 5. Desirability Research model

3. Research Design

3.1 Data Collection & Analysis

For data collection, one-on-one interviews are carried out which are done through online solutions. The reason for choosing interviews to measure the constructs rather than surveys is that the purpose is to find out how potential users feel about the certain constructs while having underdeveloped variables.

As discussed in the Literature & Theory chapter, this research' focus is on desirability of the super app. The respond of target consumers to product concept is yet unknown and will be this report's main research. The interview questions are based on the six statements proposed in the previous chapter. These propositions derived from the desk research on super app features; the theory of Zemlickiené et al. (2017), which concerns the value for consumer (Figure 3); the theory of consumption value by Shet et al. (1991); and the importance of privacy for consumers (Lebo, 2019). The interview questions are constructed and distributed on basis of the TAM (Davis et al., 1989) so that an understanding of the impact of these propositions on the eventual attitude towards use and thus desirability can be established (Figure 5).

The Interviews are conducted in a semi-structured format, so that the collected data can more easily be compared or contrasted with each other. Another reason for this is to ensure the operationalization of the constructs is done correctly so that each construct's aspect is included, and content validity is secured. The collected data is coded and analyzed through thematic content analysis (Braun & Clarke, 2006). The interviewee's answers will be analyzed on basis of patterns and themes, which will be done at a

semantic level (Braun & Clarke, 2006). Through this analysis, parts of the answers are labeled based on positive and negative perceptions of the measured variable. This leads to the possibility of comparing the answers of the various interviewees. The research's interviews are conducted with a sample of 9 interviewees. This correlates with the 6-12 range suggested by Guest et al. (2006). During their research they found that 6 interviews reach a 70% saturation (the point when incoming data produce little or no new information) and with 12 interviews 92%. Other articles such as Morgan et al. (2002) support this finding. They found that found that 80-92% of concepts are identified in the first 10 interviews. The units of observations are a random sample of different sexes, ages, educational backgrounds and professions. interviewees are selected on the following criteria: He/she lives in the Netherlands; He/she is 18 years old or above; He/she has a smartphone; he/she is (physically/mentally) able to use a super app (potential customer); he/she can make in-app payments. The sample is random because of the assumption super apps might be used by anyone capable. The questions of the interview are seen in Appendix 5.

4. Results

4.1 Role of the large Variety of Services

This paragraph covers the results of the findings regarding **P1**: *Large variety of services has a positive effect on perceived usefulness.* Overall, the large variety of services is received positively. As seen in the frequency table of the labels that cover the category 'Large Variety of Services' (Table 2), statements that are pro 'large variety of services' are mentioned 18 times. The population perceives the large variety of services as convenient and possible a better solution than current the current situation they are in, which is switching to different apps for different services.

Despite mostly positive results, there are 6 statements against this super app property. There are various reasons for these. A quote from an interviewee: "*I think it's best that the developer improves on the existing services, rather than expanding on the wide variety of services*." This interviewee believes that the focus of a developer on expanding on a wide variety of services might lead to a loss of quality per service. Another quote: "*It seems wiser to me not to have too many functions, otherwise using the app will only become more difficult*." This interviewee perceives too many functions as a cause of a loss of ease of use. Also, it is believed too many services might lead to an overwhelming experience as seen in the following quote: "*There is a risk that many users may become overwhelmed with the many options and find the app too difficult and quit*".

As mentioned earlier in the previous chapter, it is a key property of a (Asian) super app to manage the wallet of the user. Nevertheless, the interviews show a disagreement on the desire of such a service, as there are 3 positive statements and 6 negative statements on

super app wallets. The positive statements mostly describe an inbuilt wallet as convenient: "*Handy, if at least it goes through a secure way*", and something inevitable for the future: "*I think this is going to happen eventually. I no longer see money as a means of payment in the future, perhaps more as points. That can also be in a super app.*". The statements against the wallet service contain concerns about safety, privacy and overall trust.

LARGE VARIETY OF SERVICES	FREQUENCY
Pro large variety of services	18
Against large variety of services	6
Pro wallet service	3
Against wallet service	6

Table 2. Label frequency table for category: Large Variety of Services

As seen in Table 3, Super apps are overall perceived as useful. They can add value and make life easy through the convenience of many services in one app. Other useful properties which are mentioned are a clear overview of activities and super apps being possibly time saving during the day.

PERCEIVED USEFULNESS	FREQUENCY
Super apps could add value	5
Super apps could make life easy	15
Clear overview of activities	3
Time saving	5

Table 3. Label frequency table for category: Perceived Usefulness

Based on the results of the interviews it can be stated that a positive perception of the large variety of services mostly has positive effect on the perceived usefulness of the super app. Nonetheless, a valid basis is set that a large variety of services could become overwhelming and negatively impact usefulness. The results show that the positive overrules the negative significantly in numbers and thus, P1 is expected to be true.

4.1 Role of the User-Friendly Eco-System

This paragraph covers the results of the findings regarding the second proposition: **P2:** *User friendly eco-system has a positive effect on perceived ease of use*. As seen in Table 4, There are only statements that are for the eco-system (10) and none against. "*If an app offers many services, it must of course work well. It must be user-friendly to make its use attractive. After all, I think that's also the goal of a super app: the convenience of arranging everything in one and the same app.*": According to this quote from an interviewee, it seems that an eco-system is perceived as a necessity for it to be easy to use. This is seen more often in the results as many statements (8) declare that a user-friendly eco-system equals the ease of use. It might even impact the perceived usefulness of the app as seen in the following quote: "*Since you are offering a problem-solving service it must be easy to use, otherwise there would be no reason to use it.*"

USER FRIENDLY ECO-SYSTEM	FREQUENCY
Pro eco-system	10
Eco-system equals ease of use	8

Table 4. Label frequency table for category: User Friendly Eco-System

There are as many statements that conclude a super app is easy to use as statements that declare they are not.

PERCEIVED EASE OF USE	FREQUENCY
Super apps are easy to use	9
Super apps are not easy to use	9

Table 5. Label frequency table for category: User Friendly Eco-System 2

The results give a very clear message that indeed a user-friendly eco-system increases the ease of use and even equals ease of use. Thus, P2 is expected to be accepted.

4.2 Role of the Available Substitutes

This paragraph covers the results regarding two propositions which are **P3:** Available substitutes have a negative effect on perceived usefulness. And **P4:** Available substitutes have a negative effect on perceived ease of use. As seen as the label frequency table of the category available substitutes (Table 6), there is a believe that super apps might act as a substitute for other apps (4): "*Asian countries show that it is very possible to arrange many things via a super app. If it is properly arranged, I see no reason why it cannot serve as a replacement.*" The population is mostly willing to switch to a super app (7): "*It seems*

attractive to me to do everything via one app. I might not even use other apps." It is mostly agreed on that they might abandon their current apps for a super app (6): "*The apps that become redundant in the event of a super-app launch will be deleted.*" A fewer number of statements are agreeing that super apps might be used together with other apps (3), but it is mostly agreed on that "*it would be an overkill*". Various reasons are given to switch from different apps to one super app (8). These cover the following topics: making life easier, ease of use, time saving and a clear overview.

