

**IMPLEMENTATION OF THE POWER BANK SHARING PROJECT
IN TAMPERE**

Outlook to A Possible Business Idea



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In this thesis, the author aims to find a way to solve the problem of running out of battery with electronic devices such as mobile phones, wireless headphones, and other electronic devices when people are outdoors.

The author is researching whether it is a potential market to implement the power bank sharing project in Tampere, Finland. With the research question, the author introduces the topic's background, what a power bank is, what is the power bank sharing project, and as well how it works.

Furthermore, the author observes the existing charging situation in Tampere's public places. The author uses the quantitative research method by surveying two data samples. One is Chinese students studying in the city of Tampere, and the other one is Finnish students and international students who live in or have traveled to the city of Tampere.

By collecting the survey data, the survey results show that people use their phones frequently in daily life and need enough battery power with the phones or other electronic devices outdoors. Most people meet the drained battery situation when they are outdoors, and most people own a power bank, meaning there is a demand for charging the electronic devices when they are on the go. However, people do not like to carry the power bank or charger on the go because it is not convenient. People have the expectations to recharge the phone without taking a charger or power bank.

As a result, it is a potential market to implement Tampere's power bank sharing project. If the project works well, people will not worry about the battery drainage of their mobile phones and other devices when they are outdoors.

Keywords Power bank sharing project, battery, drained or lower battery, mobile phone, electronic devices

Pages 70 pages and appendices 6 pages

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Appendix 1 Sample one, the survey questionnaire

Appendix 2 Sample two, the survey questionnaire

1 Introduction

This thesis is about finding the solution to drained or lower batteries of electronic devices, especially mobile phones, when outdoors. The author aims to research whether it is possible to implement the power bank sharing project in Tampere, Finland, by analyzing the existing charging market and customers' demand in Tampere, Finland.

1.1 Background

People usually meet the situation of their phone's battery with lower battery power or drained battery when they are on the go. It is exceedingly terrible that the phone's battery drained and people didn't take their portable power bank or charger when people have to deal with their urgent matters. Because things are not always as people planned, such as people can charge their phone and other electronic devices at home, or the electronic devices' battery always has enough electricity. Moreover, it is not convenient if people always carry their portable power bank or charger on the go. Furthermore, sometimes their portable power bank becomes without power also when they go outside.

With the development of the smartphone era, most people spend lots of time on the phone and smartphones, changing people's lives every day. More and more capabilities have increased in smartphones, which have become more affordable. In addition, most smartphones have a large storage capacity and run lots of apps, making power consumption go faster and faster. So a portable power bank becomes a necessary mobile phone accessory according to the data of Statista, which can carry and charge the mobile phones or other electronic devices immediately on the way. (Joshi, 2015, p. 87-89)

1.2 The definition of Power Bank

The power bank is a portable battery which can provide power to electronic devices such as mobile phones, headphones, wireless speakers, and other electronic devices. It can charge by USB Type A, USB Type C, lightning, et cetera, or wirelessly. (Electronicsnotes, n.d.)

A power bank has different sizes, such as slim, pocket-sized, large, and high-capacity. A power bank works as it has to be stored energy up to its maximum capacity by using a wall charger, and then it can charge other devices. A power bank can be called a portable charger as a battery without using wall socket. (Radu, 2021)

A power bank is an option for charging anywhere, and it is lightweight enough to carry anywhere. The power bank aims to free people suffering from low battery anxiety. In the power bank market, there are various capacities, including 5,000 milliampere-hour (mAh), 10,000 milliampere-hour (mAh), and 15,000 milliampere-hour (mAh). And it can be applied to different kinds of electronic devices depending on the USB port, such as Type 2, Type-C, and Lightning. (Belkin, n.d.)

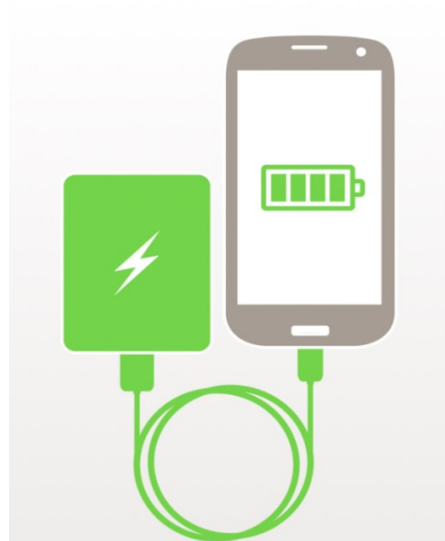


Figure 1. Power bank or portable charging (Belkin, n.d.)

1.3 Power Bank sharing

1.3.1 What is power bank sharing?

Power bank sharing means a short-term rental business service of a portable power bank. It can be applied to shopping malls, cafes, stores, restaurants, metro, parking, university campuses, and other personal stores or public places. People can find a charging station nearby and scan the QR code of the charging station to purchase the rental service (Steen,

2019). Then, users can take the power bank with them when a power bank pops out from the charging station. In addition, they return a power bank to any charging station of the same brand when done with a power bank. (Admin, 2020) Hence, people will be free from using sockets by providing energy from power bank sharing. (Rightech, n.d.)



Figure 2. Sharing power bank (Jiedian) in Beijing, China. (Lin, 2019)

Power bank sharing is a similar business model to that of sharing cars, sharing bicycles, and sharing scooters. This project has operated successfully in China and some other countries, and the business model is trendy for people.

The power bank sharing needs the charging stations, power banks, software for charging stations, power bank sharing mobile app for users, and admin panel. The charging stations have multiple power banks such as six power banks, nine power banks, or 12 power banks. The power banks' average capacity is from 4000 to 8000 milliamper-hour (MAH). (Mobindustry, 2021)

1.3.2 Why people need portable power bank sharing?

Everyone has phone chargers when they buy mobile phones, and most people have portable power banks, so why people still need a sharing power bank in real life? Because not everything in life goes as planned, people plan to charge their phones when they stay home and go outside with full charged phones. For example, sometimes people forget to charge

their phones at night. Other times they forget to carry a charger once they go out. Sometimes power banks do not always have full power when people want to go outside.

Moreover, it is not convenient and troubling when these events happened, but it happens more often than willing. So, power bank sharing becomes a solution when people need to charge their phone without their charger and go into the digital world; it has a universal purpose and helps people when in need. (Brick Technology, 2020)

1.3.3 The situation of Power Bank sharing in China

Power bank sharing project started in 2016 in China. It has been operating for almost five years now. The report of "Analysis Briefing on the Development of China's Shared Charging Industry in 2019" was released by Trust data, a mobile internet big data monitoring platform. It shows that sharing power bank market is growing steadily. The number of users has reached 150 million people in 2019. (Prospective Industry Research Institute, 2019)

Many company's brands of power bank sharing business, such as Jie Dian, cost 0.26 euros for 30 minutes after first 5 minutes. Another one is Lai Dian which costs 0.19 euros for 30 minutes. The third popular one is Xiao Dian, which costs 0.38 euros for one hour after 5 minutes. The fourth one is Energy Monster, which costs 0.19 euros for 30 minutes after first 3 minutes. Jie Dian, Xiao Dian, and Energy Monster have a maximum rental fee of 3.8 euros per 24 hours and full rental price of 12.7 euros for once. But total rental cost for one day of Lai Dian is 2.6 euros. These four power bank sharing companies are the most popular brands in China now. And the other one is Meituan Power bank which is also trendy in the market. Rental fees of these power bank sharing brands also depend on a different area. Customers can rent it from one power bank station and keep it when they are on the way. Then they can return it to another power bank station of the same company brand in same city or different city. (Zu, 2021)

1.3.4 The situation of Power Bank sharing in other countries

Some power bank sharing companies in other countries are UK startup ChargedUp which has over 2,000 power bank stations in Europe. Customers can choose to pay the rental fee for

hourly rate but up to five hours, and the rest of the day will be free. Or also can choose to rent for one day. Another one is New York RedShare which has maximum rental fee for one day, adds small rental fee plus tax after first 24 hours, and rental price depends on different locations. After three days, it will be considered for purchase by customers. The third one is Powercube which crosses the United States and meets the standards of US, European, and Japanese. As well as after 800 rentals, it can recycle. The fourth one is Sweden's Brick. The fifth one is New York CoCharge which costs a dollar an hour and offers monthly membership. If customers didn't return the power banks for more than 48 hours, it would cost a \$30 fee plus tax. The sixth one is European power bank sharing company Naki Power which has hundreds of charging stations in Paris, Berlin, Brussels, Munich, and Madrid. Its rental fee is 0.5 euros for 30 minutes, and 6 euros is the maximum rental fee for one day. Also, customers have to pay 30 euros for purchasing if they did not return the power bank after five days. (Matyunina, 2020)

1.4 Research questions

Power bank sharing project might be a solution for solving people's phone battery drain or lower power when people are outside. The business idea is helpful for modern people to solve the problem of battery drain in the digital world. Because of this the research question for this thesis is as follows:

Is there a potential market for implementing the sharing power bank project in Tampere?

1.5 Research Objective

The sharing power bank focuses on solving phone charging problems when people are on the go without always carrying any of their own charging devices and no need to spend time to charge their electronic devices with power sockets or charging cabinets. So, the research objective is to implement the power bank sharing project in Tampere to make people's lives easier if it can work well by researching whether it is a potential market to implement this sharing power bank project in Tampere.

People can go anywhere without worrying about their phone's battery percentage. It is easy to find a sharing power bank station through a sharing power bank app for charging their phones or other electronic devices by implementing the power bank sharing project in Tampere. People can rent and carry the portable power bank anywhere and return it to any other power bank station with the same brand when the phones are fully charged or enough power for people at that moment.

1.6 Charging situation of Electronic devices in Tampere public places

1.6.1 Introduction of Tampere

Tampere is located between Lake Näsijärvi and Lake Pyhäjärvi. It is the third-largest city which has 238,140 inhabitants (year 2019). There are more than 21,800 schoolchildren and students in the city. Most people are well educated. For instance, Almost 78 percent of the population have completed post-primary education. Tampere has convenient transportation, and there is 176 kilometers road distance from Tampere to the Capital, Helsinki. (Tampere, 2020)

The author chose Tampere as a test city because it is the third-largest city in Finland, and the author lives in this city. As the following figure shows, the number of Tampere inhabitants is 241,009 inhabitants, third-largest city in Finland in 2020. (Niinimäki, 2021)

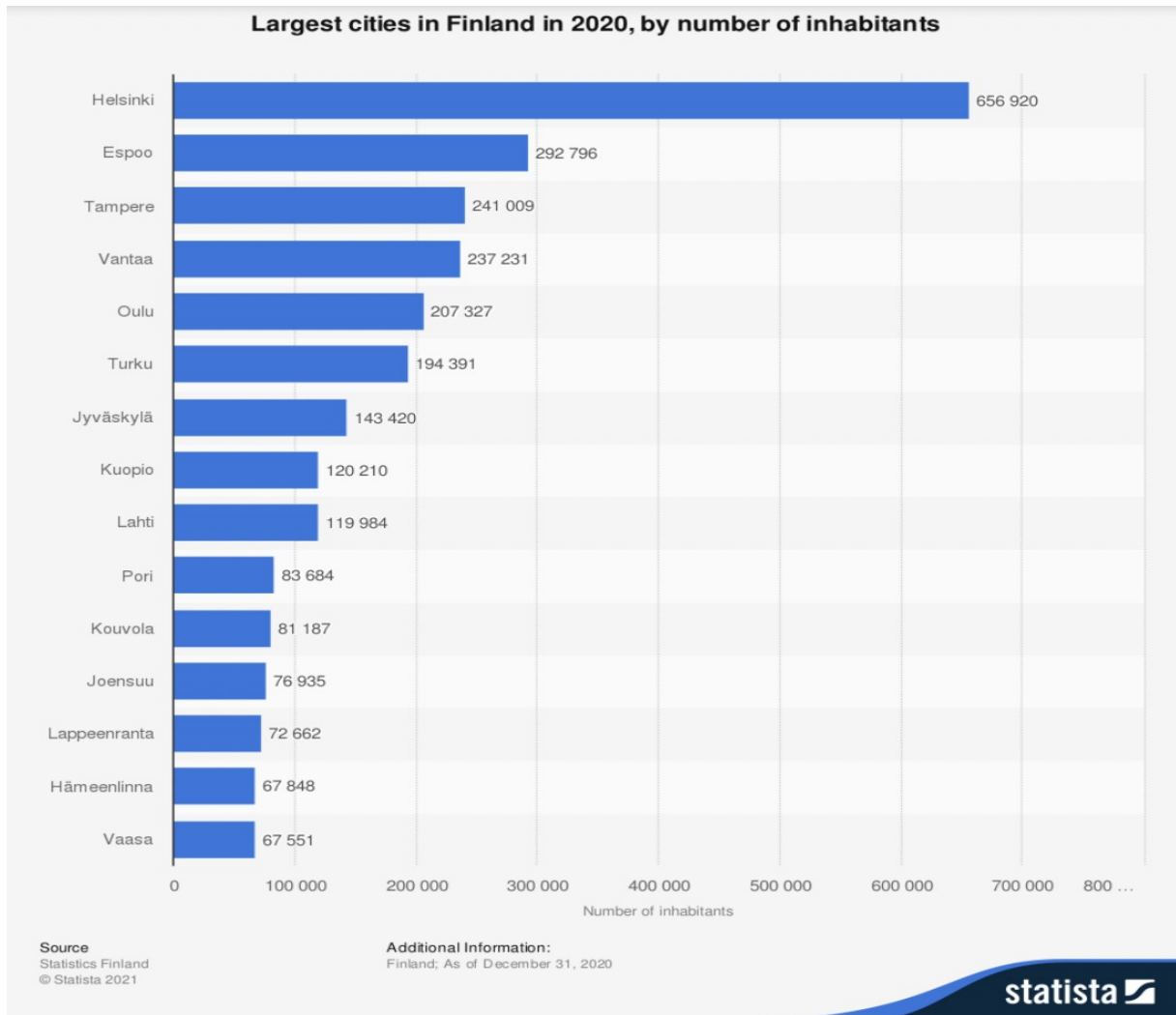


Figure 3. Largest cities in Finland in 2020, by number of inhabitants. (Niinimäki, 2021)

In Tampere, there are shopping malls such as Koskikeskus, Kauppakeskus Ratina, Stockmann, Sokos. Moreover, there is Tampere public library in the city. The author went to the shopping mall Koskikeskus, Kauppakeskus Ratina, Sokos, Stockmann, and city library to look for the charging points and consult with shopping mall staff about the charging situation.

1.6.2 Charging situation in Shopping malls of Tampere

Koskikeskus

In Koskikeskus, the author consulted with Elisa's staff about the charging point and wireless charging points or hot spots in the Koskikeskus shopping mall. They said there are no

charging points or wireless charging points and suggest the author check it in Kauppakeskus Ratina.

The author went around in the shopping mall and found that there are some power sockets in public seats that can charge people's phones with their chargers, but because of the Covid-19, now chairs in public places are not allowed for use as follows:



Figure 4. Power sockets in public seats in Koskikeskus. (Lin, 2021)

Then the author consulted with one restaurant staff about the charging points in Koskikeskus. She suggested to the author to head downstairs and check whether there are any charging cabinets, others she does not know. But the map shows that there is one charging box in one restaurant but it was closed. The charging point is a lockable mobile phone charging cabinet. People can lock their phone in charging cabinets, leave it there when their phone's battery dies, go shopping, have a coffee, et cetera. This charging point also aims to solve the problem of the phone's battery because mobile technology and mobile devices developed rapidly. As large touch screens, wireless connections, and more applications consume phones power very quickly. So, people need to have more electronic power with their mobile phones, especially in public places. The machine can be seen below (Latauspiste, n.d.)



Figure 5. Charging cabinet of Latauspiste. (Latauspiste, n.d.)

Kauppakeskus Ratina

In Kauppakeskus Ratina, the author went to Ratina shopping mall and consulted about the charging points with a customer servicer who was very friendly and talkative. She answered that there are no charging points or wireless charging in public places of Ratina, but people used the charging power sockets before the Covid-19 pandemic.

Then, the author consulted with a DNA servicer. He showed one Aircharge in DNA store fixed on the table as the picture in figure 6 shows. The author asked the question: Is it possible to charge phones when people are standing nearby with their phones? The DNA staff stated mobile phones have to be placed on Aircharge when charging and cannot be removed until fully charged or ready to be taken away. This wireless charging or wireless power bank charging usually charges slowly than wired charging and cannot move as well as it cannot support all kind of smartphones.

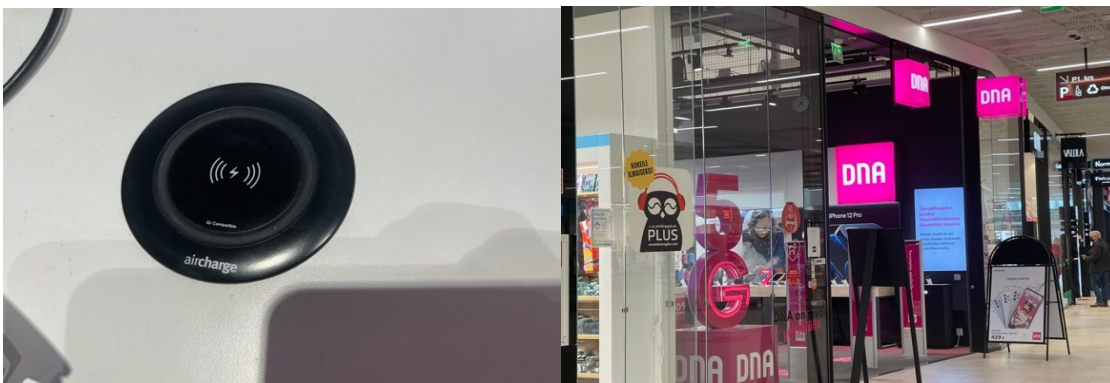


Figure 6. Aircharge in DNA store in Ratina. (Lin, 2021)

Stockmann

In Stockmann, the author went to Stockman shopping mall to check the charging points or wireless charging points and consulted with cashier staff and Power shop workers, both of them answered that they do not have charging points in Stockman.

Sokos

In Sokos, then the author went to Sokos shopping mall to check charging points. The author consulted with two cashier staff about charging points. She consulted with other staff also, who answered that they do not have any charging points in Sokos.