Nevertheless, there are also reasons given not to switch to a super app (10), which is even more frequent than reason to switch. The main reasons are privacy, avoiding fraud, glitches, and bugs. There is also doubt for switching (3) because of not believing it would be easy to use, qualitative and safe (in regards of privacy). One interviewee does not believe in super apps because of the doubt of available room in the market.

AVAILABLE SUBSTITUTES	**FREQUENCY**
Believing in super apps as a substitute	4
Willing to switch to a super app	7
Abandoning other apps and use super app only	6
Willing to use super app together with other apps	3
Reasons to switch	8
Reasons to not switch	10
Doubting to switch to a super app	3

Table 6. Label frequency table for category: Available Substitutes

In the results, available substitutes is not highly linked to the perceived ease of use. The interviewees rather turned to reasons to switch or not to switch to a super app, which also has no obvious outcome. Reasons for not switching does contain a negative perceived ease of use, but this is also not a highly evident reason.

Based on the results it seems that the availability of current existing substitute apps has a small negative to no effect at all on perceived usefulness and perceived ease of use. There is a lack of evidence to accept both P3 and P4.

4.3 Role of Privacy Concerns

The results regarding the propositions **P5:** *Privacy concerns has a negative effect on perceived usefulness.* and **P6:** *Privacy concerns has a negative effect on perceived ease of use.* are covered in this paragraph. In Table 7 it is seen that there is an overall concern about privacy. There are 7 statements which show no concern about privacy. The reasons for no concern are reflected best in the following three quotes; *"I would trust a super app the same way I would trust big tech companies."; "I do trust these large companies with this data, since these companies already know a lot about me now. They currently own data on billions of people."* and *"I would be naive if I think my data is private these days. Functionality is more important."*

Statements that show slight concern (10) have the highest frequency. Them trusting a super app with their privacy depends mostly on whether a company that releases the super app has a positive and known image and the right safety measures regarding privacy.

Concerned statements about privacy (9) shows such a concern that it might influence the attitude towards using a super app. The statements give the impression that the population rather does not want to share any private data, especially those that enable payments in the in-app wallet.

Despite the privacy concerns, the population would mostly trust a super app more if the organization behind it would be transparent about their use and management of user data.

PRIVACY CONCERNS	FREQUENCY
Not concerned about privacy	7
Slightly concerned about privacy	10
Concerned about privacy	9
Transparency increases trust	8
Transparency does not increase trust	2

Table 7. Label frequency table for category: Privacy Concerns

The concern of privacy does mostly not have effect on the perceived usefulness or perceived of use, but rather direct negative effect on the attitude towards use. Privacy is so important that, no matter the perceived usefulness or ease of use, protected data is a condition that has to be met for desirability to be measured. It indirectly affects perceived usefulness; not per se through non-useful functions, but rather by data security aspects. Thus, P5 and P6 are expected to be rejected.

4.4 Role of Attitude Towards Use

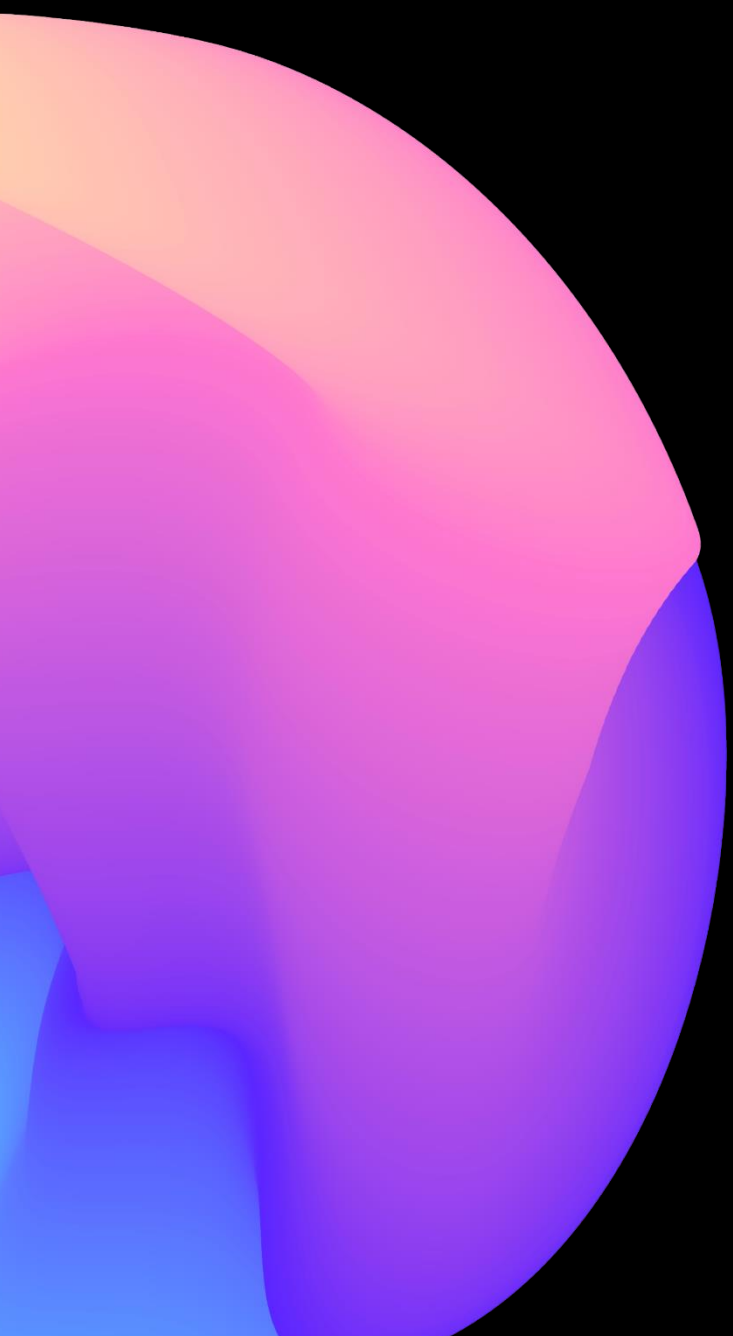
The interviews finished with questions regarding the interviewee's attitude towards using a super app with two focus point: their willingness to use and their willingness to pay for services of the super app. In Table 8 the frequencies of the labels are stated. There are 9 statements that suggest willingness of using a super in NL. The overall reasoning behind this attitude depends on the following principles: a super app should be safe, easy to use, useful and bug free. There is only one statement against the use of super apps which is a result of high concern of privacy and not wanting to share personal data.

There seems to be a division in the willingness to pay for a super app (12 vs 7). Paying for a super app depends mostly on whether it increases value compared to other apps, and it should not exceed the prices of the services on other apps. The reasons for not paying for a super app are the following: there is no desire to pay more for ease, paying for super apps is too risky because it is something new and unknown, and it is expected that the basic services and services which are needed are for free.

ATTITUDE TOWARDS USE	FREQUENCY
Would use a super app in NL	10
Would not use a super app in NL	1
Would pay for super app	12
Would not pay for super app	7

Table 8. Label frequency table for category: Attitude Towards Use

5. Discussion



5.1 Interpreting Results

Super apps are currently flourishing in Asian countries and are impacting society positively by supporting users in their daily activities and supporting business and economies by allowing them to exploit the traffic. The lack of a dominating super app in the Netherlands leads to the disregarding of certain advantages. Consumers in western countries do not have the same convenience as consumers in Asia, as they are able to enjoy the eco-system super apps offer which makes daily life easier in different respects. SME's and big tech have a probability to miss out on revenue, as was shown that super apps have a high ARPU. There is a big difference in the context of societal development, economy, culture, politics, between Asian countries and the Netherlands. Relevant differences are a later and by the government initiated relatively short digital transformation, different economic and political system and culture. In the case of China's WeChat , the developments of digital transformation in China laid a foundation for the super app, which launched in 2011. WeChat did not start off as a super app, but as a communication app. The extra features which were added later, fit perfectly in the environmental context the app was growing in; rise of tech and digitalization to make life more efficient. The objective of this research is to add to current base of knowledge on super apps by gaining understanding whether the concept of a super app could have commercial potential (from a company perspective), or even be a next disruption in the western mobile apps industry, despite the differences with Asian countries. This objective is approached through a Design Thinking lens. This is done by considering the following

three spaces: desirability (user's perspective), viability (business perspective) and feasibility (technological perspective) (Chasanidou et al., 2015).

5.1.1 The role of Variety of Services

This section covers the interpretations of the results regarding **P1**: *Large variety of services has a positive effect on perceived usefulness.* Figure 6 shows the distribution of the amount of positive and negative responses regarding this topic during the interviews.

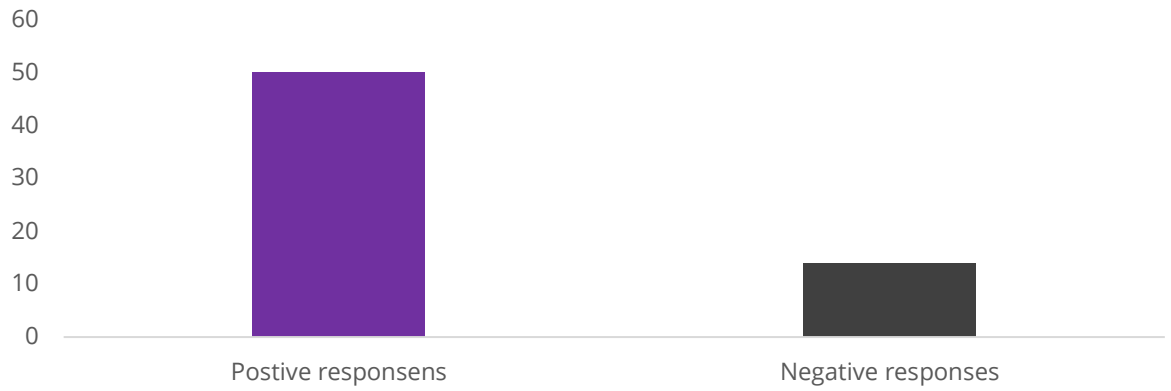


Figure 6. Large Variety of Services: positive responses vs. negative responses

Based on the results of the interviews it could be stated that the large variety of services is received positive and has a positive effect on the perceived usefulness of the super app and P1 is expected to be true. This is mostly because a large variety of services is perceived as something that could be utilized in a way to make the user's life easier. According to Stafford and Gillenson (2004), the motivation of mobile device users is strongly linked to the gratifications which are related to gains in efficiency: in the case of super apps, it is the focus lays on increasing efficiency.

However, there are comments that suggest a large variety of services might decrease the ease of use of a super app; an effect which was not included in the research model. It thus seems that there is a possibility for a negative effect of large variety of services on the perceived ease of use. According to the study of Davis (1989) in 'Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology', perceived ease of use is highly correlated self-reported current use. This could explain why a super app with many features, something which is currently spread onto various apps, can intimidate users and give them the expectancy of the app being hard to use.

Davis (1989) also found that the usefulness-usage relationship compared to the ease of use-usage relationship is much more strongly linked. This means that the positive reactions, which support that a large variety of services does indeed increase the usefulness of the super app, weigh stronger on attitude towards use than the negative reactions which suggest that a large variety of services might harm the ease of use.

Other findings from the interviews show that potential users believe that a large variety of services has a negative effect on the overall quality of the app, because this places focus on many services instead of one. There is thus a possibility that a large variety of services has a negative effect on perceived quality of the super app. The study of Olaleye et al. (2018) explains this by indicating that performance expectancy is the highest predictor of tension free and mobile app usefulness in the context of online and in-store retailing.

The wallet management, one of the main super app functions which works as a basis for all other services, is perceived mostly negatively based on privacy reasons. Potential users

are less willing to share banking information etc. This means that a large variety of services might increase privacy concerns. The empirical results of the study of Olaleye et al. (2018) support the importance of trust in using a retailing mobile app, which coincides with the results of this study's interview. Privacy concerns and trust are important predictors of usage.

5.1.2 The role of User-Friendly Eco-System

This section covers the interpretations of the findings regarding the second proposition: **P2:** *User friendly eco-system has a positive effect on perceived ease of use.* The results give a very clear message that indeed a user-friendly eco-system increases the ease of use and even equals ease of use; P2 is to be accepted. Figure 7 shows the distribution of the amount of positive and negative responses regarding this topic during the interviews.

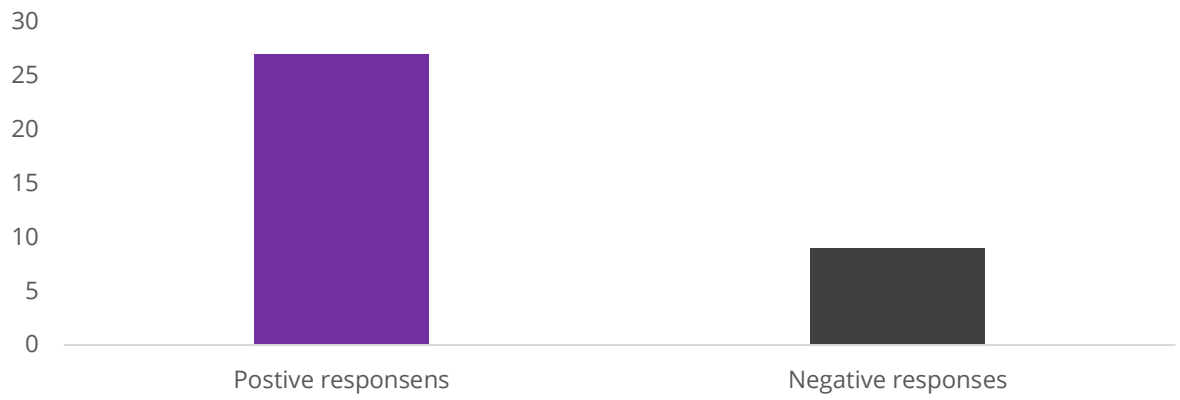


Figure 7. User-Friendly Eco-System: positive responses vs. negative responses

Some answers suggest that the eco-system is a condition for the usefulness of the app. There might thus be an effect of the eco-system on perceived usefulness. The reason for

this is that the large variety of services might only be manageable through a user-friendly eco-system and thus only such an eco-system could make the super app useful. In Table 5, it is seen that statements that declare that super apps are easy to use appeared the same number of times as statements that did the opposite. Reasons given by the sample for ease-of-use correlate all to the dependence of quality; quality has an impact on the ease of use. This relates to what is mentioned in the previous paragraph: how large variety of services has a negative effect on perceived quality of the super app and how the study of Olaleye et al. (2018) explains this by indicating that performance expectancy is the highest predictor of mobile app usefulness. Reasons given against ease of use are also like that mentioned in the previous paragraph; a large variety of services might be overwhelming and lead to a decrease of ease of use.