1.6.3 Charging situation in City library

In City Library, for more research, the author went to the public library in Tampere and consulted with the library servicer about charging points. She showed that a charging cabinet in library, as in figure 7. However, it is not convenient because people have to lock their phone inside the box and leave it there for charging. People cannot use their phones when charging, and they cannot use this charging cabinet if they have to go on the way.

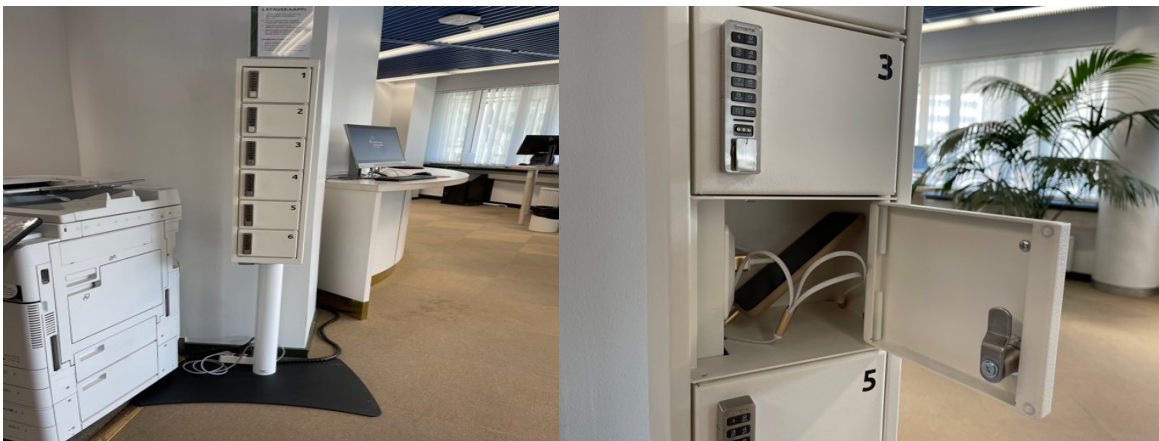


Figure 7. Charging cabinets in City library. (Lin, 2021)

2 Literature review

2.1 Sharing Economy theory

2.1.1 Definition

The first time sharing economy was mentioned was in 2008. It refers to collaborative consumption by renting, exchanging, and sharing resources that customers do not own. Sharing resources can be service or physical good. Customers will get service through community-based online services or platforms to finish transactions. It does not focus on ownership by selling or buying products to transfer ownership. (Puschmann & Alt, 2016, P. 93-99)

Sharing economy changes many aspects, including resource allocation, business market models, and consumer behavior in many industries. The economic model can solve social problems such as reducing financial cost, reducing pollution, and reducing hyper-consumption, poverty, using economic coordination instead of traditional market model, pure selling and buying model. Alongside internet development spreads globally, it is easy for all people to gain or share information by internet which caused sharing economy to develop fast. From supplier's point of view, sharing economy encourages people to share extra items or resources that are tangible or intangible for getting extra income via internet sharing platforms. And this kind of lower-risk business does not affect their current job or lifestyles. From customer's side view, sharing economy provides product's service or use at lower cost instead of buying the product. Both provider side and customer's side can get benefits from sharing economy model. (Zhu, So & Hudson, 2017).

2.1.2 Sharing economy in accommodation and transportation industry as examples

Airbnb sharing platforms in accommodation domain, new consumption pattern, changed traditional hotel industry. It is a peer-to-peer accommodation that allows people to share their extra home with tourists. It demonstrates that consumption behavior has changed a lot. The new consumption patterns changed the travel range, frequency, choice of tourists

and motivated tourism development. Meanwhile, customers can get more help from local host or community, making accommodation sharing popular. (Zhu, So & Hudson, 2017).

In the transportation domain, Uber sharing platforms changed traditional transportation industry. People can go to work or home by sharing cars at lower prices. This is a way to reduce pollution for environmental protection. Car-sharing platform can provide lower price, flexible choice, easy use, transparency, and interaction for customers from the customer side view. Most critical value for customers is user-centric mission of car-sharing service. (Zhu, So & Hudson, 2017).

2.1.3 People's attitude to sharing economy

A survey report of 2014 from PricewaterhouseCoopers (2015) shows that 83% of people think life is more convenient and efficient by using sharing economy. 76% of people believe sharing economy protects the environment. 78% of people believe sharing economy made the community stronger. 63% of people think that sharing economy provides more fun than a traditional company. Even though sharing economy has negative impact on conventional economy, customers are still attracted by sharing economy business model. (Zhu, So & Hudson, 2017).

Alongside rapid internet development, plenty of online platforms have emerged in the market, such as online shopping, electronic bank, mobile pay, et cetera. Customers can choose with free attitude without any compulsory consumption. So, it means this new market phenomenon was tested by customers in the market and identified themselves. (Zhu, So & Hudson, 2017).

2.1.4 Disciplines of sharing economy

Sharing economy has different disciplines related to economics, business administration, and law, in the economic aspect, such as macro and microeconomic perspective. Macro-economic focuses on market models. Microeconomic focuses on strategies, processes, company's systems and the interaction with consumers. (Puschmann & Alt, 2016, p. 93-99)

Economic aspects

Macroeconomics belongs to hybrid market model as future forms of economic exchange. Exchanging goods or services based on the market-based models refers to transferring physical goods or services between two parties as pure market model. It has two different models: the traditional market model including money transactions by transferring goods or services. Another one is gift-giving without including money transactions process. So, these models are based on coexistence of different market types, such as sharing economy. (Puschmann & Alt, 2016, P. 93-99)

Sharing economy makes business brands less relevant. It drives customers to access different brands. The business administration needs to think about new strategies for sharing economy, such as these incumbents, start-ups, or small and medium-sized companies.

The company size will be independent with success in sharing company and management indicates some different success strategies in sharing economy such as a. sharing the use of goods or services instead of selling ownership, b. reducing wastes by using unused resources and capacities. c. supporting service as repair and maintenance. d. developing new customers, e. adopting new business models. As well as provide intermediary services such as insurance services to eliminate moral hazard problems. (Puschmann & Alt, 2016, P. 93-99)

Legal aspects

Legal aspects of sharing economy, such as taxes, regulation, et cetera, this legislation still waits for research in law discipline. Airbnb, which applies sharing economy theory, calls for insurances, licensing, and tax requirements. (Puschmann & Alt, 2016, P. 93-99)

Besides, sharing economy affects positive impact on environmental sustainability and social equality. Sharing economy means exchange value for customers between provider and client. It also corresponds with macro-economic points. (Puschmann & Alt, 2016, P. 93-99)

The new economy modes as sharing economy affect existing standards and law. Such as bed stays at Airbnb. From legal perspective, it causes many questions about legal issues that

need to consider and create legalization. Sharing economy is a new economy model. Social norms related to sharing economy have not fully been established for changing reality. But a growing number of sharing economy users are increasingly merged. Global trends show that sharing economy will play in long term, not just temporary phenomenon, by using resources efficiently and sustainably. All society will get benefit from sharing economy activities. (Teubner, 2014.)

2.1.5 The framework of sharing economy

Sharing economy in consumer to consumer or business to consumer models. In the consumer-to-consumer model, customers can directly connect providers via intermediaries such as business platform. Both provider and customer can turn their role in the transaction process. Both can be providers and customers to produce and distribute services for their customers and accept assistance. In business-to-consumer model, customers can get service from a business provider. (Puschmann & Alt, 2016, P. 93-99)

Sharing economy is limited in peer-to-peer markets such as eBay, Airbnb, which sell and rentals web platforms, and it still occurs as new form of lending, donating, and barter. Now sharing use is more of a popular theme than keep ownership. (Teubner, 2014.)

A survey with 168 sharetribe. Com users, which is a peer -to -peer platform about renting, lending, buying, selling, and share products, knowledge, rides, et cetera by Hamara and Ukkonen (2013), showed that user's attitude to sharing economy project was affected by their intrinsic motivation for performing sustainability. Users enjoyed these kinds of sustainable activities, and this enjoyment motive with perceived economic benefits affecting their action behaviors. Results showed us that people are welcome forsustainable business method, for instance, sharing economy. (Teubner, 2014.)

2.1.6 Sustainable development of sharing economy

Modern environmentalism and sustainable development have been discussed for 40 years and 20 years for practice locally, nationally, and internationally. Environmental policy, environment institutionalization, environmental management, and environmental

awareness have increased by citizens and the environmental sciences and education. All of these ecological aspects have been developed successfully. But limited activities result which concerned with international environmental and sustainability. So, sustainable development still has to develop under this situation, and there is a need to find a new sustainable pathway for developing a sustainable environment. Sharing economy is an unique perspective to create sustainability. (Heinrichs, 2013, p.228-231)

During financial and economic crisis period, people start to think about alternative perspective which can be found. Some voices appeared as repairing and improving the existing economic system in market society, and other voices like new perspective view as sharing economy. Sharing economy aims to make a collaborative and sustainable society by using market intelligence for examples such as bike-sharing, car-sharing schemes, and online web platforms, including a boarding range of activities such as renting, sharing, and selling as exchanging information. (Heinrichs, 2013, p.228-231)

Sharing economy has some features including a product service system, market redistribution, and collaborative lifestyle. Sharing economy concept involves exchanging, redistributing, renting or sharing, and exchanging information, commercial goods, and intelligence talent. On one hand, sharing economy is possible to disrupt mainstream economies. Still, on the other hand, it creates a new sustainable market economic model which reduce resources wasted and improves social cohesion. (Heinrichs, 2013, p.228-231)

Development of sharing economy is not just limited to collaborative, peer-to-peer practices found in academic publications. New stories concerned with sustainability usually appear at an interface with product-service system, market redistribution, and collaborative consumption. Meanwhile, usage and ownership forms include end-users, peer-to-peer sharing, business-to-business relationships, civil activities, and government entities. These concepts indicate that sharing economy is an umbrella concept that provides future vision varieties and a guideline to lead innovation and new economic practices. (Heinrichs, 2013, p.228-231)

To sum up, sharing economy as an umbrella concept can bring together or reframe past or existing economic activities. Under the umbrella concept of sharing economy, potential

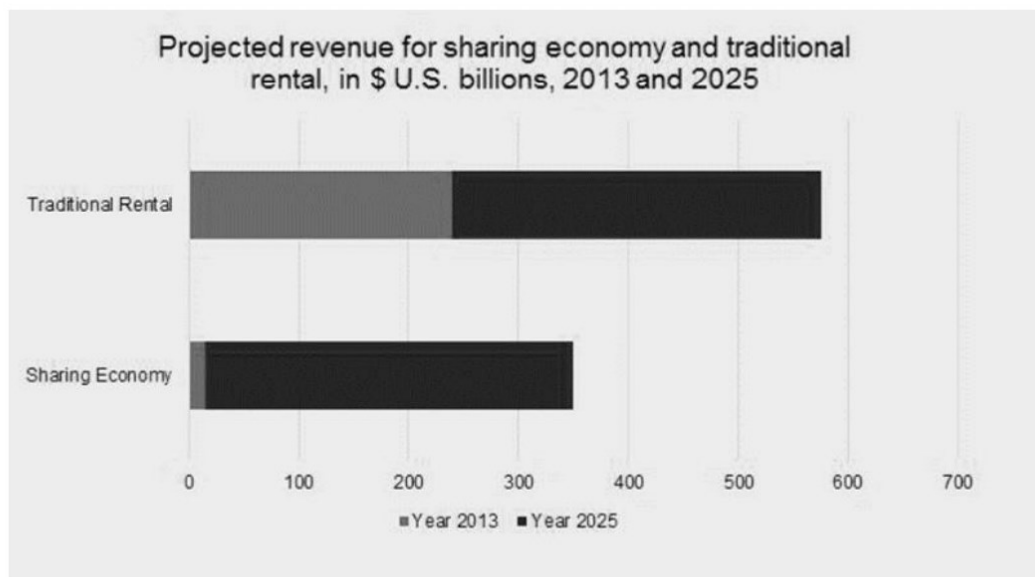
game-changing for new development, a unique opportunity for creating new alternative approaches for sustainable development society. (Heinrichs, 2013, p.228-231)

2.1.7 The future of sharing economy

The world witnessed rapid development of sharing economy, and plenty of customers come to enjoy new market business model. Sharing economy allowed participants to produce their extra profits for individuals or groups. Physical assets will be changed as shared services in sharing economy. People in the world have a strong appetite for sharing economy services. (Yaraghi & Ravi, 2017)

Furthermore, deep impaction of sharing economy appears on part-time work, Hathaway and Muro (2016) at Brookings institution reported that no-employer business has increased from 15 million to 24 million from 1997 to 2014. Researchers of Pew Research Center analyzed ten different industries. Almost 50% of global revenues come from sharing economy department, which includes peer-to-peer loan, online staffing, peer-to-peer accommodation, car sharing, as well as music and video streaming. And there are 68% workers coming from the range of age between 18 years old to 34 years old. Meanwhile, users of sharing economy spread across all age ranges. The Pew Research Center showed us that 72% of Americans would use sharing economy in the next two years. (Yaraghi & Ravi, 2017)

The professors Arun Sundararajan and Scott Galloway at New York University have conducted a study about the future of a sharing economy in rental industries as follows:

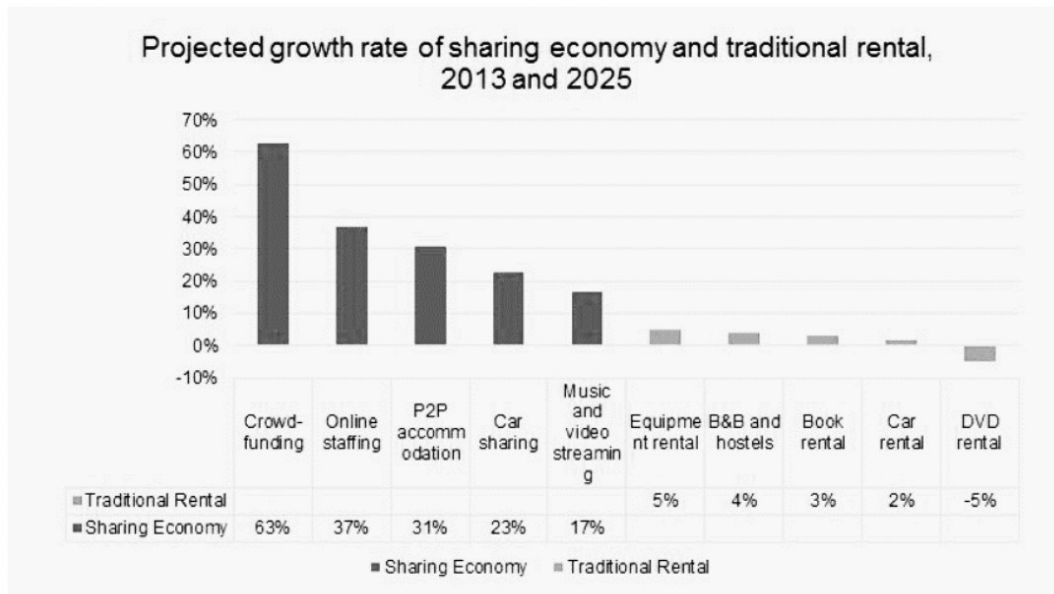


Source: "The sharing economy—sizing the revenue opportunity," (Hawksworth et al., 2014)

Figure 8. Projected revenue for sharing economy and traditional rental, in \$ U.S. billions, 2013 and 2025. (Yaraghi & Ravi, 2017)

It showed us that the traditional rental industry's projected revenue increased slowly between 2013 year and 2025 year. But the projected revenue of sharing economy increased explosively fast between 2013 and 2025. (Yaraghi & Ravi, 2017)

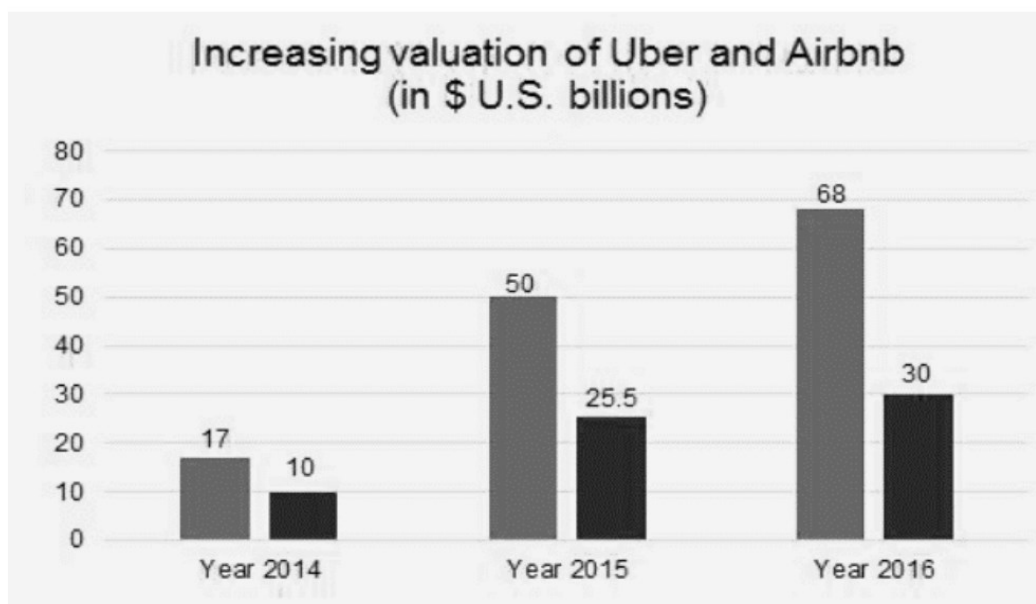
The projected growth rate of sharing economy and traditional rental between 2013 and 2025 in different industries by PwC in 2014 shows us that sharing economy sectors show more significantly higher than traditional economic sectors. Sharing economy includes crowdfunding, online staffing, peer-to-peer accommodation, car sharing, music, and video streaming. Traditional economy includes equipment rental, B&B and hostels, book rental, car rental, and DVD rental. (Yaraghi & Ravi, 2017)



Source: "The sharing economy—sizing the revenue opportunity," (Hawksworth et al., 2014)

Figure 9. Projected growth rate of sharing economy and traditional rental, 2013 and 2025. (Yaraghi & Ravi, 2017)

There are two famous leading sharing economy companies Uber and Airbnb which company valuation is rapidly growing. Both global companies witnessed massive growing valuation caused by business innovation in 2014, 2015, and 2016. (Yaraghi & Ravi, 2017)



Source: "The sharing economy—sizing the revenue opportunity," (Hawksworth et al., 2014).