5.1.3 The role of Available Substitutes

This section covers the interpretations regarding the results of two propositions which are **P3:** *Available substitutes have a negative effect on perceived usefulness.* And **P4:** *Available substitutes have a negative effect on perceived ease of use.* Figure 8 shows the distribution of the amount of positive and negative responses regarding this topic during the interviews.

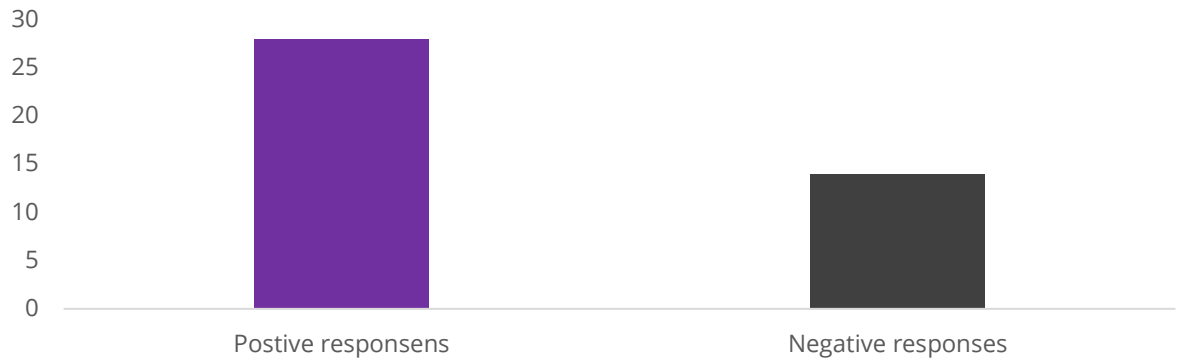


Figure 8. Available Substitutes: positive responses vs. negative responses

Based on the results it seems that the availability of current existing substitute apps has a small negative to no effect at all on perceived usefulness and perceived ease of use. This means people are mostly willing to switch because they can perceive the usefulness and ease of use of an all-in-one super app, which agrees with the hypothesis of the TAM. On the other hand, available substitutes might have a negative effect on attitude toward use as in willingness to switch. Because of the existing conform of Dutch users in their current apps, the willingness to switch to a super app might be avoided. Hinderances for switching are learning something new, trusting your privacy to a new party, being content with the current situation and avoiding possible fraud and glitches.

5.1.4 The role of Privacy Concerns

The interpretations of the results regarding the propositions **P5:** *Privacy concerns has a negative effect on perceived usefulness.* and **P6:** *Privacy concerns has a negative effect on perceived ease of use.* are covered in this section. Figure 9 shows the distribution of the amount of positive and negative responses regarding this topic during the interviews.

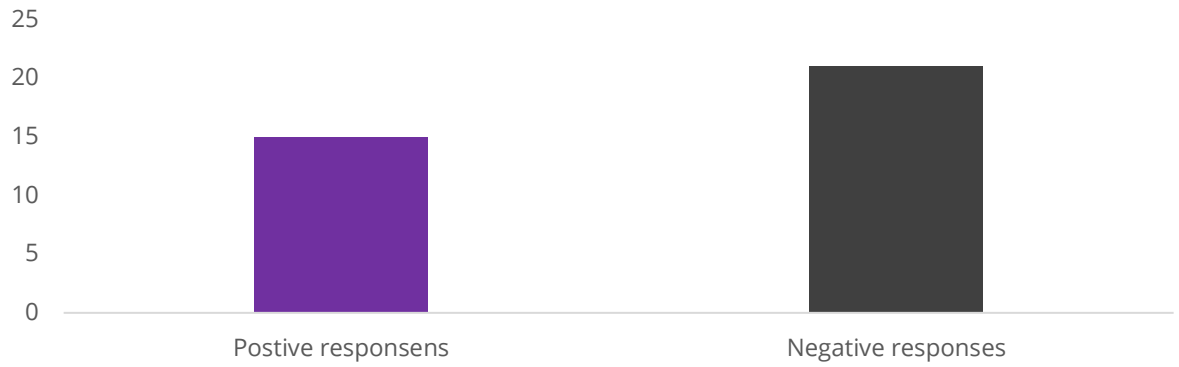


Figure 9. Privacy Concerns: positive responses vs. negative responses

There are statements that show no concern of privacy, but more that show slight to much concern. This concern of privacy does mostly not have effect on the perceived usefulness or perceived of use, but rather direct negative effect on the attitude towards use. This is consistent with the results of the study of Brown et al. (2004), Wherein it is said that the way in which personal data is handled appears to be critical in online purchasing behavior. The propositions could be replaced with the following proposition: privacy concern has a negative effect on attitude towards use: a super-app can be considered as truly useful and user-friendly only when there is no major privacy concern that will prevent users to commit to this app. All in all, based on the results it can be said that despite the privacy concerns, the population would mostly trust and use a super app more likely if the organization behind it has a certain degree of brand awareness and would be transparent about their use and management of user data.

5.1.5 The role of Attitude Towards Use

The interview finished with questions regarding the interviewee's attitude towards using a super app with two focus points: their willingness to use and their willingness to pay for services of the super app. Figure 10 shows the distribution of the amount of positive and negative responses regarding this topic during the interviews.

Figure 10. Attitude Towards Use: positive responses vs. negative responses

There seems to be a division in the willingness to pay for a super app. Paying for a super app depends mostly on whether it increases value deliverance compared to other apps, and it should not exceed the prices of the services on other apps. The reasons for not paying for a super app are the following: there is no desire to pay more for ease; paying for super apps is too risky because it is something new and unknown; and it is expected that the basic services and services which are needed are for free. It is thus important for enterprises developing a super app to understand that generation of income relies mostly on third parties and not so much on direct payments for services from users.

5.1.6 Summary

As mentioned previously, this research draws commercial potential out of the three design thinking lenses: feasibility, viability, and desirability. Both feasibility and viability seem not to change based on the geographical setting of the super app and thus commercial potential depends on the desirability in the Netherlands.

Based on the results, there is a willingness to use a super app in the Netherlands and thus a desirability for one. However, this depends on the following qualities: a super app should be safe (privacy), easy to use, useful and bug free (highly qualitative app). The results of the study of Chin et al. (2017), suggest that trust has a strong positive relationship with the intention to install mobile apps, while risk has a weak relationship. The results of this research show that brand awareness, which is the antecedent of brand trust, decreases privacy concerns, which corresponds to the findings of the researchers. On the other hand, they suggest that risk, the antecedent of desire for quality, has a weak relationship with installing mobile apps, which contradicts the findings of this research that suggest that the app being bug free and qualitative is an important predictor of the desire of a super app.

On account on the fact that there is measured a potential existing desirability under Dutch potential users through the interviews, it might be concluded that there indeed is commercial potential for a super app in the Netherlands, despite the differences in context with Asia. Based on this conclusion, theoretical and practical implications are formulated in the following paragraphs.

5.2 Theoretical Implications

Based on the results and interpretations, a revised theoretical framework is established and seen in Figure 11. This new framework closely resembles the roles of various constructs, both priorly determined and found in research. It contains all findings mentioned in the previous paragraph. Its purpose is acting as a base for future research regarding the desirability of super apps.

When comparing this framework with the work of Zemlickiené et al. (2017), which established a theory of predictors for commercial potential (Appendix 3), similarities are recognized. The researchers suggest that the situation on the market predicts the commercial potential of the new technology. The highest scoring factor of this predictor is the "*share of target market of potential product on the moment of evaluation*". The available substitute in the market diminishes the perceived usefulness and ease of use but also the intent of using it altogether. This predictor seems to have a negative relation with desirability. Another predictor is the value for the consumer. The "*level of uniqueness of value provided tot potential user*" is a factor of this predictor. Comparing this to the framework, we see that the unique value of super apps, which is a large variety of services under one roof, does indeed has a positive role towards the perceived usefulness. What differs from the theory of the value for the consumer, is that when a certain value proposition is perceived as something as hard to realize or hard to use, this might have a negative effect on the perceived quality, perceived ease of use, and even privacy concerns. According to Butler et al. (2002), adopting new technology has many

affecting factors, of which many high scoring factors explain the findings of this paper's research. As seen in in the model, large variety of services has a negative effect on various factors. According to the theory of Butler et al. (2002) reliability of the technology scores as strongest predicting factor for technology adoption, which explains that the perception of users that a large variety of services is hard to realize in a qualitative manner, has an indirect negative impact on desirability.

Technology features are another predictor for commercial potential. A factor of this predictor is complexity of technology. Super apps address this piece by adding the eco-system to the app. As seen in the framework, this most likely does have a positive effect on perceived ease of use and through this construct on attitude towards use and desirability.

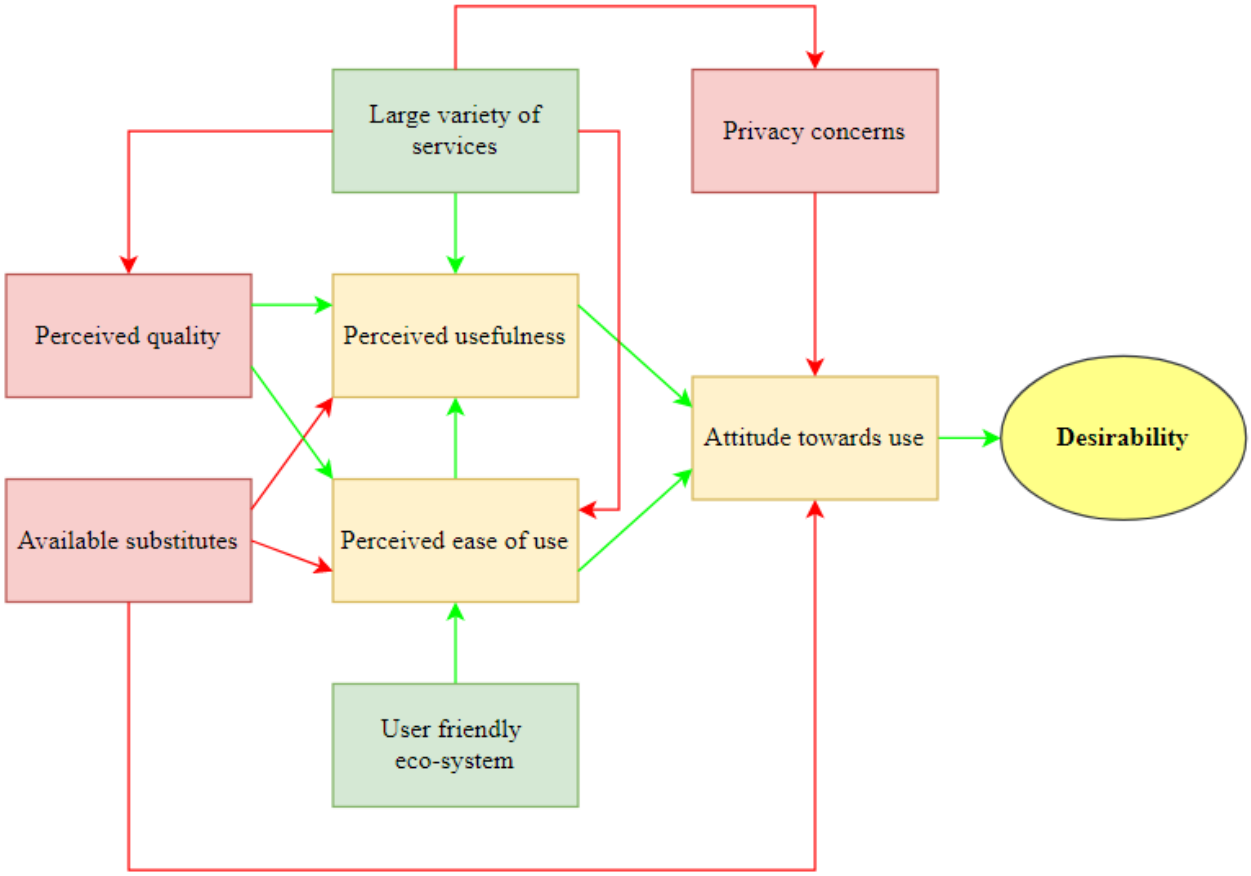


Figure 11. Revised Theoretical Framework

Green lines represent positive effects, red lines represent negative effects.

5.3 Practical Implications

Based on the interviews, it might be concluded that a super app is desirable in the Netherlands. The interviews also show various impacts of the perks and cons of super apps on desirability. Based on this knowledge, practical implications are formulated in this section for entrepreneurs, managers or app developers that inspire to develop and launch a super app.

To build a super app the business must meet the condition that the app contains various services. An effective manner to organize this is to build a customer base based on one service and adding new services to this same customer base. Each added service could be tested at these customers before implementing fully. Businesses that are already have a (large) customer base have a head start on startups. When a company already offers different services but via different channels/under different names, this company must combine these services through one channel/under one name to meet the conditions of being a super app. Wallets are a main function of super apps in Asian countries, but according to the interviews, these are not so much liked in the Netherlands. The reason for this is most probably the differences in societal development: Asian users do not have online banking and the wallet inside the super app is their only access to this feature. In the Netherlands, online banking is a technology widely accepted for a long time and thus there is no need for such wallet; instead, it may even form a hindrance for switching to a super app, as it changes their current ways of paying and it requires a high level of trust in the launching company.

The role of a user-friendly eco-system is prevalent. Without it, the perceived ease of use and perceived usefulness will diminish among potential users, which again leads to a lower desirability. It is thus important that services work harmonious and are easy to handle in the app.