Figure 10. Increasing valuation of Uber and Airbnb (in \$ U.S. billions). (Yaraghi & Ravi, 2017)

2.1.8 What caused the growth of sharing economy?

Factors of sharing economy growth include flexibility, low entry barriers for workers, numberless smartphone users, renting instead of ownership, digital trust, lax regulations, operational efficiency, et cetera (Yaraghi &Ravi 2017.)

Flexibility: Sharing platform provides a flexible work schedule for participants who share economy service as self-employed workers. Sharing economy company was called a digital matching firm by the U.S. Office of the Chief Economist. Self-employed workers provide service according to their flexible work schedules by using IT and user ratings. Nowadays, there are 2.7 million Americans who work this way currently. Sharing economy kind of companies provide lots of job opportunities. Sharing economy usually achieves some unexpected benefits that even exceed expectation. (Yaraghi &Ravi 2017.)

As vehicle-sharing project reducing greenhouse emissions is almost up to 40 percent, even in India, sharing economy is the country's environmental mandate. Uber applied sharing economy's moral implications to provide job opportunities as 30000 job positions for the unemployed people in Tamil Nadu. Even other competitors offer training programs to over 50000 women. (Yaraghi &Ravi 2017.)

2.1.9 Low entry barrier

Like in taxi industry, traditional taxis and Uber sharing economy have different requirements and features. For conventional taxi drivers, applicants should meet the conditions such as over 19 years old, valid social security number, driver's license with chauffeur-class, driving record, certificate of defensive driving course, medical exam, drug test, background check, training, fingerprint, photo, military veterans with discharge paper. Also, they have to pay \$ 252 application fee that cannot be refunded. Applicants of Uber and Lyft drivers should meet the conditions, such as, over 21 years old who have a driving record history of three years with driver's license. To have car insurance, vehicle registration and checking background; qualified vehicle owner, four-door with a car, vehicle inspection by a uber or third party, a smartphone can use apps, bank account, et cetera. Meanwhile, these requirements will be different according to different states or cities. (Yaraghi &Ravi 2017.)

Comparing requirements of traditional taxi drivers and sharing economy platforms as Uber and Lyft have different requirements. Conditions of traditional taxi drivers have more complicated requirements and costs money. The requirements of Uber or Lyft, drivers' requirements, are not as complex as traditional taxi, but cars also need to fulfill the requirements. No need to pay money first. (Yaraghi &Ravi 2017.)

Also, the Taxi Medallion price has increased expenses for taxi owners. In 2014, the Taxi Medallion selling price reached \$1.3 million. In 2016, asking price of Taxi Medallion fell to \$250000 in October. In 2017, the average Taxi Medallion asking price around \$ 500000. It showed that industry entry of driver of Traditional Taxi has substantial entry barriers. (Yaraghi &Ravi 2017.)

2.1.10 Smartphone popularity and digital trust, renting instead of ownership

In 2016, American smartphone users reached 207 million users, accounting for 64% of the total population. Recently, smartphones plays an essential role in mobile market, accounting for 79.3% of the mobile market. Moreover, sharing economy has lower transaction cost by using digital technologies. (Yaraghi &Ravi 2017.)

Sharing economy builds trust among strangers by using rating system and feedback for both providers and consumers. Sharing economy is changing consumption behavior and corporation relationship as a transformation of products. Customers start to buy product's service as a part of the product to fulfill customers' demand instead of purchasing product's ownership. Customers sometimes do not need the right of one product. They need the service of product's utility at a lower cost. In this sense, sharing economy operates the service by renting short period instead of buying ownership is valuable and popular for customers. (Yaraghi &Ravi 2017.)

Sharing economy is an urban phenomenon based on sufficient population density. It needs many participants to achieve economic scale by using lots of sharing economy services. Also, sharing economy is not necessary to replace traditional economy, and it is not standing on the opposite side. It stands alongside formal economy, such as ride-sharing project. Ride-

sharing economy project is not replacing public transportation in cities, but it assists public transportation by providing convenient life method as an example. (Yaraghi &Ravi 2017.)

2.1.11 Lax Regulations

Kenney and Zysman said that sharing platforms remaking existing business law or regulations by creating new market space and new practices is a first-mover advantage. The online company complies with one set of rules, but traditional tax industry has to follow another regulation. Some complaints about sharing economy are skirting laws which need a high cost for conventional taxi companies. One anti-ridesharing said, there are 35% to 40% of costs come from regulatory compliance. Exactly, it is too much cost, significantly if regulation cost exceeds license value and no one will invest it under this situation. (Yaraghi &Ravi 2017.)

2.1.12 Unused resources

95 percent unuse rate on private cars lifetime was estimated by transportation economist Donald Shoup. For example, in one study about personal vehicle usage in Montreal, Morency et al. showed that only 48% to 59% of Montreal's current car fleet could satisfy all of Montreal's people's car demand. From this view, sharing economy will reduce city traffic jam and protect the global environment by reducing pollution. (Yaraghi &Ravi 2017.)

Sharing economy provides lots of job opportunities for people with a short or temporary work contract. The phenomenon is a positive effect on the traditional economy. In the past years, this kind of temporary workers has increased gradually. Uber and Lyft have changed forms of conventional workplaces. Sharing economy creates new work options for employers. Nevertheless, it does not replace the traditional work forms with a steady style. (Yaraghi &Ravi 2017.)

2.2 Blue Ocean Strategy

2.2.1 Definition

Blue ocean strategy is a theoretical framework for creating new market space and market demand in existing competitive crowded markets by reconstructing of new industry boundaries. (Mi,2015) Latest industry fields usually have both risks and opportunities, and people have to think about reducing the risks and maximizing the opportunities. (Kim, 2005, p. 105-121)

Blue ocean strategy never uses the competition strategy of red ocean. It creates value for both companies and customers instead of competition strategy. Companies compete with other competitors under same industry's structural conditions and same practice rule in red ocean. These practitioners competing in red ocean have to choose a differentiation factor to create a more excellent customer value with higher cost and make reasonable value for customers based on lower price. The reconstructionist view of creating unknown industry structures and market boundaries is blue ocean strategy. It can reconstruct these existing trade-off rules and generate a leap value for customers at lower cost. (Kim, 2005, p. 105-121)

These managers who hold the reconstructionist view have to create a blue ocean in the existing market structures. By using the competition strategy, they should focus on the intense competition and the supply side. However, people should forget the competition strategy and focus on customers' demand using the blue ocean strategy by stimulating the demand side of the economy to expand the existing markets and create a new market space. The Blue ocean strategy aims to create high value for customers and at a lower cost simultaneously. Since customers' value depends on the price and utility. However, companies' value depends on price and cost. So, blue ocean strategy is a sustainable approach to make possibility for getting price, lower cost, and utility aligned together. (Kim, 2005, p. 105-121)

2.2.2 Red Ocean

The global business market divides into Red Ocean market and Blue Ocean market. (Kim, 2005, p. 105-121). The existing competitive crowded market, which people have known everything in the market means Red Ocean market. The red ocean market has obvious market boundaries, market limitations, and market rules for operating business among business practitioners. All firms in red ocean market want to earn more profits and attract more customers by performing best than competitors in existing market. The competitive business environment in Red Ocean market makes situation bloody, and it is tough to achieve profits. Three factors play essential roles as cost, competition, and price in red ocean. All elements of business should be good enough for winning the competition. The differentiation is also a significant advantage factor for battle, but it needs to cost a lot under same business rule in red ocean. (Dehkordi, Rezvani, & Behravan, 2012, P. 477)

There are plenty of competitors that are fighting for the current limited market demand and eventually capturing fewer profits and growth in the Red Ocean market. (Kim, 2005, p. 105-121) It is like a rival for over-fighting among these competitors by shrinking profits. (Kim & Mauborgne, 2005) So, the result of this competition will be nothing. (Kim & Mauborgne, 2005) In the current market, all market participants knew this market well, such as existing product, customer segment, customer demand, product's supply chain, profit model, et cetera. Furthermore, people knew all industries in market which had cutthroat competition in the market like the bloody, so-called red ocean. (Kim, 2005, p. 105-121)

It attracted lots of business organizations to share the market space. All competitors want to be the winner in the market competition by improving product and service quality, reducing costs, and satisfying customer demand. In the end, no one can be the winner in the competitive game by sacrificing profits. So, the situation is that supply exceeds demand in existing market. (Mi,2015)

2.2.3 Blue ocean

The blue ocean strategy stands on the opposite side of red ocean strategy. It means new business opportunities, new market demand, and innovative ways to create market space

and new industry which do not have existing crowd competitors in blue ocean market. The new game rules will set in blue ocean market. It has strong potential to create more profits, achievements, and more value for customers with lower cost than a competitive strategy by conducting differentiation and breaking the existing trade-off in the red ocean market. (Mi,2015).

Blue ocean indicates industries that have not existed in the existing market currently, business environment does not have competitors. It has many potential opportunities to gain lots of profit returns. It is dynamic because action and strategy will affect cost structure, value proposition, and value innovation. Meanwhile, value innovation is the most crucial factor by reducing imitation, which will cause intense competitive environment and defense imitators to enter new market. Besides, blue ocean is a win-win strategy for both sellers and customers. By driving down costs and driving up buyers value, as the following figure 1 shows. Blue Ocean strategy will affect all firms' functional and operational activities, and value innovations help companies achieve value for buyers. (Dehkordi, Rezvani, & Behravan, 2012, P. 477)

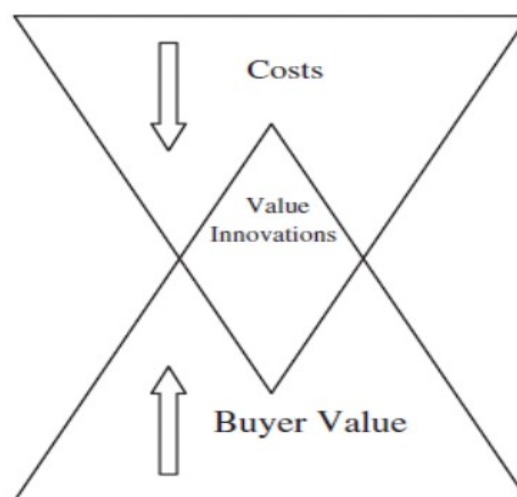


Figure 11. Value innovation: cornerstone of blue ocean strategy. (Dehkordi, Rezvani, & Behravan, 2012, P. 477)

The success of the Blue Ocean is not coming from fighting with competitors, and it makes the competition irrelevant. Focus on breaking out the existing market boundaries and using

value innovation instead of competitive strategy. Blue ocean strategy's cornerstone is innovation, which leaves competition behind and creates a leap in value for customers. (Kim, Mauborgne, 2005).

2.2.4 The reason for creating Blue Ocean strategy

Competition is everywhere in the current existing market and fighting the battle in the past 25 years. It is hard to find market space without competition such as competitive strategy and competitive advantages. The existing market structure has supply and demand side, then called seller and buyer. The business practitioners have to build their business advantages to overflight other competitors for capturing limited market share and sustain market position. Usually, the practitioners have to assess competitors' strengths and weaknesses and then try to defeat them. This competitive market structure adapts zero-sum game, and some business practitioner wins market share then other competitors will lose the market share. (Kim, 2005, p. 105-121)

With technological development of modern society and gradually globalization trend, business environment pushes suppliers to produce more innovative products. Because global trade barriers are steadily disappeared, it leads to more and more intense competition activities. Unhealthy competition leads business results without profits. So, creating blue oceans, it's a necessary business development trend. (Kim, 2005, p. 105-121)

The global trends showed us that firms focus not only on competition but also on innovation for their future. Staying stable and changing is subject of keeping market position. Many strategic perception books show invention is essential and evolution in business by distinguishing current competitive situation. (Dehkordi, Rezvani, & Behravan, 2012, P. 477)

2.2.5 Business achievements comparison between the red ocean and blue ocean

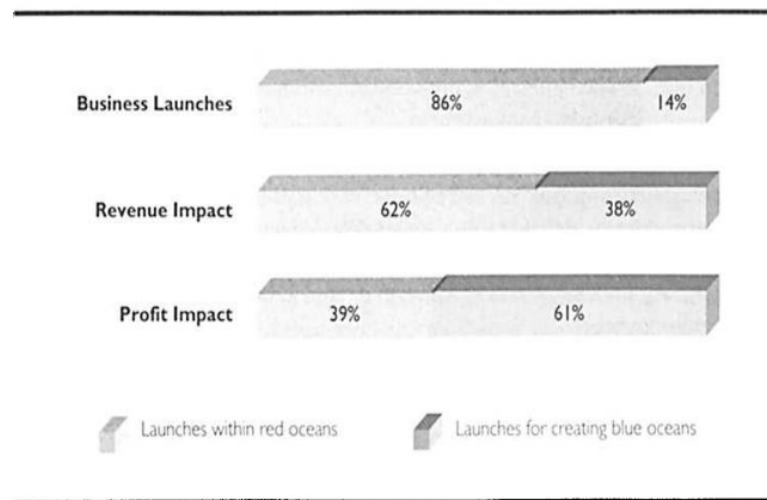


Figure 12. Profit and Growth Consequences of Creating Blue Oceans. (Kim, 2005, p. 105-121)

As the above figure showed, the business data from 108 companies, left side represented red ocean, and right side represented blue ocean. It shows 86% business launches in red ocean but just got 62% revenue impact and 39% profit impact in the end. On the contrary, only 14% of business launches in blue ocean, but it gained 38% revenue impact and 61% profit impact. The profit gap between two markets shapes the red ocean and blue ocean, and this is strong evidence to have a potentially high-profit new market space by creating a new market space or blue ocean. (Kim, 2005, p. 105-121)

2.2.6 Who can adopt blue ocean strategy?

Any organization can adapt blue ocean strategy to create a market space for pursuing new opportunities in existing market. There are three necessary factors for practicing blue ocean strategy: structural conditions, resources and capabilities, and strategic mindset. (Mi,2015)

In existing competitive market, organization can succeed overcome other competitors and create a large part of the market share based on its structural conditions, resources, capabilities. Then competitive strategy is also right choice for the organization. On the contrary, if the organization cannot create any market position and cannot beat the strong competitors, the organization should make an innovative way to develop the business using

blue ocean strategy. This situation depends on factor structural conditions, and resources, and capabilities of any organization. (Mi,2015)

Whether to adopt blue ocean strategy, other aspect depends on its strategic mindset. Suppose that the organization focuses on keeping current market position and lacks courage to enter into an unknown market. Then It is better to stay in competitive strategy market. On the contrary, if an organization wants to pursue new opportunities and desire to do innovation instead of keeping an intense competition situation. Then blue ocean strategy is the best way. (Mi,2015)

2.2.7 How to access success by using blue ocean strategy?

Three crucial propositions need to be developed and aligned to reach successful blue ocean strategy. One is a value proposition for attracting new customers, and another one is a profitable proposition for obtaining the business's profits. The last one is people proposition for motivating people to work well with the organization and execute it. The value propositions and profit propositions refer to the strategy's contents. The people proposition refers to quality of strategy. By cooperation among three propositions to reconstruct the new business environment. (Mi,2015)

Under the competition strategy, the organization's activities and strategy proposition align with the differentiation factor or lower cost factor. If not, it will lead to failure. However, by using blue ocean strategy, all the three propositions can be pursued simultaneously. It can lead to achieving differentiation and low cost. The most foundation of the strategy is creating value for customers and reducing costs for a company. (Mi,2015)

2.2.8 The four actions framework

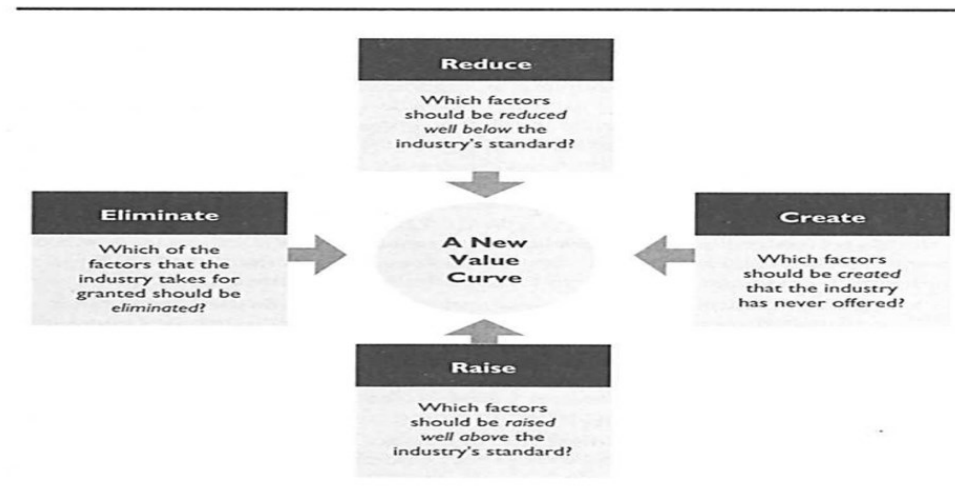


Figure 13. The Four Actions Framework. (Kim, 2005, p. 105-121)

Four action questions show that how to reconstruct customers' value elements. Two questions indicate factors which have long competed and achieved less value or over-designed for competition and over-serve for customers should be reduced and eliminated. This two-action helps companies to drop the cost structure and reduce unnecessary cost factors for competition. The other two questions indicate the elements which forced compromise customers should be uncovered and eliminated. Moreover, discover the new value and create new demand for customers in the industry. These two actions can help business practitioners to develop a new value and need for customers. (Kim, 2005, p. 105-121)

2.2.9 Blue Ocean examples

In furniture industry, high-ended customers' segments can afford a classy furniture design at a higher price. The low ended market customers can afford a traditional furniture design at a lower price. Based on this situation, IKEA created a business model by providing high value and lower cost for customers by reducing unnecessary cost as expensive staff cost and free delivery services cost for providing classy furniture design at a lower price. Meanwhile, customers can afford furniture by shopping and delivering it home by themselves. So, IKEA achieved both differentiation and lower cost. (Agnihotri, 2016, P. 519-528)

The strategy canvas can help managers understand how it works in the industry and remove unnecessary products or services for reducing cost and providing more benefits for customers. (Agnihotri, 2016, P. 519-528)

2.2.10 How to implement blue ocean strategy

Blue ocean strategy is a new business model idea as a fresh perspective and a market redefinition. It is a substitute as an alternative for the existing competitive market. It introduces three concepts that establish the new business models, creating new market space and customer demands, increase earnings for sellers and buyers.