Businesses must consider the complications at a management and operation level that come with this. Changes must be made in the organization that support a better overview

of activities and a closer customer relationship which leads to higher satisfaction rates. Also, Managing and storing data of users is of high importance. Companies must make sure that user data is stored safely and according to legal terms. Based on this research, privacy concerns are very common among potential users and transparency of safe management of data is highly favored.

Combining current services, adding new ones, creating a higher satisfaction rate and making managing data safe priority does come with financial costs which has impact on the viability of the super app. Businesses have to deal with higher operational costs because the management of operations becomes more complicated. Also, investing in the development and launch of new services come with costs.

To make the super app viable, companies must find ways to increase the ARPU. Every newly added service should lead to a higher revenue per user and should attract more users. However, the generation of income should not depend on users solely. As seen in the results, users are expecting most services to be free or not more expensive than solutions offered by other apps. It is thus important for enterprises developing a super app to understand that generation of income relies mostly on third parties (which use the high daily traffic on super apps) and not so much on direct payments for services from users.

According to the results, if a super app is working well, is easy to use, is not more expensive than other apps and is safe regarding privacy, there is a high willingness to switch from different apps to one super app. This means that execution of the

development and launch are key performances for the commercial effectiveness of a super app.

5.4 Limitations

First, this research' interviews were done through virtual means due to COVID19 measures. This might have induced limitations in achieving the interview's full efficacy in terms of knowledge extraction.

Second, because of the newness of the super app, the amount of literature covering it was scarce. This necessitated the usage of non-academic literature for certain insights, from which its reliability might differ from academic norm.

Third, the conclusion of the commercial potential is partly based on assumptions. This is because the state of feasibility and viability of super apps in the Netherlands is not research thoroughly but only assumed to set a base for the research.

5.5 Future Research Agenda

The current situation concerning COVID19 and the complications that come with it are not considered during this research. For future research, the change of behavior and communication on mass scale during this pandemic might be included as a factor.

This research measured commercial potential only in the Netherlands. The desirability of a super app might differ in other countries and thus so the commercial potential. For future research, differences in results must be taken into consideration.

The impact of privacy on a super app desirability in the west can be a research on its own. Based on the findings of this research, a super app could be both useful and easy to use in terms of features and technology, but holds a solid privacy security as an absolute condition.

The opinions on a large variety of services differ a lot. Based on the results, it might have a small negative impact on the perceived usefulness and ease of use. Researching this relation in an empirical setting and finding factors that influence this relation is sequacious for future research.

This research' qualitative nature's purpose is to uncover underlying mechanisms, identify new relationships through the propositions. Qualitative research is chosen purposefully with the intention to increase knowledge on the topic of desirability of super apps in the Netherlands. The research can be done based on a larger sample and though a quantitative approach to add additional knowledge and to further test the significance of the found relations. The adjusted model (Figure 11) can be used as a basis in an empirical setting.

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Appendices

Appendix 1: Super App Features

WeChat features

- *Messaging*: With alle the features other messaging apps (like WhatsApp) offer, such ass voice messaging, stickers, emoticons, normal and video calls and sharing real time locations with friends.
- *Moments:* Sharing 'moments' in form of text and images/videos on a feed with your friends.
- *Shake/Look Around:* Find random people nearby.
- *Drift Bottles:* Show a message to random people.
- *Read articles:* Read the news, media or blogs and tip authors.
- *Mobile Games:* Play famous mobile games (with friends).
- *WeChat Pay:* A wallet feature to pay online, in stores or transfer money. Other functions of this wallet are repaying credit cards, paying utility bills, recharge mobile phone (call minutes/data), buy wealth management products and virtual currency.
- *Third party services:* Rides, online shopping, food delivery and more.
- *Public services:* Booking doctor appointments, appointments with government agencies, and more.
- *Mini programs:* More than one million available so-called 'mini programs', which are made by 3rd party developers. These mini programs fall in the categories of games, lifestyle, news, e-commerce, tools, travel, entertainment . They are quicker and easier to download via WeChat than via an app store, and they are all accessible with one account. Mini programs give businesses the opportunity to exploit their service/products via WeChat. This makes almost every service/product available on WeChat.
- *WeChat Service Account and WeChat Enterprise Account:* Accounts for businesses that want to make use of WeChat's large traffic for marketing their services and products, or become a third party deliverer for WeChat.

Gojek features

- The first category, *transport & logistics*, consists of ordering a car ride (GoCar), scooter ride (GoRide), luxurious car ride (GoBluebird), postal service (GoSend) and moving service (GoBox).
- The category *food & FMCG consists* of ordering food from restaurants (GoFood), products from different stores/merchants (GoMart) and healthcare services as teleconsultation, pharmacy delivery and hospital booking (GoMed).

- The *payments* category consist of a digital wallet with different functions as splitting bills, paying online and in brick & mortar stores (GoPay), paying monthly bills as water bills, gas, internet, electricity etc. (GoTagihan), paying later (PayLater), insurance (GoSure), Investing (GoInvestasi) and donating (GoGive).
- The category *news & entertainment* include the features of streaming movies & series (GoPlay) and ordering tickets for the cinema (GoTix).
- The last category, *Business,* consists out of a different app called GoBiz facilitates value creation for businesses. The GoBiz app has features as managing GoFood for restaurants, managing in-store orders, accepting GoPay payments, analyzing sales reports and promotion.
- One could also book hotels now through Gojek's partnership with Tiket.com (GoTravel).

Grab

- *Transport* consists out of many features which are taxi service (JustGrab), carpooling (GrabShare / GrabHitch), car rental (GrabCar / GrabFamily / GrabPet / Grab Assist), bus rental (GrabCoach), and hiring a chauffeur (GrabHire).
- *Food* makes ordering food from restaurants possible (GrabFood)
- *Mart* offers deliveries of products from supermarkets like ingredients but also shampoo and other items (GrabMart).
- *Express* allows for door-to-door delivery (GrabExpress).
- *Pay* allows payments in app and transfer of money (GrabPay). GrabPay deliver its users GrabReward points after every payment from which products can be bought. It also facilitates investing (in stocks).
- *Tickets* grants the ability to buy tickets for the cinema.
- *Hotels* allows users to book hotels.
- *Rewards* is the reward system/program mentioned previously, that comes with Grab Pay.
- *Subscriptions* gives subscribed users a stack of vouchers every month to use within the app.
- *Insurance* allows users to insure themselves via the app.
- *Gifts* creates the possibility to grant gift card presents to friends and family.
- *Business* lets businesses that offer their services/products via Grab manage their exploitation via the app.