Any changes in primary process of the business can gain incredible achievements by comparing the competition. And blue ocean strategy is this kind of reinforcement approach. It will create more profit returns for firms as a new business model method. Using some tools such as PDM, SCM, and CRM can also make competitive advantages but do not ignore blue ocean strategy, which is also essential in the business world. (Dehkordi, Rezvani, & Behravan, 2012, P. 477)

Blue ocean strategy is a method for increasing the firms' profit returns by creating new customer demand and customer value instead of numberless competitors. It leads managers to think about some problems, such as practicing strategy theories in real business world includes:

- Vertical incorporation factor.
- Diversification factor.
- New product factor.
- Newmarket combinations factor.

All of these factors will affect the business model change. Knowing the business model change in a networked context should be considered in transforming structures. The value creation theory is the foundation of new business model, blue ocean strategy. (Dehkordi, Rezvani, & Behravan, 2012, P. 477)

Managers should think about implementing blue ocean strategy, such as reinforcing business strategy, focusing on potential innovation, considering sales question, and developing guide programs for staff and cooperation. And managers should attract people to new business fields even if existing service providers can provide services or product that customers can satisfy and meet market needs. (Dehkordi, Rezvani, & Behravan, 2012, P. 477)

Meanwhile, most firms that want to play blue ocean strategy have to consider changing management and functional changes in operation. The other changing approaches related to sales management and business model's criteria are technology innovation, market recession, and market evolution. The company's members should also tie with practical ability and knowledge for implementing blue ocean strategy. These sudden changes should get help from deep practical activities such as strategy changes, salesman position changes, renegotiating contract with corporation partners. On the other hand, leadership and leading meeting are also important not only as general management attributes. Recruiting blue ocean strategy will enhance the firm's quality. (Dehkordi, Rezvani, & Behravan, 2012, P. 477)

3 Analysis of mobile phone usage in Finland

3.1 Smartphone penetration rate in Finland 2017 - 2020

The survey question is that do you have a smartphone? Nepa conducted it in Finland. There are 1036 respondents aged 16 to 74 years old in Finland and participating in the study survey from 2017 to 2020. (Niinimäki, 2020).

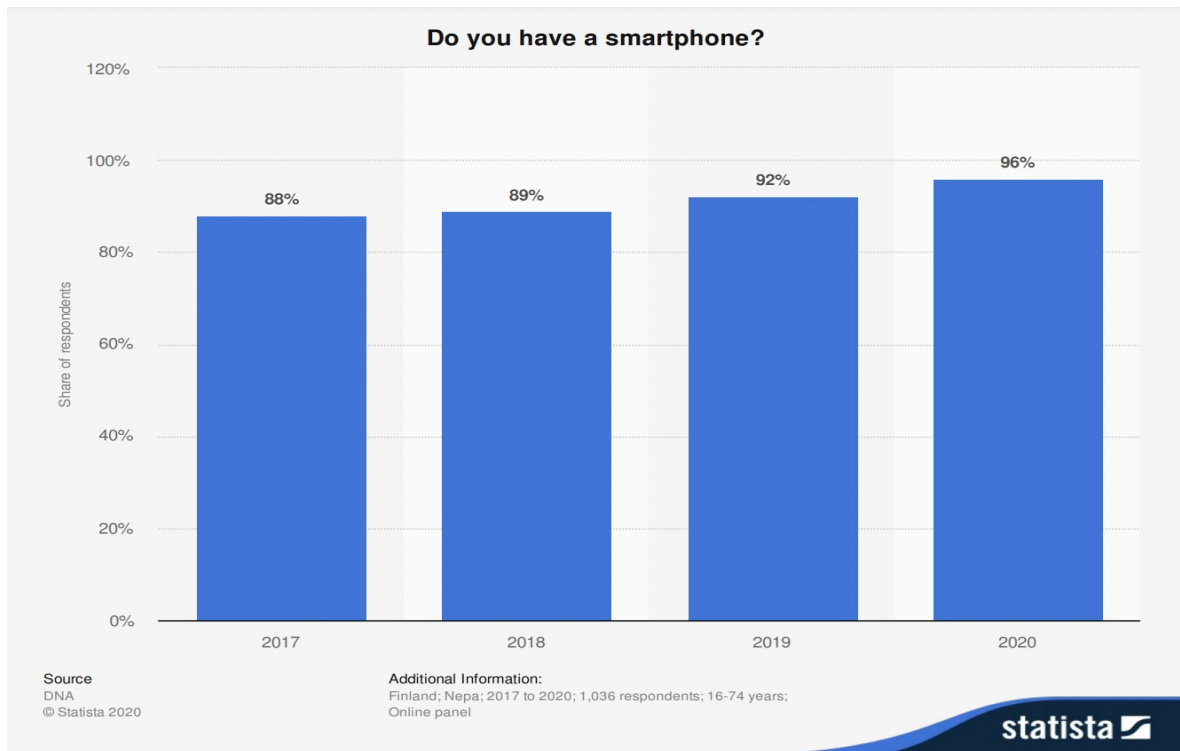


Figure 14. Do you have a smartphone? (Niinimäki, 2020).

The above figure shows the survey results. It shows us that 88% of people have a smartphone already in Finland in 2017. 89% of people have a smartphone in 2018. 92% of people have a smartphone in 2019. and 96% had a smartphone in 2020. It showed that the usage rate of smartphones grown year by year. And young respondents aged 16 to 24 years old have a 100% usage rate of smartphones in Finland. The high smartphone usage rate means that most people use smartphones and have a strong connection with smartphones in their daily lives. (Niinimäki, 2020)

3.2 Foresee the penetration rate of smartphone users in Finland from 2018 to 2024

The survey is about forecast of the smartphone user penetration rate in Finland from 2018 to 2024. The survey does not limit age scope. All of the participants at least have one smartphone and at least used it once one month. Statista Market Analytics conducted it in June 2019. (Niinimäki, 2020).

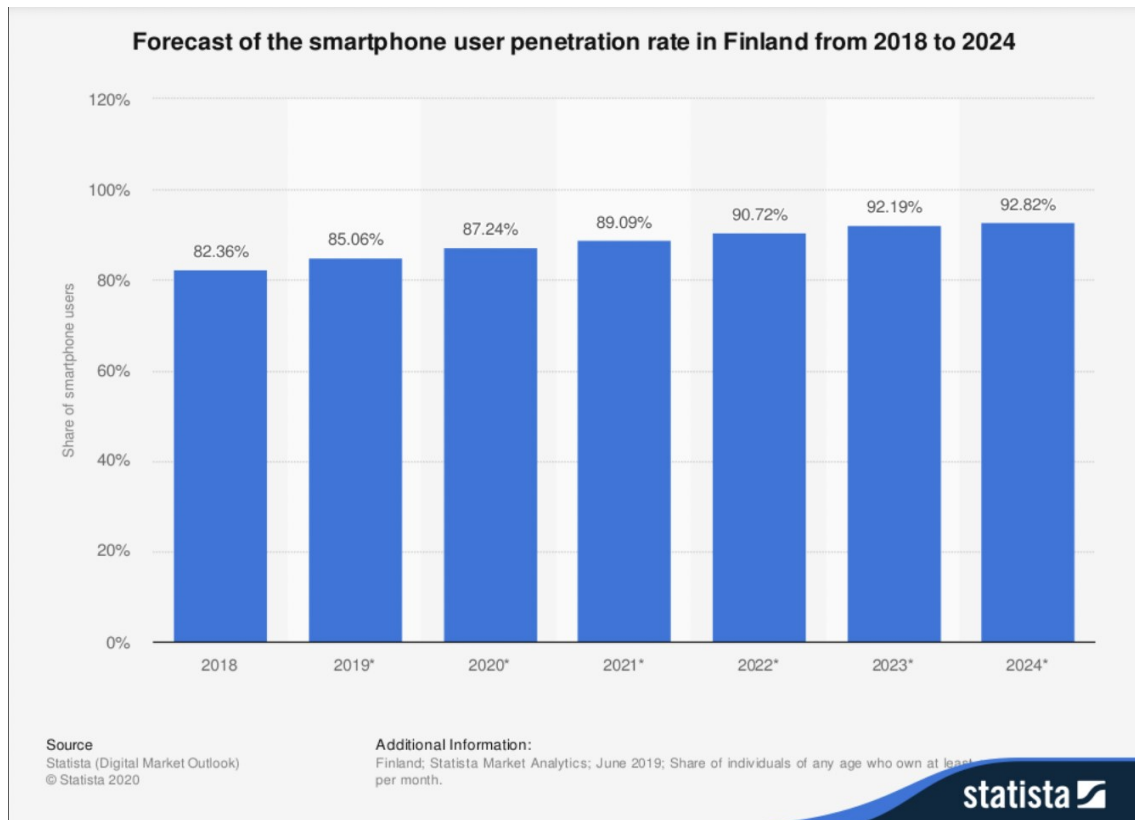


Figure 15. Forecast of the smartphone user penetration rate in Finland from 2018 to 2024. (Niinimäki, 2020).

The above Figure shows the survey results as a nice picture in Finland. There are 82.36 % of users who were using the smartphone already in 2017. In 2018, penetration rate of smartphone users had increased to 85.06%. In 2020, penetration rate in percent of smartphone users reached 87.24%. By looking at the past three years' penetration rate of the smartphone, it grew gradually year on year. According to the growth rate, penetration rate in percent of smartphone users is 89.09% in 2021. And penetration rate in percent of smartphone users will reach 90.72% in 2022, 92.19% in 2023, and 92.82% in 2024. (Niinimäki, 2020).

3.3 Mobile phone usage in Finland 2020

Traficom surveyed about mobile phone usage in Finland 2020 in May 2020. Two thousand respondents aged from 15 years old to 79 years old for answering the survey question what do you use for your mobile phone?. (Niinimäki, 2020).

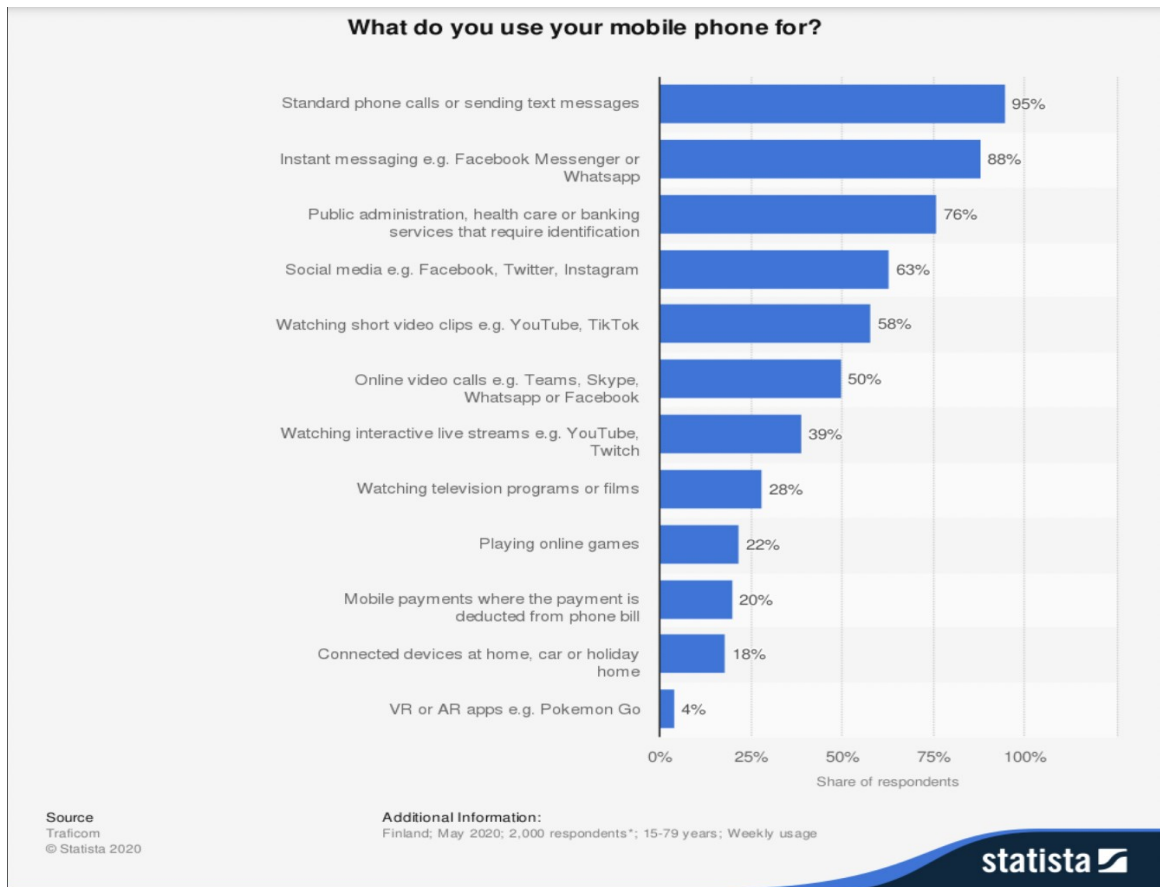


Figure 16. What do you use your mobile phone for? (Niinimäki, 2020)

The survey results show that 95% of respondents use mobile phones for standard phone calls or sending text messages. And 88% of respondents use mobile phones for instant messaging, such as Facebook Messenger or WhatsApp. Also, 76% of respondents use mobile phones for public administration, health care, or banking services that require identification by mobile phone. Too, 63% of respondents use mobile phones for social media like Facebook, Twitter, and Instagram as well as, 58% of respondents use the mobile phone for watching a short video as youtube and Tictok. Besides, 50% of respondents use it for online video calls such as teams, skype, WhatsApp, and Facebook. In addition, 39% of respondents use it for watching interactive live streams as youtube, twitch.

Moreover, 28% of respondents use it for watching television programs and films. Along with that, 22% of respondents use it for mobile payments for phone bills. Apart from this, 18% of respondents use it for connected devices at home, car, or holiday home. In the end, 4% of respondents use it for VR or AR apps, for example, Pokemon Go. (Niinimäki, 2020).

The survey results show a phenomenon that most people are relying on mobile phone in actual society. People need to contact their friends, colleges, classmates, and family members by mobile phone. Also, they are playing social media frequently for getting news or communicating on social media by mobile phone. When people want to relax, they still need mobile phones to watch videos and play games. When people want to go shopping, they need to pay the bills by mobile phone also which is a convenient way.

3.4 The forecast of Finnish smartphone users from 2010 to 2025 (in millions)

The survey is about forecast of smartphone users in Finland from 2010 to 2025 was conducted by Statista from 2010 to 2019. The data of the figure comes from Statista's Key Market Indicators (KMI), a collection of indicators that include primary and secondary indicators related to the macro-economic, demographic, and technological environment of 150 countries. All indicators come from international and national statistical offices, trade associations, and press for generating comparable data sets. (Degenhard, 2021.)

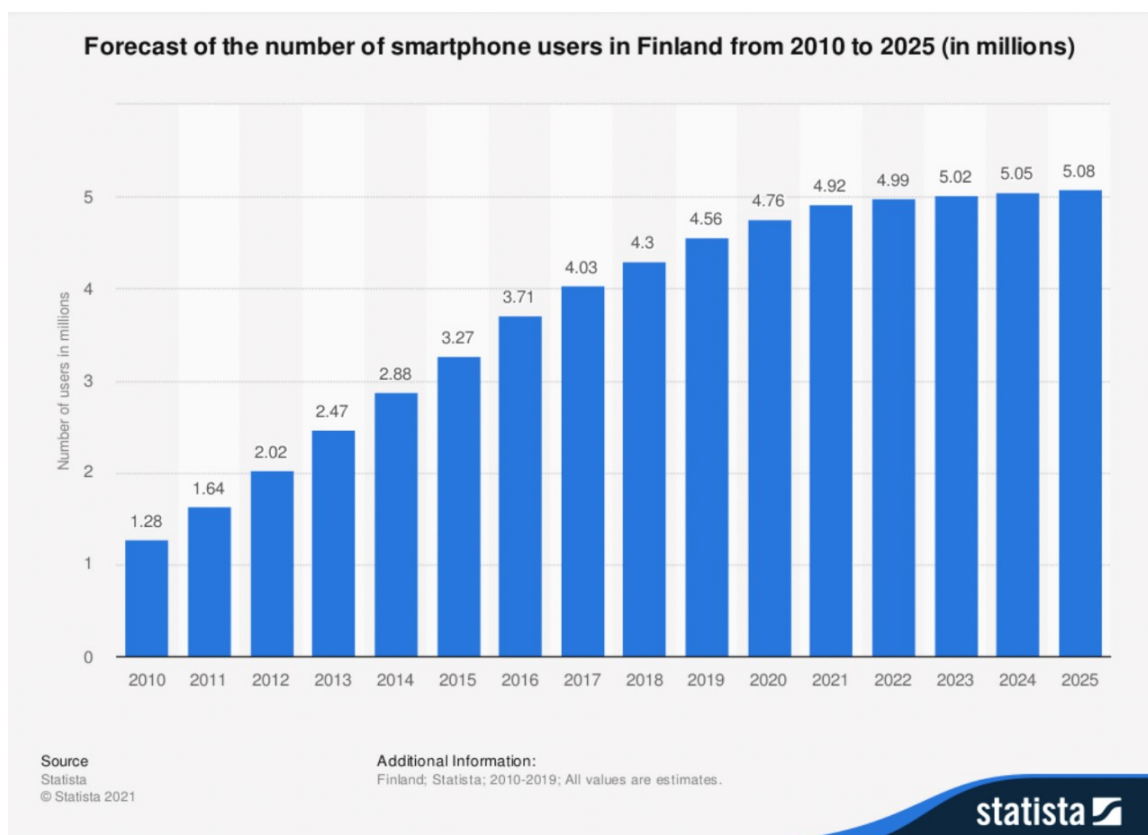


Figure 17. Forecast of the number of smartphone users in Finland from 2010 to 2025 (in millions). (Degenhard, 2021.)

The above statistics show the number of smartphone users in Finland from 2010 to 2025 for fifteen years. The number of users is projected to 5.08 million in 2025. For now, it already reached 4.76 million in 2020. Looking back to 2010 year, the number of users reach 1.28 million since ten years ago. From 2011 to 2019, the number of smartphone users has increased from 1.64 million to 4.56 million. Then the statistics show the forecast data from 2021 to 2025. The number of smartphone users is projected to from 4.92 million to 5.08 million. The number of smartphone users grew rapidly and steadily. (Degenhard, 2021.)

3.5 Which of these accessories/services for your phone do you own?

The survey is about which of these accessories or services for Nordic users' phone do they own. These accessories include wired earphones, power banks, wired headphones, memory cards, screen protectors, wireless headphones, wireless earphones, and wireless chargers. Ipsos surveyed in July 2019, and the region of this survey includes Denmark, Finland, Norway, and Sweden. Five thousand and one respondents from 18 years old to 75 years old participated in the study and answered the survey questions. Among these respondents, 1864 respondents come from Sweden, 976 respondents come from Norway, and 1095 respondents come from Denmark. (Vailshery, 2021)

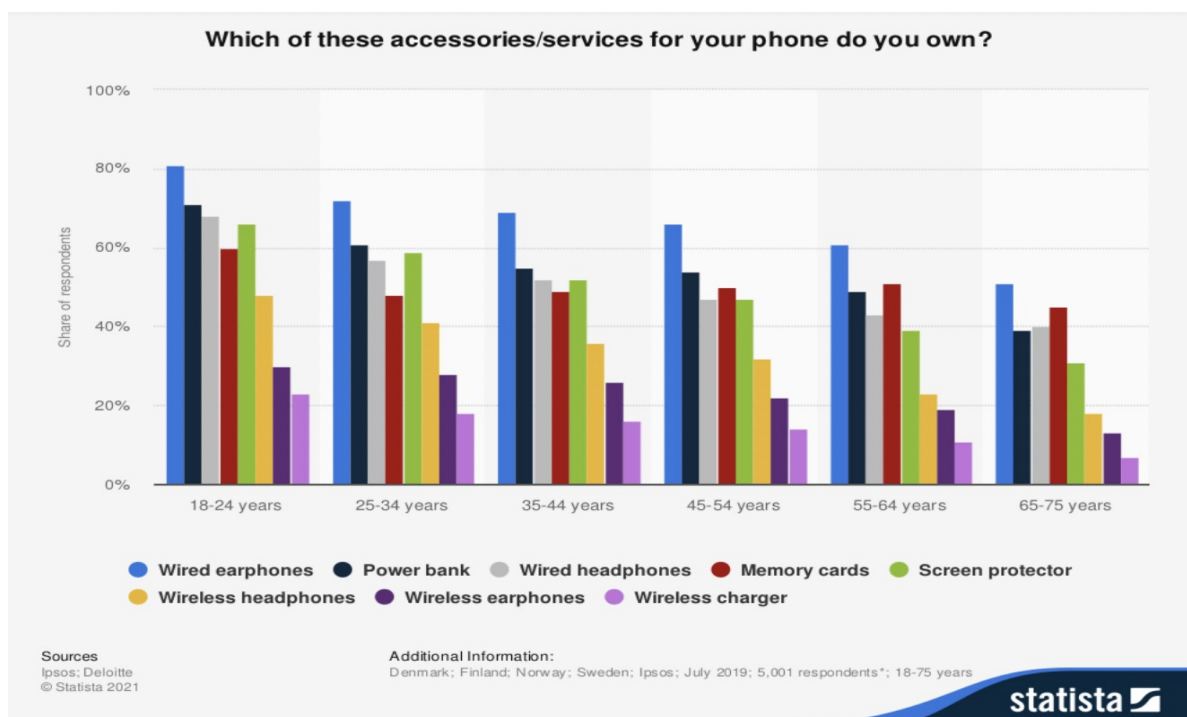


Figure 18. Which of these accessories/services for your phone do you own? (Vailshery, 2021)

The survey results show that almost the highest proportions of the phone accessories are wired earphones and power banks. From the age of 18 years old to 24 years old, nearly 70 % percent of users have a power bank. From the age of 25 years old to 34 years old, there is 60% percent of users have a power bank. At the age of 35 to 44 years old, almost 52% percent of users have a power bank. From the age of 45 years old to 54 years old, there is nearly 52% percent of users have a power bank. From 55 to 64 years old, almost 47% percent of users have a power bank. From the age of 65 years old to 75 years old, nearly 39% percent of users have a power bank. Most people are using the phone accessories like power banks no matter what group age people are in. It is an essential accessory for mobile phones, especially in modern society with the rapid development of the internet. (Vailshery, 2021)

4 Research methodology

The author uses quantitative research method as a survey for doing research and collecting data among people who live in or have traveled in Tampere by using Webropol-survey tool and Google forms. Then, the author used SPSS software to analyze the survey data collection and interpreting the data results.

4.1 Quantitative research method

The quantitative research method is one category of empirical research based on experimentation or observation by adopting the scientific practices for conducting research. The other category is qualitative research. Research is not just gathering facts and presenting data information without considering research purpose and interpreting data results. It is the systematic manner to collect data with a clear purpose and well-planned activities for finding research solution. In the end, presenting the findings and limitations, as well as the conclusions. (Khalid, Abdullah & Kumar, 2012)

The quantitative research method uses deductive reasoning and varies range of analysis techniques. Descriptive related variables, then demonstrate the statistical relationships among the variables by using statistical modeling. (Khalid, Abdullah & Kumar, 2012)

The quantitative research method explains particular phenomena, which are critical elements of research by collecting and analyzing data. It is a mathematically based method. (Sukamolson, 2007)

By using this quantitative research method, it has five steps to process. First of all, the author needs to design the questions for collecting data. Second, the author needs to consider who can be the participants for data collection. Third, choosing which kinds of methods to answer questions such as variables, measure of the variable, and overall design. Fourth, analysis tools need to select. Fifth, analyzing and understanding data as well as interpreting data. (Swanson & Holton, n.d.)

In this thesis, the author chose the quantitative research method to research whether it is a potential market for implementing the power bank sharing project in Tampere?

4.2 The survey design

How did the author design the survey questions, and what kind of form did the author take? The author created these survey questions with multiple-choice for respondents who can choose one answer, and some questions can answer with suggestions.

In the survey questionnaire, the author creates questions, the questions 1, 2, and 3 aims to collect information about respondents' gender, age, and country. These data will show the different behavior among the various customer segments. And questions 4, 5, and 6 are about whether they have a salary among the respondents and the phone system they use. Also, how often do people use mobile phones? The results will show that the 'percentage of respondents are using the IOS system or Android system, which means both mobile systems need to set in sharing power bank. And know the daily use of mobile phones in their everyday life. Furthermore questions 7, and 8 are about the phone battery's situation met by respondents when people are on the go. And how do people usually deal with the problem of battery used out when they are outdoors?

Besides, questions 9, 10, 11, and 12 are about people's demand for mobile phone batteries, the percentage of the respondents who are using their power bank nowadays, and people's feelings about carrying the charger power bank on the way.

Apart from that, questions 13, 14, and 15 about how many percent of people are willing to recharge their mobile phone? And even pay charging fee, and how much of the rental price is reasonable for recharging the phone? Then, in the end, question 16 is about how do they usually deal with the phone's battery in their life when they met the battery situation?

4.3 Data collection

There are two data samples. One data sample is from Chinese students including Bachelor's degree students, Master's degree students, and Ph.D. degree students who study or live in Tampere of Finland via WeChat group. Twenty-nine respondents participated in this survey includes 19 female respondents, nine male respondents, and one prefers not to say. The other data sample is from Finnish students and international students who live in and have traveled in Tampere via social media, including Instagram and Facebook, and WhatsApp groups. The international students did not include Chinese students. There are 22 participants, including 13 male participants and nine female participants.

4.4 Data analysis

4.4.1 Sample one

Question 2 and 6

At the age of 15 to 24 years old, 92% of respondents use their phones frequently most of the time. Only 8% of respondents do not know the strict opinion who choose the answer maybe for the question. At the age of 25 to 35, 100% of respondents use their phones frequently in their daily lives. And at more than 35 years old, 100% of respondents use the phone frequently also. In total, 97% of respondents use their phones often. According to these data results, using the mobile phone is very important and necessary in their lives.

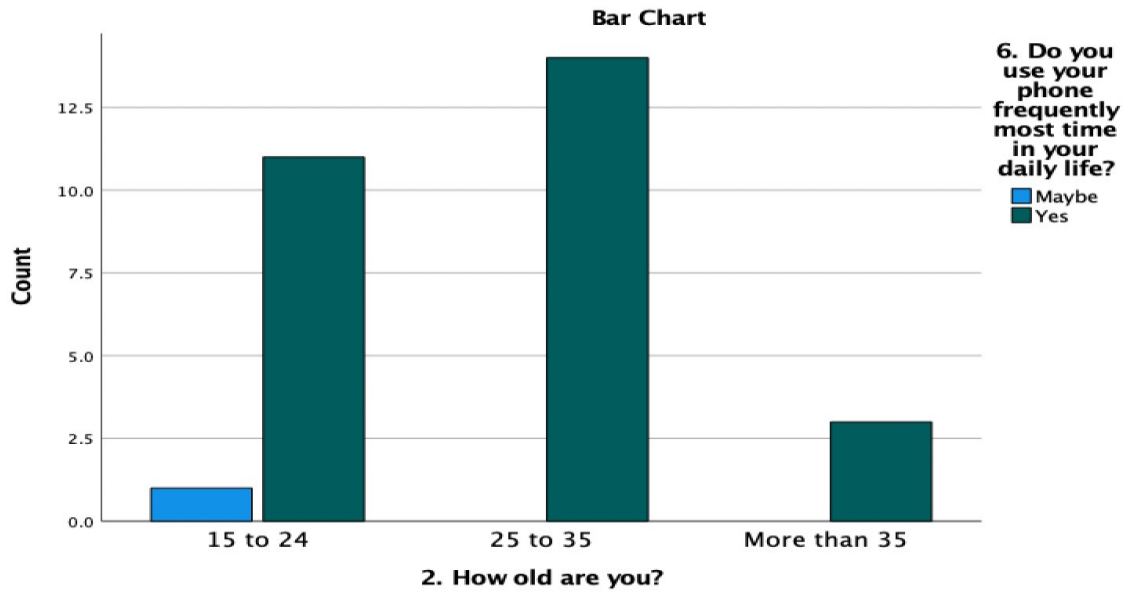


Figure 19. How old are you? Do you use your phone frequently most time in your daily life?
 (Lin, 2021)

Question 2 and 7

At the age of 15 to 24 years old, 75% of respondents feel flustered when people meet the battery is red when they are outdoors. 17% of respondents do not have this kind of flustered feeling. It is a typical situation for them. 8% of respondents had no idea about their sense when they met this red color battery reminder. At the age of 25 to 35, 93% of respondents have a red panic feeling when their phone used out the battery, and 7% of respondents were not sure about this feeling. At the age of more than 35 years old, 67% of respondents stand in the middle ground, they will or not worry about the phone battery, and 33% think they did not have the worrying feeling when they met the situation. In total, 76% of respondents will worry about the red panic, 10% of respondents do not worry about this when the battery is exhausted, 14% of respondents stand in the middle position.

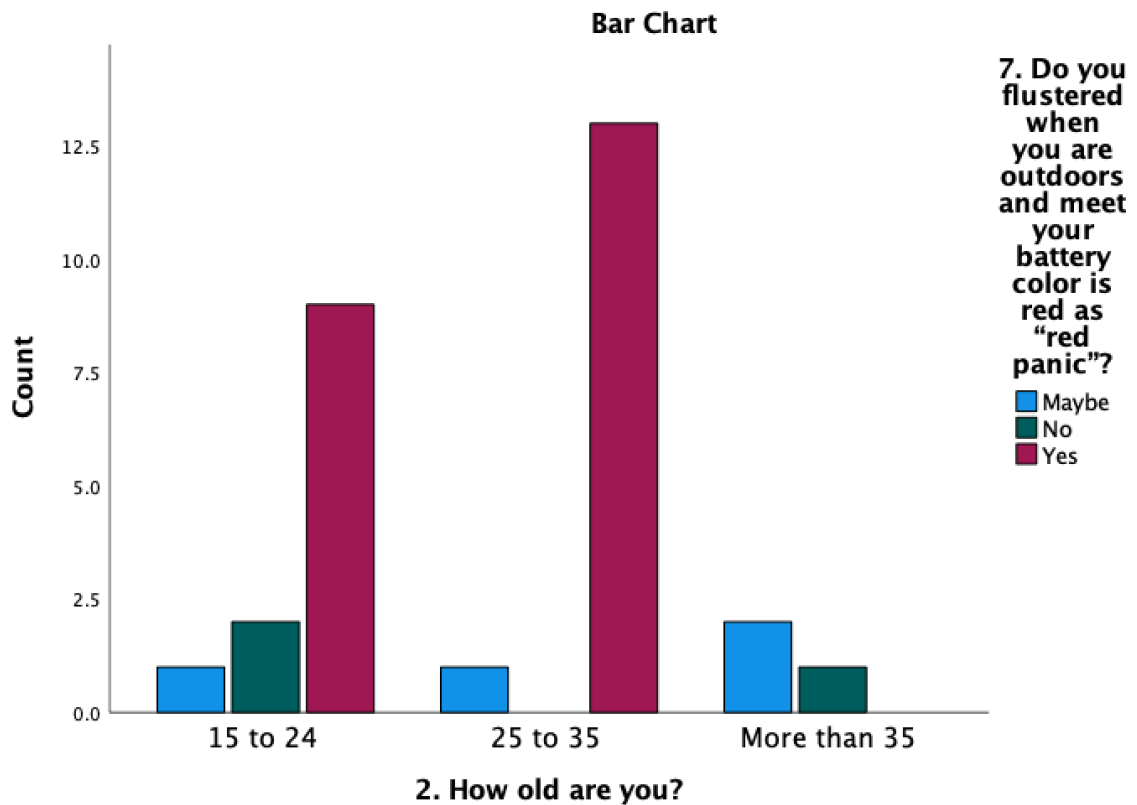


Figure 20. How old are you? Do you flustered when you are outdoors and meet your battery color is red as "red panic"? (Lin, 2021)

Question 2 and 8

At the age of 15 to 24 years old, 92% of respondents met this drained battery situation in public places, only 8% of respondents did not meet this deadly battery situation. At the age of 25 to 35, 93% of respondents met this drained or low battery situation in public places, and 7% did not meet this situation. At the age of more than 35, 100% of respondents met this situation with a low or drained battery in public places. In total, 93% of respondents have experienced that their phone without power or with low power when they are in public places. And 7% of respondents did not experience this situation.

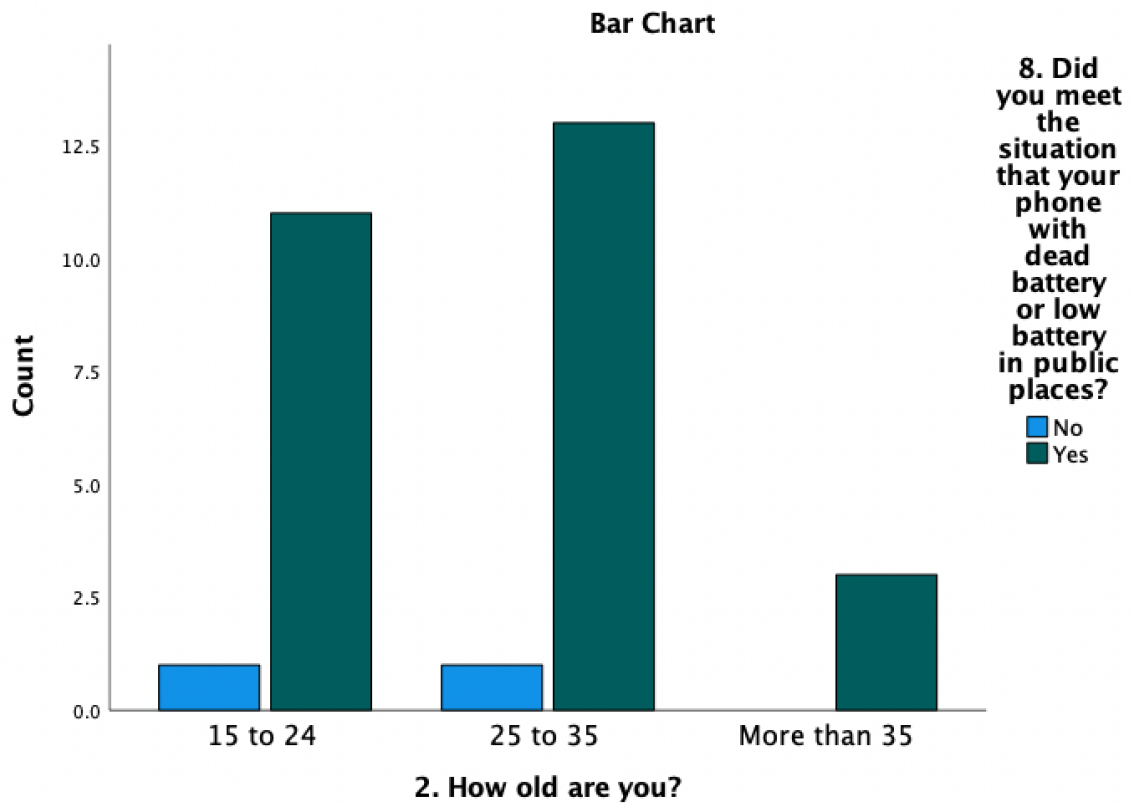


Figure 21. How old are you? did you meet the situation that your phone with dead battery or low battery in public places? (Lin, 2021)

Question 2 and 9

At the age of 15 to 24 years old, 75% of respondents need enough electronic power with their mobile phone or other devices when they are outdoors, 17% of respondents do not need it, and 8% of respondents are not sure. At the age of 25 to 35, 100% of respondents have a high demand for battery power with their phones or other electronic devices. At the age of more than 35 years old, 33% of respondents think it is necessary to make phones or other devices with enough electronic power when outdoors, 67% of respondents are not sure. In total, 83% of respondents stand by making electronic devices with enough battery power, 7% of respondents think it is not needed, and 10% of respondents in the middle ground.