Appendix 2: Features per Super App

Feature/App	WeChat	Gojek	Grab
Messaging	✓		
Social feature(s)	✓		
Accessing media/news	✓		
Games	✓		
Wallet/pay service	✓	✓	✓
Insurance	✓	✓	✓
Investing	✓	✓	✓
E-commerce	✓		
Taxi service	✓	✓	✓
Carpooling	✓		✓
Food delivery	✓	✓	✓
Product delivery	✓	✓	✓
Postal service	✓	✓	✓
Moving service	✓	✓	
Healthcare service	✓	✓	
Booking appointments	✓	✓	
Booking hotels	✓	✓	✓
Booking flights	✓		
Streaming movies/series	✓	✓	
Cinema tickets	✓	✓	✓
Subscriptions	✓		✓
Rewards/discounts	✓	✓	✓
Gifts	✓	✓	✓
Third party added services	✓		
Business solution	✓	✓	✓

Appendix 3

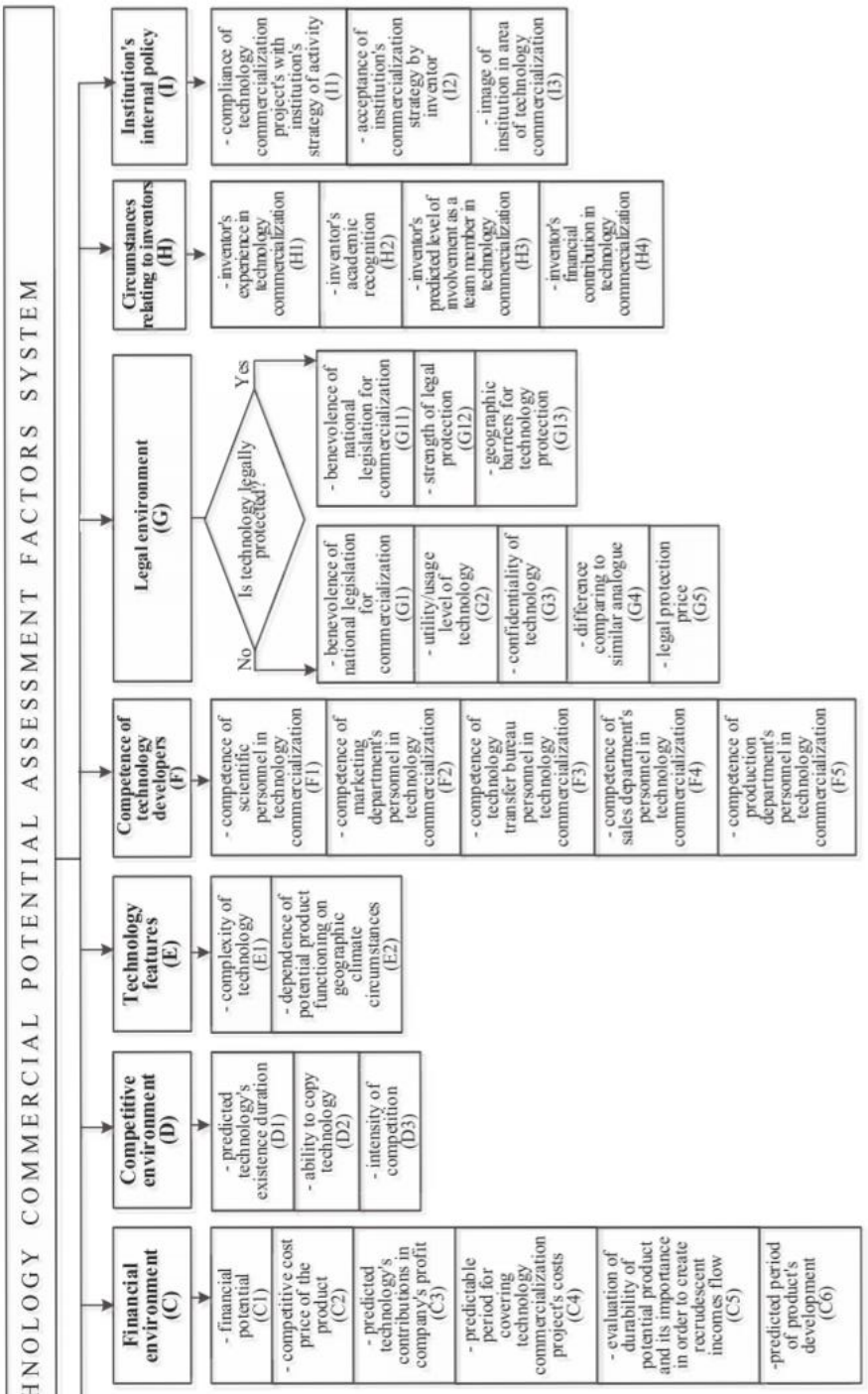

Fig. 1. System of factors used for technology commercial potential assessment
Source: authors.

Appendix 4: WeChat vs. Western Apps

Feature/App	WC	FB	BK	TB	UB	PP	VT	NF	LC	BB	DI	GGD	PC	IM	DG	BO	ID
Messaging	✓	✓															
Social feature(s)	✓	✓															
Accessing media/news	✓	✓															
Games	✓	✓															
Wallet/pay service	✓					✓											
Insurance	✓																✓
Investing	✓														✓		
E-commerce	✓															✓	
Taxi service	✓				✓												
Carpooling	✓									✓							
Food delivery	✓			✓	✓												
Product delivery	✓												✓				
Postal service	✓												✓				
Moving service	✓													✓			
Healthcare service	✓											✓					
Booking appointments	✓										✓						
Booking hotels	✓		✓														
Booking flights	✓						✓										
Streaming movies	✓							✓									
Cinema tickets	✓								✓								

WC: WeChat	UB: Uber	LC: Local Cinema	PC: Postal Company	ID: Independer
FB: Facebook	PP: PayPal	BB: BlaBlaCar	IM: iMove.com	
BK: Booking.com	VT: Vliegtickets.nl	DI: DigID	DG: DeGiro	
TB: Thuisbezorgd	NF: Netflix	GGD: Health Service	BO: Bol.com	

Appendix 5: Interview

Interview Questions (Guide)

Before starting the interview, it is made sure the informed consent form is signed by the interviewer and interviewee.

When starting the interview, the interviewee will be introduced to the origin of current super apps in Asia, its features and the lack of a reigning one in the Netherlands. Then, the idea of using one if it were available is proposed. Subsequently, the following questions are asked:

Questions concerning Available Substitutes

- **AS1:** Do you think the super app could add more value for you instead of the already existing different apps? Please elaborate further on your answer.
- **AS2:** What is your opinion on an all-in-one super app regarding it as a replacement for current solutions? Please elaborate further on your answer.
- **AS3:** To what extent would you abandon your current apps to switch to an all in-one-app? Please elaborate further on your answer.
- **AS4:** Would you use an all-in-one super app aside the current apps you use? Please elaborate further on your answer.
- **AS5:** What would be the biggest reason for you to switch or not switch to a super app? Please elaborate further on your answer.

Questions concerning Privacy Concerns

- **PC1:** Would you trust a super app that offers many services and including a payment method with your private data? Please elaborate further on your answer.
- **PC2:** Do you trust big tech companies (Such as Facebook, Google, Apple etc.) with your private data? If no, please elaborate further. If yes, would you trust a super app the same way?
- **PC3:** Could privacy be the main reason for you not to use a super app? Please elaborate further on your answer.
- **PC4:** Would awareness of privacy practices and how personal data are used make you less concerned about your privacy? Please elaborate further on your answer.

Now, the interviewee will be introduced to the large variety of services a super app offers in a more detailed manner. After, the following questions are asked.

Questions concerning Large Variety of Services

- **LVS1:** What is your opinion on the fact that super apps offer a large variety of service under on app? Please elaborate further on your answer.
- **LVS2:** What is your opinion on the fact that super apps manage the wallets of the user with payment, depositing and withdrawing options? Please elaborate further on your answer.
- **LVS3:** Do you think a large variety within one app is useful? Please elaborate further on your answer.