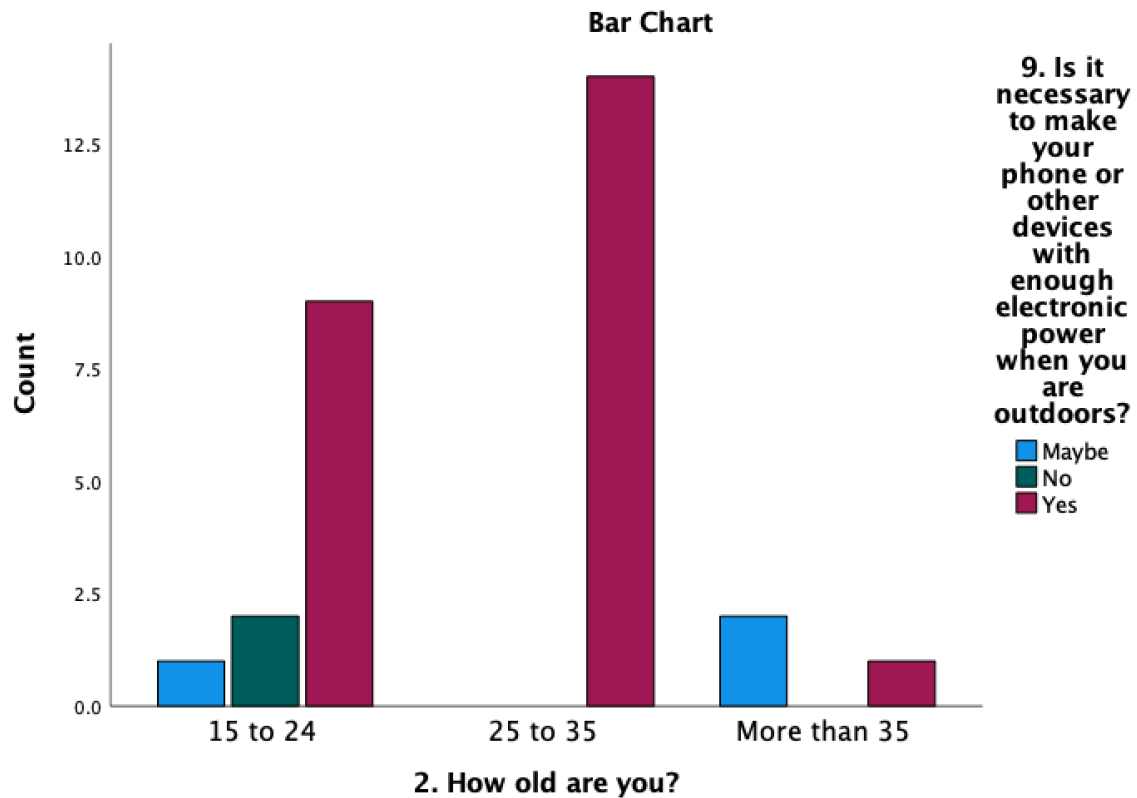


Figure 22. How old are you? is it necessary to make your phone or other devices with enough electronic power when outdoors? (Lin, 2021)

Question 2 and 10

At the age of 15 to 24 years old, 67% of respondents bought a power bank for recharging the phone, and 8% of respondents maybe will buy a power bank, but 25% of respondents have not purchased a power bank before. At the age of 25 to 35, 79% of respondents already bought a power bank, 14% of respondents considered a purchase or not, but 7% of respondents have not purchased a power bank. At the age of more than 35, 67% of respondents bought a power bank, 33% of respondents have not purchased a power bank. In all, 72% of respondents purchased a power bank, 10% of respondents will buy, and 17% have not bought a power bank. According to data results, most people need a power bank for recharging their phone or other electronic devices no matter which age group.

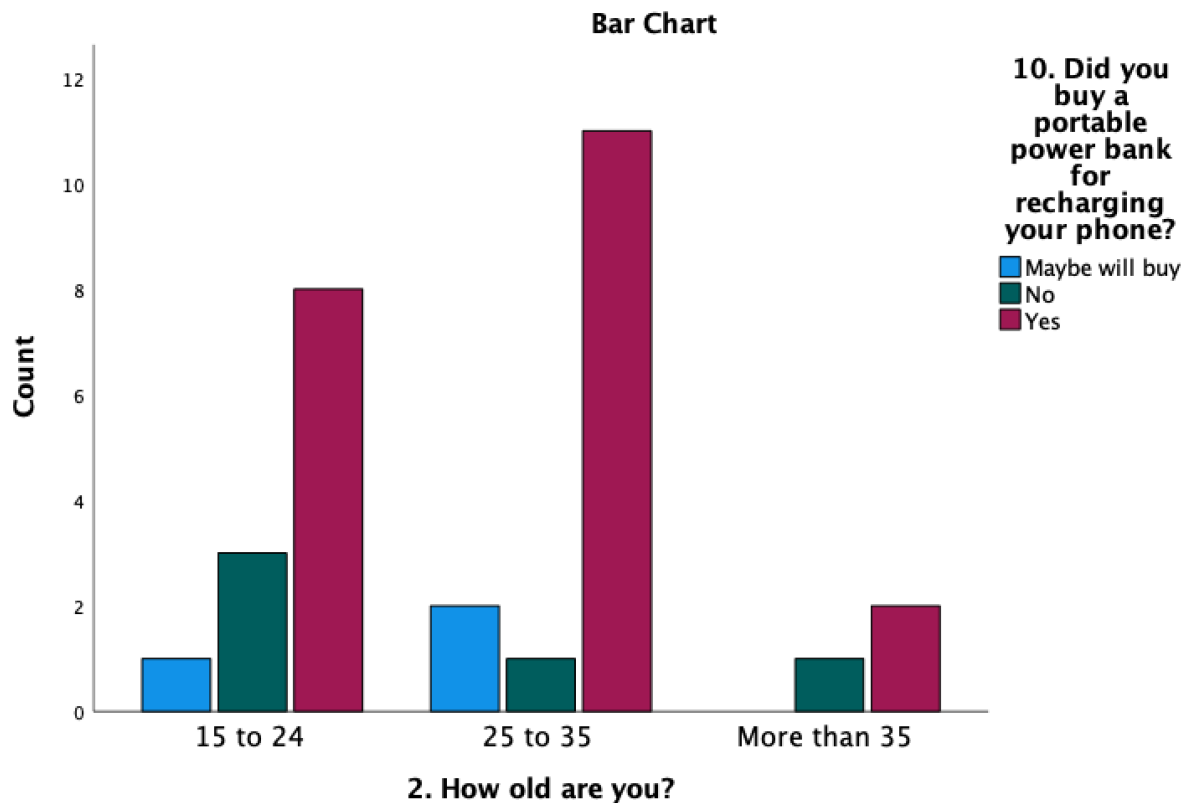


Figure 23. How old are you? did you buy a portable power bank for recharging your phone?
(Lin, 2021)

Question 2 and 11

On the way when they go out shopping, coffee, or meeting. 33% of respondents did not take a power bank on the way, and 25% of respondents may take a power bank on the go. At the age of 25 to 35 years old, 21% of respondents took a power bank on the go, 50% of respondents did not take a power bank when they are outside, and 29% of respondents may take a power bank when they go out. At the age of more than 35, the percentage of respondents who took or did not take or maybe take a power bank on the go is equal to 33%. Overall, 31% of respondents took a power bank on the go, 41% of respondents did not take a power bank on the go, and 28% of respondents in the middle ground maybe will take a power bank when people are outside. In these data results, most respondents did not take a power bank or charger when they go out shopping or do other things.

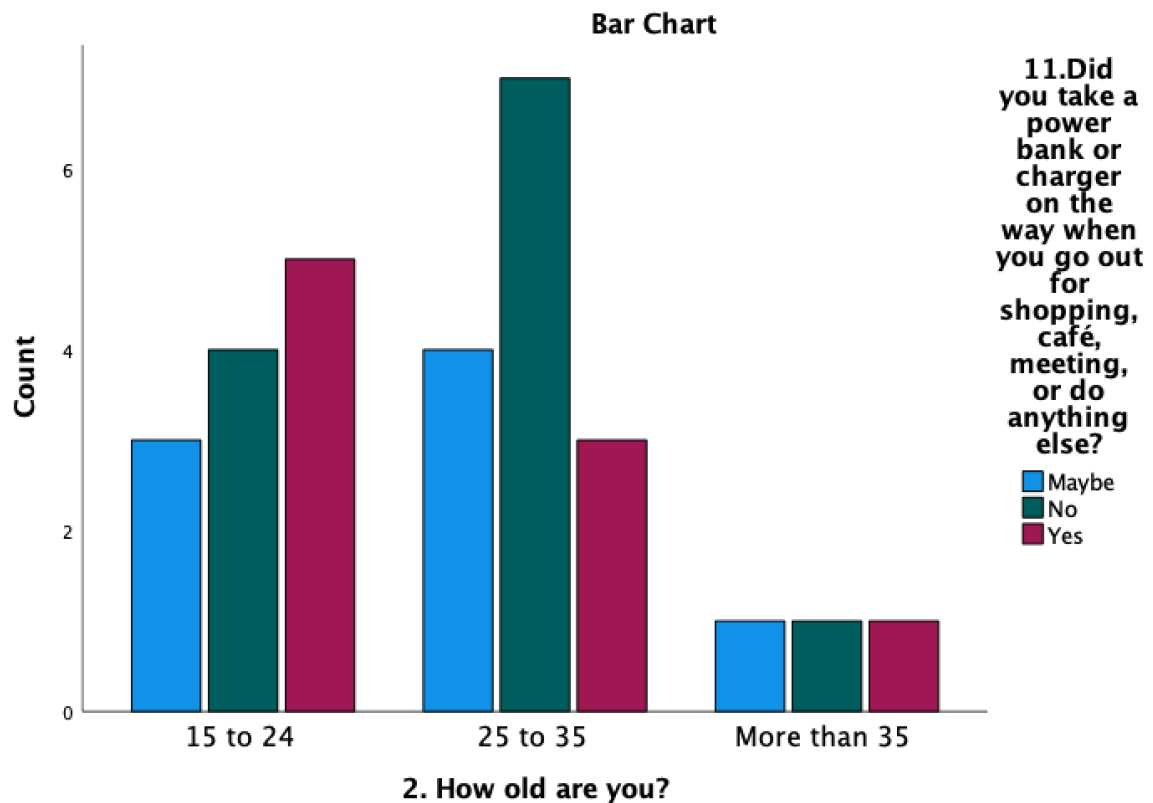


Figure 24. How old are you? did you take a power bank or charger on the way when you go out shopping, a cafe, meeting, or do anything else? (Lin, 2021)

Question 2 and 12

At the age of 15 to 24 years old, 33% of respondents think that it is convenient to take a power bank or charger on the way, 67% of respondents believe that it is not suitable to take a power bank or charger on the go. At the age of 25 to 35 years old, 36% of respondents believe that it is convenient to take a power bank on the go, 64% of respondents think it is not suitable. At the age of more than 35 years old, there are 67 % of respondents believe it is convenient, and 33% of respondents think it is not suitable to carry a power bank on the go. In all, 38% of respondents stand by the convenient side, and 62% of respondents stand by the inconvenient side for carrying a power bank or charger when they are on the go. So, most respondents think that it is not convenient.

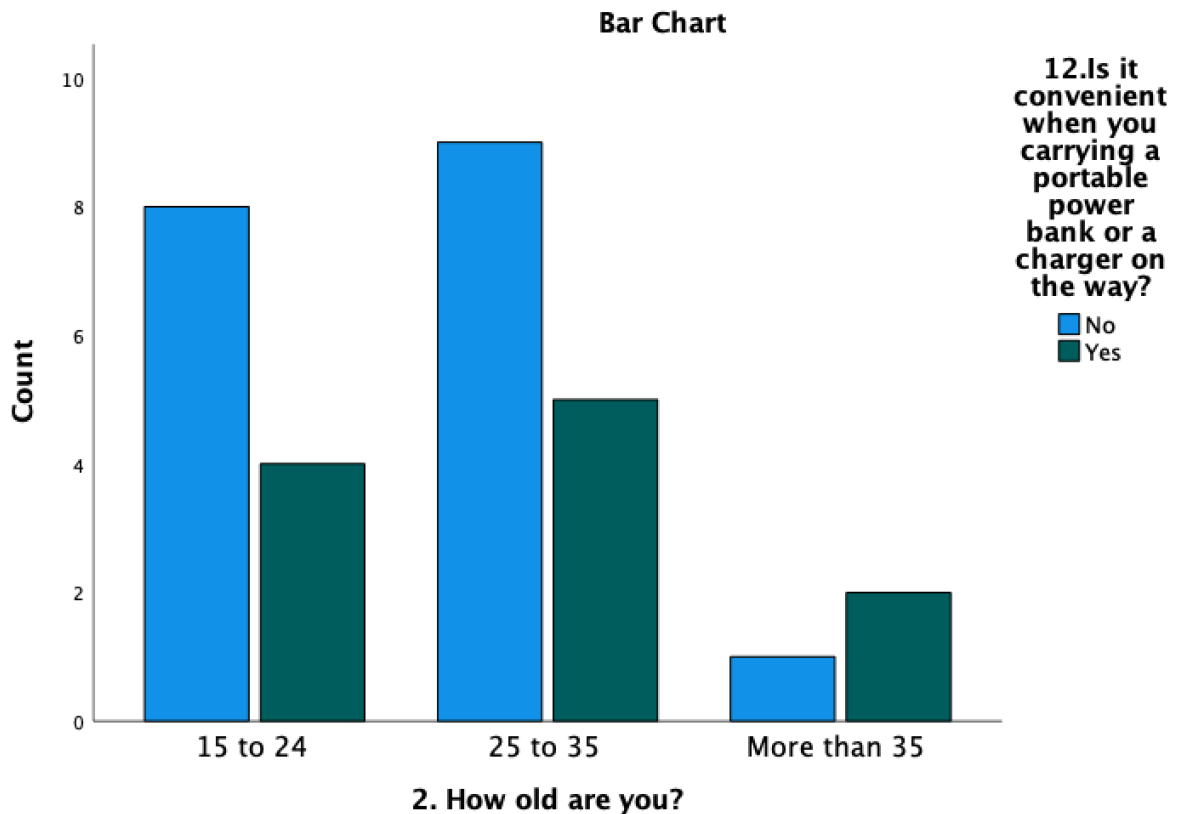


Figure 25. How old are you? is it convenient when you carry a portable power bank or a charger on the way? (Lin, 2021)

Question 2 and 13

At the age of 15 to 24 years old, 75% of respondents want to find a way to charge their phone without carrying any charger or power bank. 17% of respondents think that there is no need to charge their phone in public places. 8% of respondents stand in the middle ground. At the age of 25 to 35 years old, 79% of respondents want to charge their phone in public places, 7% of respondents choose no need to recharge, 14% of respondents not sure. At the age of more than 35, 100% of respondents think it is necessary to find a way to charge their phones in public places. In total, 79% of respondents have the charging demand when they are outside, 10% of respondents do not have the charging need and considering attitude. According to data collection, most people have the charging demand in public places.

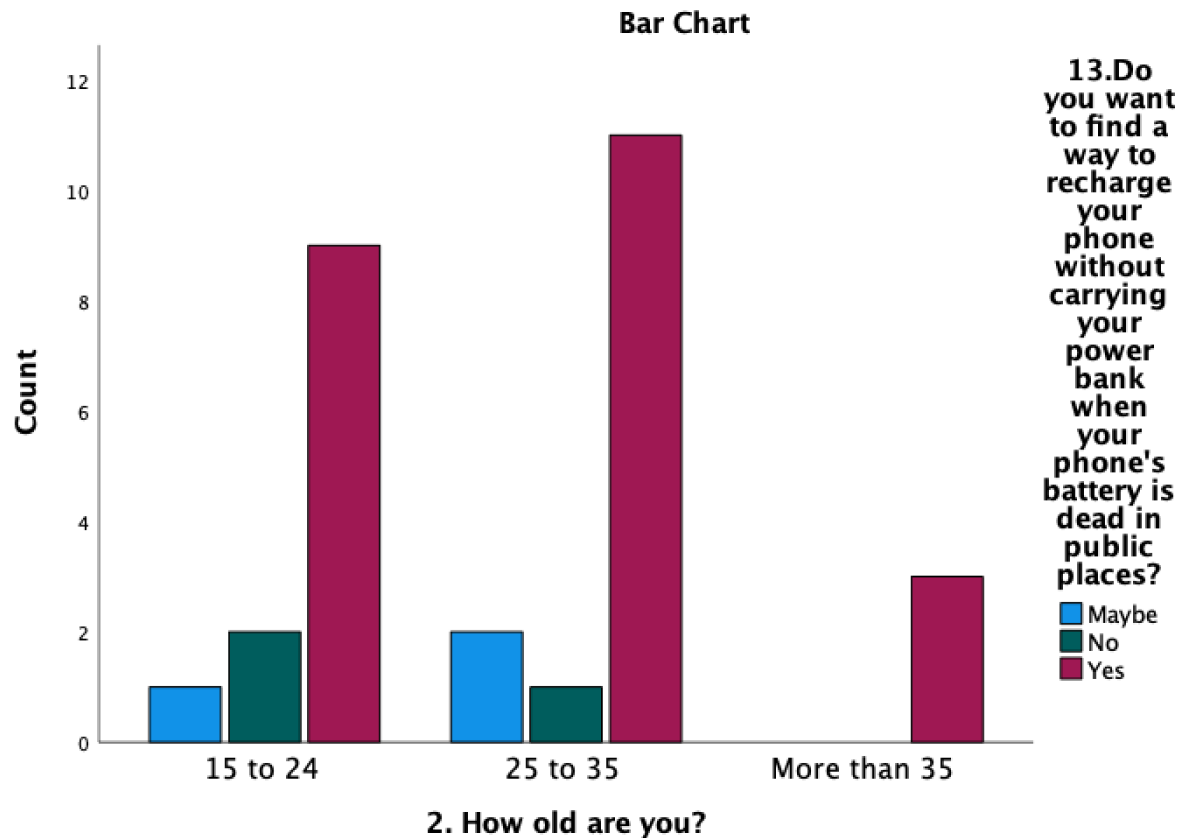


Figure 26. How old are you?do you want to find a way to recharge your phone without carrying your power bank when your phone's battery is dead in public places? (Lin, 2021)

Question 2 and 14

At the age of 15 to 24 years old, 42% of respondents want to pay the recharging fee when there is a need for charging the phone. 25% of respondents do not want to pay for recharging their phones when they are outside. 33% of respondents stand by the middle ground. At the age of 25 to 35 years old, 43% of respondents accept to pay for recharging their phone when on the go, 21% of respondents can not accept to pay for recharging the electronic devices when there is a demand for charging. 36% of respondents stand by the middle ground. At the age of more than 35 years old, 33% of respondents can pay for charging the phone or other devices, 67% of respondents cannot pay for charging the phone or other devices. In total, 41% of respondents want to pay for recharging their phone when they are outside, 28% of respondents disagree with the charging option for charging their phone when they need it. 31% of respondents can consider paying and standing in the

middle ground. According to the data collection, most people can accept or consider paying for the recharging option when they are outside and met the drained battery situation.

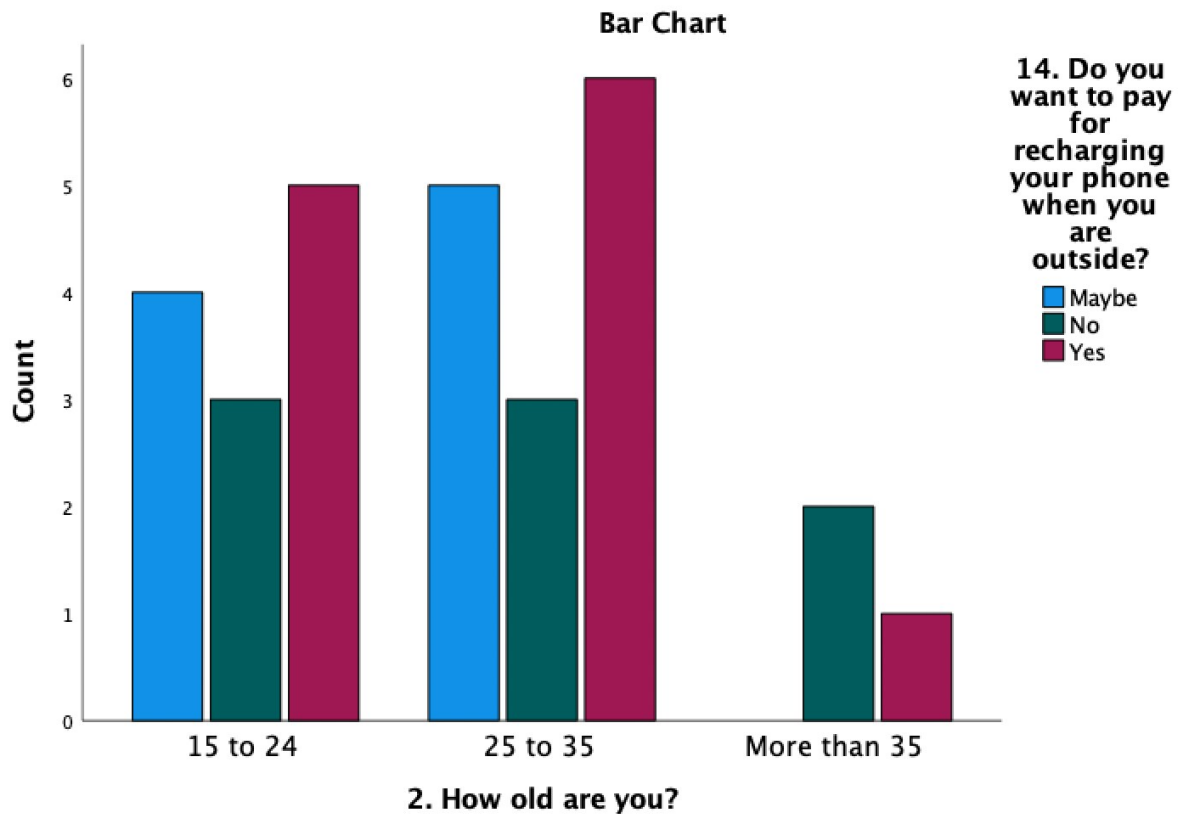


Figure 27. How old are you? do you want to pay for recharging your phone when you are outside? (Lin, 2021)

Question 2 and 15

At the age of 15 to 24 years old, 58% of respondents choose to pay 0.5 euros for 30 minutes, 17% of respondents prefer to pay 1 euro for 1 hour, 8% of respondents did not select any cost options and did not give the suggestions. 8% of respondents chose free of charge, 8% of respondents provide recommendations as the respondents prefer to have options like charge to 50% in 30 minutes, and if it can charge to 80% in 30 minutes, it can have a premium price. At the age of 25 to 35 years old, 71% of respondents prefer to pay 0.5 euros for 30 minutes, 14% of respondents prefer to pay 1 euro for 1 hour, 7% skip this question, 7% like to free of charge. At the age of more than 35, 100% of respondents prefer to pay 0.5

euros for 30 minutes. In total, 69% of respondents chose to pay 0.5 euros for 30 minutes, 14% chose to pay euros for 1 hour, 7% of respondents did not answer, 7% of respondents chose free of charge, and 3% of respondents give suggestions. According to data collection, most people prefer to pay 0.5 euros for 30 minutes.

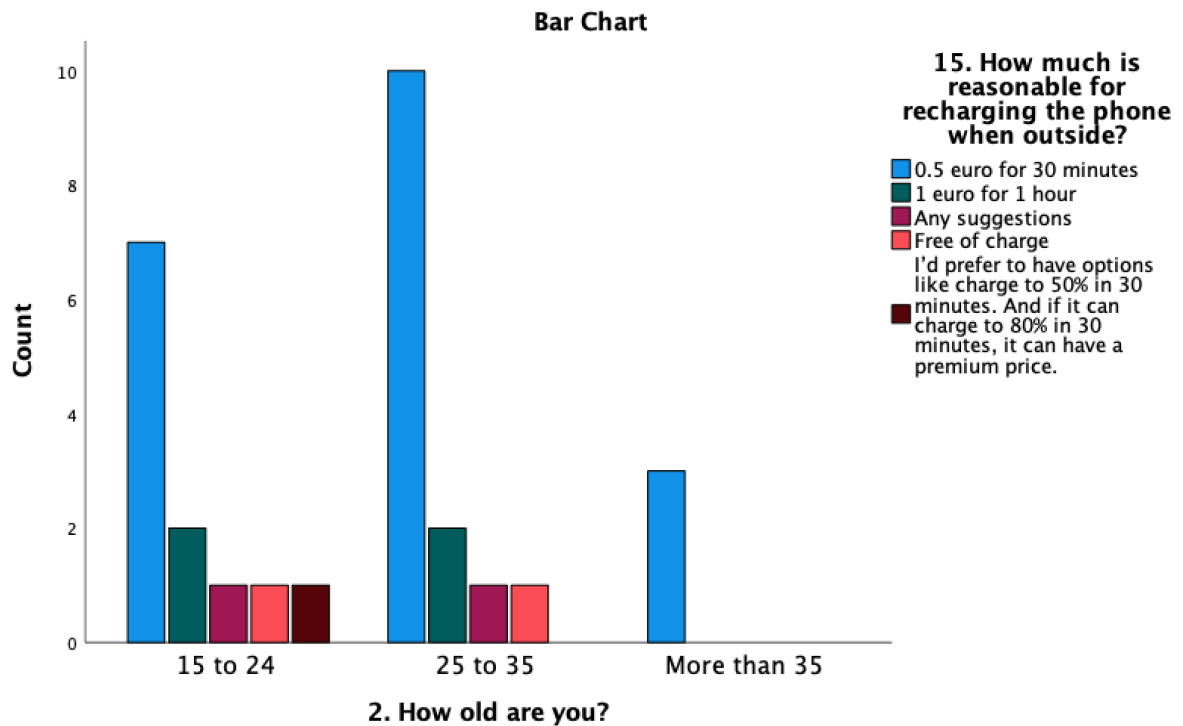


Figure 28. How old are you? how much is reasonable for recharging the phone when outside? (Lin, 2021)

Question 2 and 16

At the age of 15 to 24 years old, there are 50% of respondents use their power bank to charge the phone without battery power when they are outside. 50% of respondents use the charge to charge their phone when their phone's battery died out. At the age of 25 to 35 years old, 57% of respondents use their portable power bank when they are on the go, 36% of respondents use their charger when they are outside, 7% of respondents will do nothing when met the battery died situation. At the age of more than 35 years old, 67% of respondents use their portable power bank also 33% of respondents use charger also for

charging their phone when they are outside and the phone, the battery goes out of the power. In total, 55% of respondents will use their portable power bank, and 41% of respondents will use their charger for charging the phone without power, and 3% of respondents will do nothing. According to data collection, most people will use the portable power bank or the charger to recharge the phone when they have a drained battery situation outside or in public places.

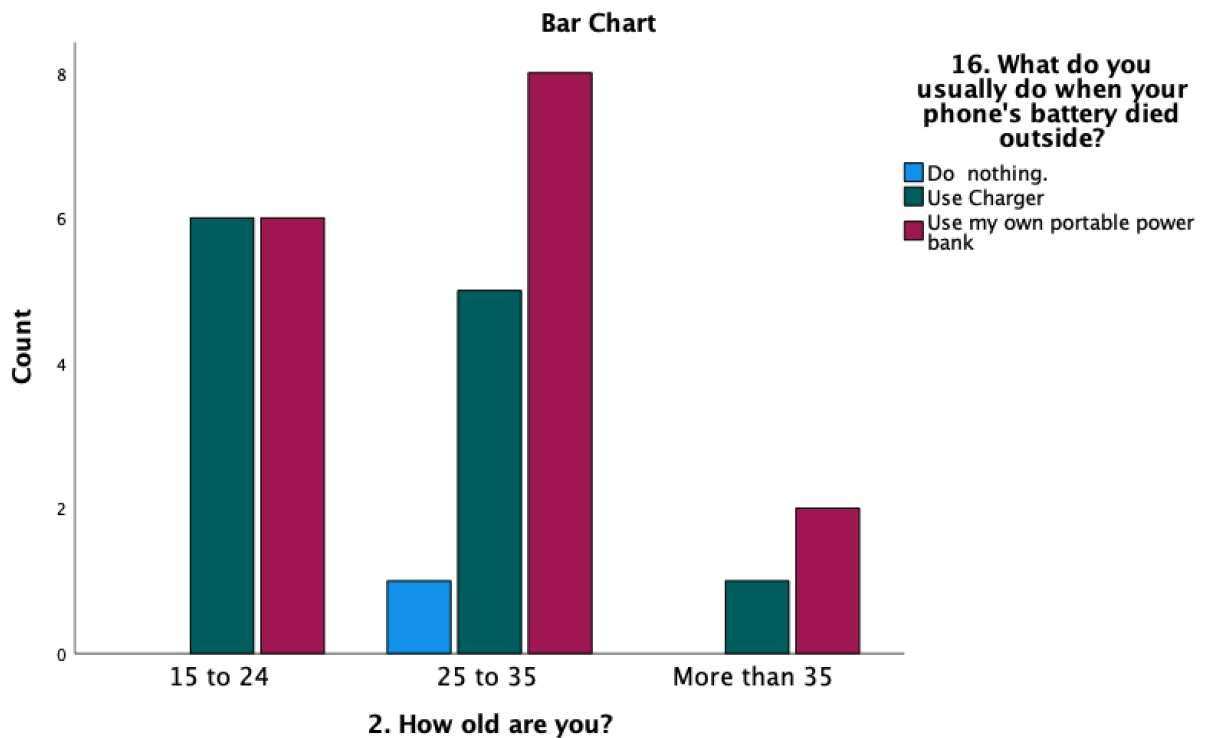


Figure 29. How old are you? What do you usually do when your phone's battery died outside? (Lin, 2021)

4.4.2 Sample two

Question5

86% of participants use the phone frequently in their daily life just 14% of participants think that they did not use their phone frequently. But most of the participants use lot of smartphones every day to deal with some things.

5. Do you use your phone frequently most time in your daily life?

Number of respondents: 22

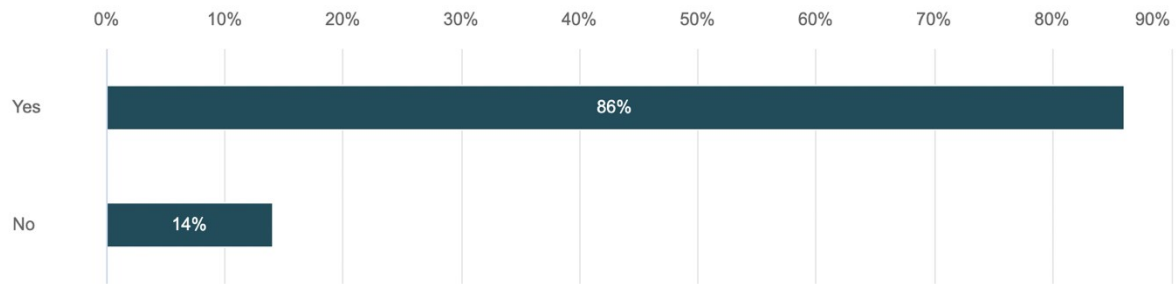


Figure 30. Do you use your phone frequently most time in your daily life? (Lin, 2021)

Question 6

45% of respondents worried about the lower battery problem when they met the situation, such as lower or drained battery when they are outside. 55% of respondents do not matter about this battery situation. It refers to most respondents do not worry about the "red panic" situation. It shows different behavior between data sample one and sample two. Data sample one shows that most people worried about "red panic" situation.

6. Do you worried when you are outdoors and meet your battery color is red as "red panic"?

Number of respondents: 22



Figure 31. Do you worried when you are outdoors and meet your battery color is red as "red panic." (Lin, 2021)

Question 7

59% of respondents met drained battery situation before, and 41% did not meet the deadly battery situation. These results are different from sample one. Most of the respondents from sample one encountered drained batteries situation of their phone.

7. Did you meet the situation that your phone with dead batteries in public places?

Number of respondents: 22

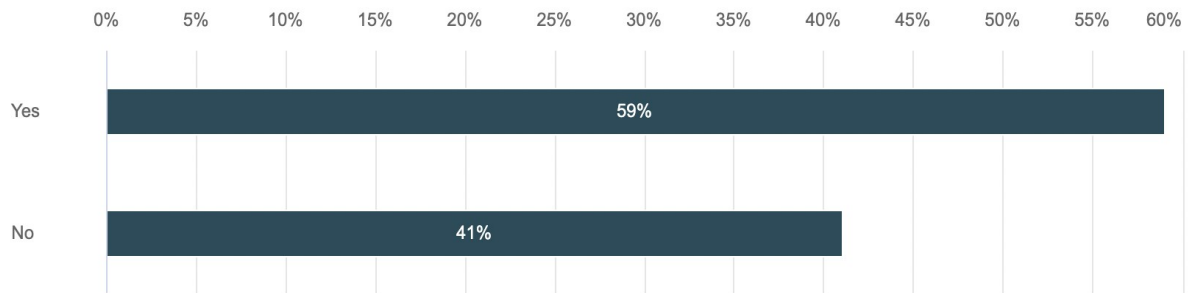


Figure 32. Did you meet the situation that your phone with dead batteries in public places? (Lin, 2021)

Question 8

For this question, 77% of respondents think it is necessary to make enough power with their phone or other electronic devices, 23% of respondents feel making the phone with enough battery is not required.

8. Is it necessary to make your phone or other devices with enough electronic power when you are outdoors?

Number of respondents: 22

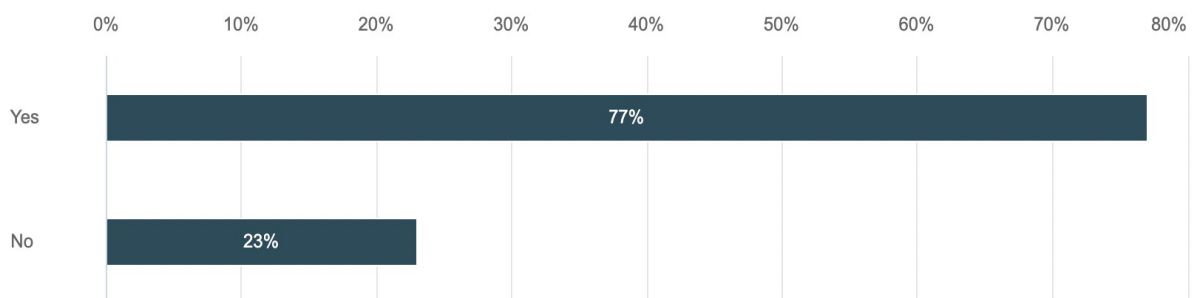


Figure 33. Is it necessary to make your phone or other devices with enough electronic power when you are outdoors? (Lin, 2021)

Question 9

59% of respondents bought a power bank for their electronic devices for charging, and 41% did not buy a power bank. This data ratio is different from sample one, which collected data

from Chinese students. Not many people need a power bank as sample one because of the different charging situations between Finland and China. In Tampere, most public places have power sockets. Some people usually take a charger and try to find a power socket when the phone without a battery, then the portable power bank is a not necessary accessory.

9. Did you buy a portable power bank for recharging your phone?

Number of respondents: 22

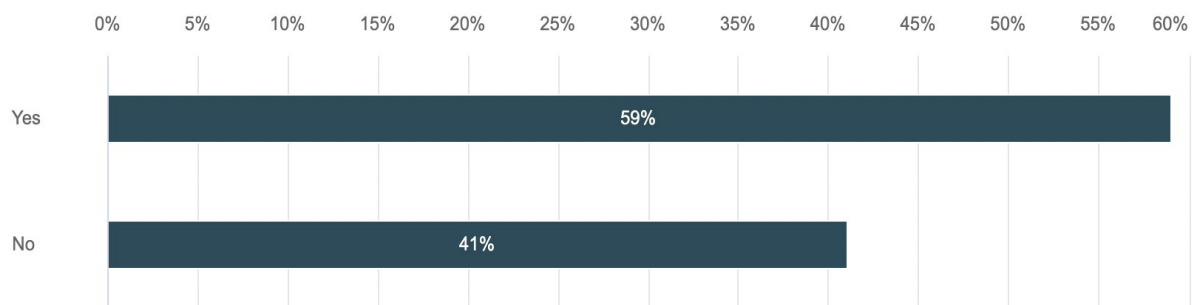


Figure 34. Did you buy a portable power bank for recharging your phone? (Lin, 2021)

Question 10

There are 32% of respondents who will carry a power bank or charger on the way, and 68% of respondents will not bring a power bank with them when they are going shopping or do other things. It means that it is not convenient for people to always carry a power bank or charger. People prefer to go outside without having any extra stuff.