Now, the interviewee will be introduced to the user friendly eco-system a super app offers in a more detailed manner. After, the following questions are asked.

Questions concerning User Friendly Eco-System

- **UFES1:** What is your opinion on the fact that super apps offer an user friendly eco-system that allows users to easily use and pay for many different services? Please elaborate further on your answer.
- **UFES2:** Do you think an eco-system of services within one app would make these services easier to use? Please elaborate further on your answer.

Questions concerning Perceived Usefulness

- **PU1:** Do you think the services of a super app could make daily mobile tasks/activities easier? Please elaborate further on your answer.
- **PU2:** Do you think having many features on one app is useful? Please elaborate further on your answer.

Questions concerning Perceived Ease of Use

- **PEU1:** Do you think a super app would be easy to use? Please elaborate further on your answer.
- **PEU2:** Would you expect a super app as be easy to use as other apps you use daily? Please elaborate further on your answer.

Questions concerning Attitude Towards Use

- **ATU1:** Would you use a super app if it was available if you were in a country where it is widely accepted? Please elaborate further on your answer.
- **ATU2:** Would you use a super app if it became available in the Netherlands? Please give your main reason for your answer.
- **ATU3:** Are you willing to pay for in-app services just as you would for other apps? Please give your main reason for your answer.
- **ATU4**: Would you be willing to pay more for super app in-app services because of the large variety of services within one eco--system ? Please give your main reason for your answer.

At the end, it is made sure the interviewee leaves the interview with comfort and that the contact details of the researcher are shared for potential future questions of the interviewee.

Appendix 6: Codebook

Area	Code	Example
Available Substitutes	Believing in super apps as a substitute	*"I think it's handy, then I don't have to look up the right app every time."*
	Willing to switch to a super app	*"If the new app has an easy and fast integration of my current apps (everything is easily transferred) then I will switch soon."*
	Abandoning other apps and use super app only	*"If everything is in 1 app, then the other apps will be unnecessary."*
	Willing to use super app together with other apps	*"Yes, if it offers extra functionalities, or if it links certain apps to each other (e.g. KLM app with NS for extra good travel advice)."*
	Reasons to switch	*"Ease. Apps are there to give the user convenience. As long as the super app makes my life easier I will switch."*
	Doubting market is big enough	*"I don't think it can be a replacement because the market is not big enough for it."*
	Doubting to switch to a super app	*"Depending on a number of factors such as: how user-friendly it is, which functionalities and how well it is secured."*
	Reasons to not switch	*"I will not switch if it's not working properly, so bugs or not foolproof in terms of sensitive info. "*
Privacy Concerns	Slightly concerned about privacy	*"Actually, I don't trust big tech companies but you can't ignore it in these times."*
	Concerned about privacy	*"That would be an issue. I would prefer to keep things like this (payment details) private."*
	Not concerned about privacy	*"I do trust these large companies with this data, since these companies already know a lot about me at the moment."*
	Transparency increases trust	*"An explanation of how the data is handled is very important to me, explanation will ensure that the user will start to feel more at home."*
	Transparency does not increase trust	*"Transparacy does not really get my trust up because it is already clear."*
Large Variety of Services (and its) Perceived Usefulness	Pro large variety of services	*"If it ensures that I don't have to switch between different apps and can control everything in 1 app, that would certainly be an addition."*
	Pro wallet service	*"I think this is going to happen eventually. I no longer see money as a means of payment in the future, perhaps more points. "*
	Against wallet service	*"As mentioned before, this could be one of the reasons not to use it. This is a very big step that people can sometimes encounter"*
	Against large variety of services	*" It seems wiser to me not to have too many functions, otherwise using the app will only become more difficult."*
	Super apps could add value	*"I think more value can be added anyway."*
	Super app could make life easy	*"At the moment I don't really run into problems but if I save time and it makes actions easier it seems good to me."*

	Clear overview of activities	*"This could be useful, because it is still a bit difficult to keep up with everything with the different apps."*
	Time saving	*"If it ensures that I don't have to switch between different apps and can control everything in 1 app, that would certainly be an addition."*
	Additional wants	*"Yes, for example, receiving messages from various government agencies etc. in a super app seems useful to me."*
User Friendly Eco System (and its) Perceived Ease of Use	Pro eco system	*"Yes, if an app offers many services, it must of course work well. It must be user-friendly to make its use attractive. "*
	Eco system equals Ease of use	*"I think so since you offer a problem solving service so it has to be easy to use otherwise there would be no reason to use it."*
	Super apps are easy to use	*"If this super-app is well developed, yes. The ease of use is of course 1 of the advantages of the app."*
	Super apps are not easy to use	*" In a super app there are many more components, this could make it a bit more unfriendly."*
Attitute towards use	Open for innovation	*"I am always for innovation."*
	Would use a super app in NL	*"I would use it at some point. If it turns out to be user-friendly and can replace other apps. My privacy must also be well protected."*
	Would not use a super app in NL	*"No, I want my privacy to be protected."*
	Would pay for super app	*"Yes, but this totally depends on the service. Some services are worth paying for and some are not."*
	Wouldn't pay for super app	*"New. I'm fine with the apps I have, I wouldn't pay more for convenience."*

Appendix 7: Invitation Letter (E-mail)

Title: Super Apps: Super Desired or Not?

Dear interviewee,

We are conducting interviews as part of a research study to increase our understanding on whether super apps might have commercial potential in the Netherlands. As a potential user, you are in an ideal position to give us valuable firsthand information from your own perspective on the desirability of such an app.

The interview takes around 30 minutes. Your responses to the questions, both audio and written, will be kept confidential. Each interview will be assigned a number code to help ensure that personal identifiers are not revealed during the analysis and write up of findings

There is no compensation for participating in this study. However, your participation will be a valuable addition to our research and findings could lead to greater public understanding of commercial potential of super apps in the Netherlands.

If you are willing to participate, please suggest a day and time that suits you and I'll do my best to be available. If you have any questions, please contact me at: a.a.gelici@student.utwente.nl

Kind regards,

Anthony Gelici

Appendix 8: Informed Consent

Please tick the appropriate boxes	Yes	No
Taking part in the study		
I have read and understood the study information dated [01/09/2021], or it has been read to me. I have been able to ask questions about the study and my questions have been answered to my satisfaction.	○	○
I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions and I can withdraw from the study at any time, without having to give a reason.	○	○
I understand that taking part in the study involves audio recording and transcription of the audio, which both will be handled confidentially and destroyed after the research has reached it end.	○	○
Use of the information in the study		
I understand that information I provide will be used for an article which increases public knowledge on commercial potential of super apps in the Netherlands.	○	○
I understand that personal information collected about me that can identify me, such as [e.g. my name or where I live], will not be shared beyond the study team.	○	○
agree that my information can be quoted in research outputs.	○	○
I agree to be audio recorded. Yes/no	○	○

Signatures

_____	_____	_____
Researcher name [printed]	Signature	Date

I have accurately read out the information sheet to the potential participant and, to the best of my ability, ensured that the participant understands to what they are freely consenting.

_____	_____	_____
Researcher name [printed]	Signature	Date