10. Did you take a power bank or charger on the way when you go out for shopping, café, meeting, or do anything else?

Number of respondents: 22

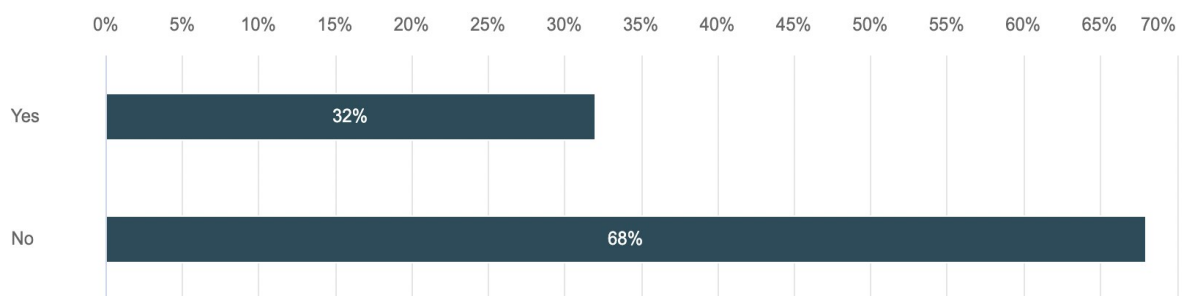


Figure 35. Did you take a power bank or charger on the way when you go out shopping, café, meeting, or do anything else? (Lin, 2021)

Question 11

This data result shows that 64% of respondents think it is not convenient to carry a power bank in public places. Almost the same as 68% of respondents will not bring a power bank when in public places. But 36% of respondents believe there is a need to recharge their phone or devices, so it is convenient for them to carry their power bank.

11. Is it convenient when you carrying a portable power bank or a charger on the way?

Number of respondents: 22

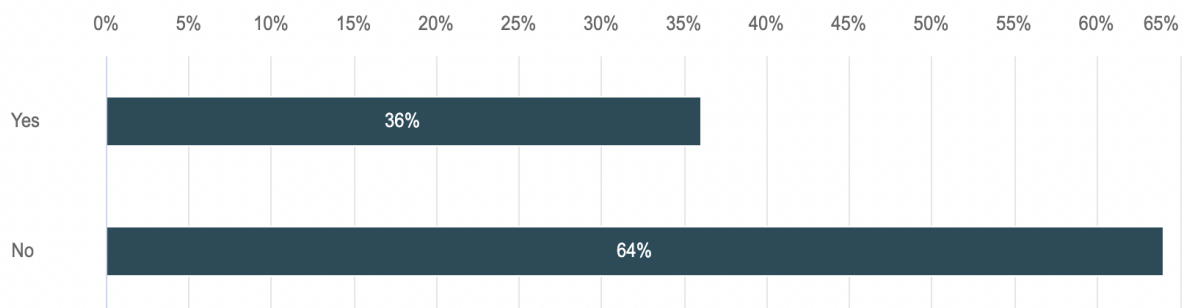


Figure 36. Is it convenient when you carry a portable power bank or a charger on the way?
(Lin, 2021)

Question 12

The percentage of those who want to find a way to recharge their phones without carrying their power bank when people are in public places is 68%, this is almost the same as the percentage of who think it is not convenient to carry a power bank or charger. Also, 32% of respondents believe no need to find a way, such as people who always want to take their phone charger or own power bank then there is no need.

12. Do you want to find a way to recharge your phone without carrying your power bank when your phone is dead in public places?

Number of respondents: 22

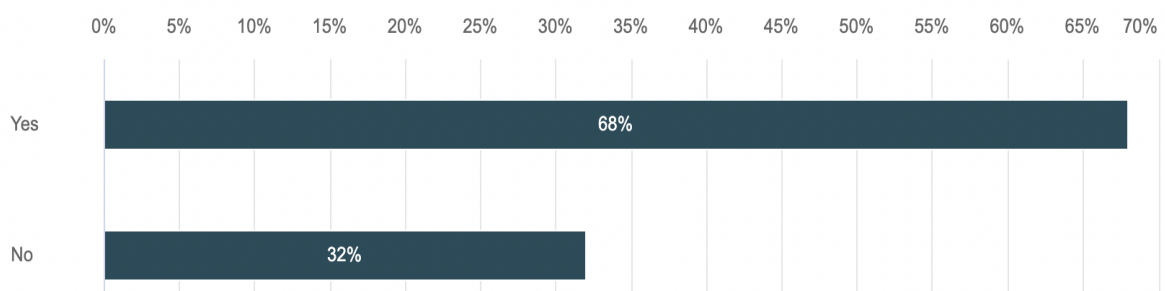


Figure 37. Do you want to find a way to recharge your phone without carrying your power bank when your phone is drained in public places? (Lin, 2021)

Question 13

This data is obviously different from data sample one. Only 9% of respondents choose that payment option, 46% of respondents do not want to pay for recharging their devices instead of free charge option. But there are 45% of respondents stand in middle ground. It depends on the situation at that moment when their phone or devices without enough power.

13. Do you want to pay for recharging your phone when you are outside?

Number of respondents: 22

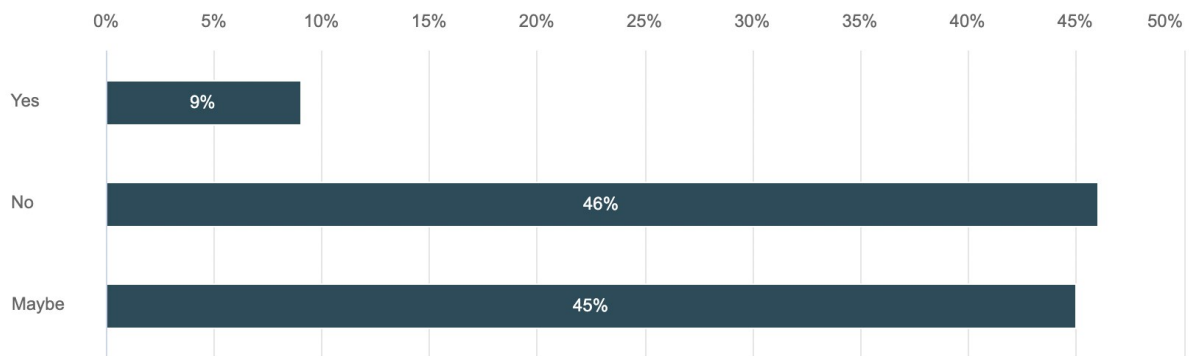


Figure 38. Do you want to pay for recharging your phone when you are outside? (Lin, 2021)

Question 14. How much is reasonable for recharging the phone when outside?

This question wants to know the reasonable price for people to choose recharging their phone or electronic devices. 50% of respondents prefer 0.5 euros per 30 minutes, 18% of respondents choose 1 euro per hour, and 32% of respondents give suggestions instead of the current price options. These suggestions including under 1 euro per hour, free charge, and quick charge.

14. How much is reasonable for recharging the phone when outside?

Number of respondents: 22

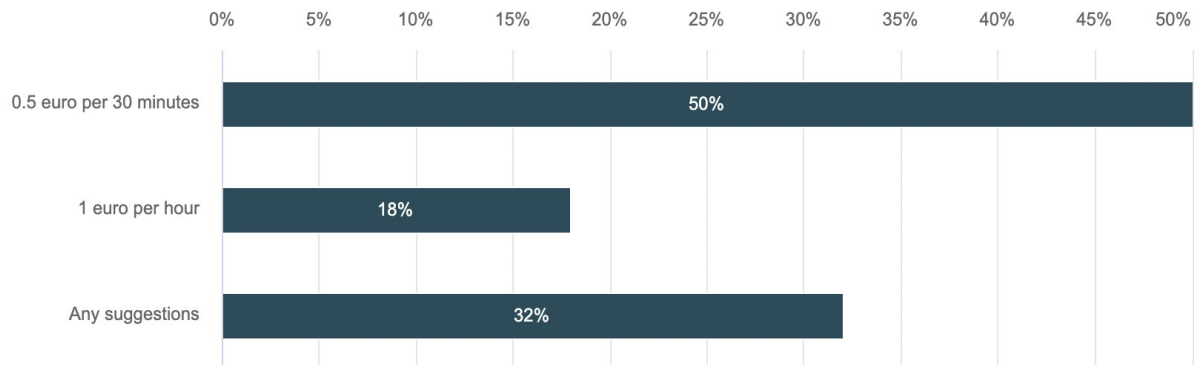


Figure 39. How much is reasonable for recharging the phone when outside? (Lin, 2021)

Question 15

There are five options: charging sockets, own portable power bank, charging cabinet, wireless charging points, and other options. 54% of respondents chose to use charging sockets, 23% of respondents use their portable power bank, 9% of respondents use wireless charging points, and 14% use other options such as using the second phone or doing nothing. The results show that most respondents use charging sockets, but results from sample one, most of the respondents use their power bank. It shows that there is different behavior according to existing charging situation.

15. What do you usually do when your phone's battery died outside?

Number of respondents: 22

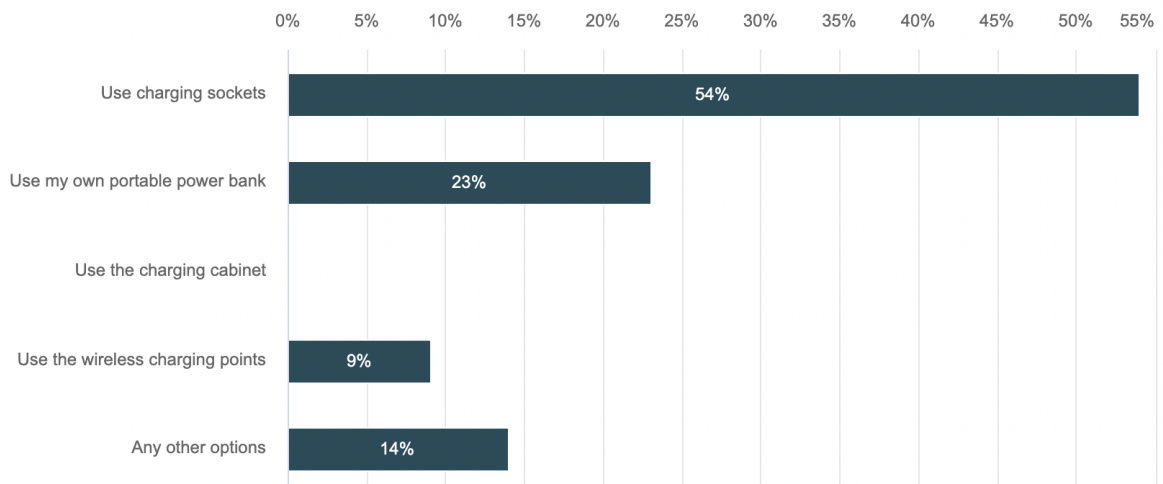


Figure 40. What do you usually do when your phone's battery died outside? (Lin, 2021)

Question 16

68% of respondents do not know the charging points in Tampere public places, but 32% answered that charging socket is customary in public areas, a charging cabinet in DNA and Koskikeskusand, Hesburger ratina.

16. Do you know any mobile phone's charging points for customer in public places of Tampere? If yes, what is that, and how is it?

Number of respondents: 22

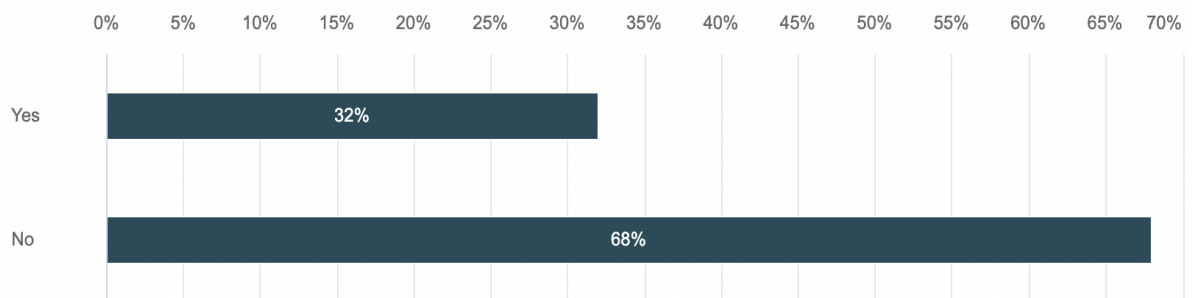


Figure 41. Do you know any mobile phone's charging points for customers in public places of Tampere? If yes, what is that, and how is it? (Lin, 2021)

Question 17

86% of respondents do not know the wireless charging points, but some respondents answered that one restaurant with wireless charging, but the phone has to contact the wireless charger.

17. Do you know any wireless charging points of mobile phone for customers in Tampere public places? If yes, what is that, and how is it?

Number of respondents: 22

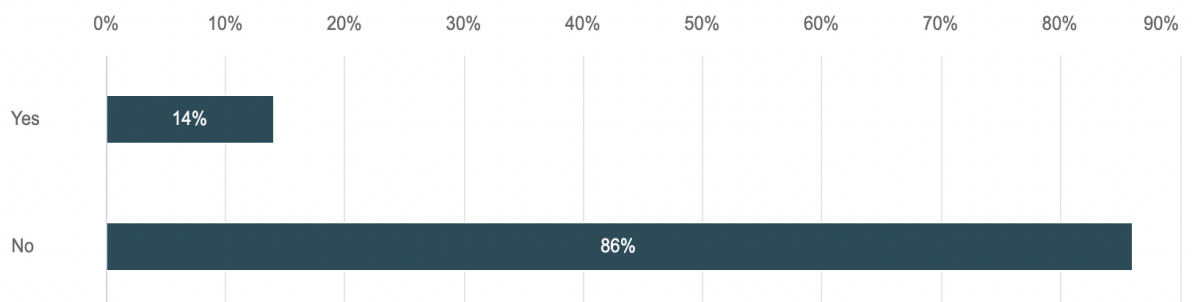


Figure 42. Do you know any wireless charging points of mobile phones for customers in Tampere public places? If yes, what is that, and how is it? (Lin, 2021)

5 Discussion

5.1 Findings

5.1.1 Sample one

The data clearly show that smartphone is a necessary part of people's lives. People usually rely on it to deal with things related to work or life. Due to increased usage of mobile phones, people's demand for portable phone power is gets higher and higher.

As shown in the data, people have a higher expectation for enough electricity with their phones when they are outside. Most people often meet the drained battery situation with their mobile phone when they are on the go. Meanwhile, people worried when they meet this kind of situation without enough power as red panic. From this point, people have the demand for enough power with phones or devices.

About charging option, people carry their potable power bank and charger with them when going outside. It is not convenient but is a necessary option for making enough power with mobile phone and other electronic devices. But most people felt annoying carrying a power bank and do not want to carry a power bank or charger when they are outdoors.

Most people want to find ways to recharge their phone or other electronics when they are in public places conveniently without carrying their power bank or charger. Even most people want to pay for recharging the phone. And 69% of respondents tend to pay 0.5 euros for 30 minutes.

5.1.2 Sample two

Mobile smartphones are necessary part in our lives, and enough power with their phones or other devices is essential in their daily lives. Most people met the drained battery situation when they are outside, so there is demand to recharging their phone when people are in public places.

The data results show that most Finnish people used to use a charger to recharge their phone instead of carrying a power bank because of the existing charging situation with many power sockets in public places.

The author observes the charging situation in public places of Tampere. Most public places have a power socket for charging electronic devices and increasing the customer experience. There are some charging cabinets in some areas, but all of the charging options still can not solve the battery problem of charging the mobile phone on the go.

Although there are many power sockets in Tampere's public places, according to these data results, many people use their power banks, which means charging power sockets can not solve the mobile charging problem perfectly.

Few people like carrying a power bank or charger, and most people think that taking a power bank or charger is not convenient when people on the way. And most people are willing to have a convenient way to charge the phone without carrying any extra charger or power bank.

For the charging fee, the attitude of the respondents is half to half with a positive attitude and negative attitude. 46% of respondents do not like to spend any charging fee, 45% of respondents can accept to pay for charging, and 9% of respondents in the middle ground, which means it has possible to pay but depends on charging option or power demand of electronic devices. The option 0.5 euros per 30 minutes is a reasonable price, and the quick charge is a suggestion

Most people know power sockets about charging points in Tampere, and few people know wireless charging and charging cabinets. But according to this data collection, no one uses charging cabinet when people met the battery problem when outdoors. This phenomenon shows that a charging cabinet is not a convenient option for charging phones. But few wireless charging are helpful when people did not take a charger when they are going to a restaurant that has installed this wireless charging on the table. Still, contact charging means people have to put the phone on the wireless charging stand, slowly charging.

5.1.3 The difference between data sample one and data sample two

Most of the respondents from sample one are Chinese students who study in Tampere of Finland. The respondents of sample two are Finnish students and international students from other countries except for China.

Condition	Chinese students who study in Finland	Finnish and International students
Using the phone frequently	97%	86%
Felt panic when met lower or drained battery situation	76%	45%
Met the situation that phone with drained batteries in public places.	93%	59%
It is necessary to make a phone with enough electronic power when staying outdoors.	83%	77%
Bought a portable power bank for recharging the phone.	72%	59%
Carrying a power bank or charger on the way.	31%	32%

It is not convenient to carry a portable power bank or a charger on the way.	62%	64%
Finding a way to recharge the phone without carrying the power bank when your phone is drained in public places.	79%	68%
The positive attitude for paying the recharging fees.	43%	9%
0.5 euros per 30 minutes for charging	69%	50%
1 euro per hour for charging	13.8%	18%
Use charger for recharging when outside	41%	54%
Use own power bank for recharging when outside	55%	23%

5.2 Limitations

This thesis research uses a quantitative method by surveying international students and local Finnish students who are living in or have traveled in Tampere of Finland. The study's limitations are the research scope is limited, the survey data scope focuses on the students' level, and it just has limited data. So the survey results may be affected by the research scope by expanding the scope of investigation.

Moreover, as an international student, researching local mobile charging market lack knowledge of local customers. It is limited research which maybe has some shortcomings and lack of enough resources.

Furthermore, Under the COVID-19 situation, some places were closed, such as restaurants, public libraries, coffee shops, and the public chair, which has power sockets and prohibited people from sitting there. It becomes harder to research and observe more places for the charging situations.

6 Conclusion

For all of the ways mentioned above, including power sockets, charging cabinet, and air charge, the phone is not portable in charging. Thus, it is very inconvenient if one needs to use the phone in travel. However, sharing power bank projects can solve the problem effeciently, namely, charging phones anywhere. It can solve the problem of mobile charging, which is an essential aspect. The rapid development of power banks in the charging market is because many users demand mobile charging.

Power bank sharing stations can be installed in public places, including restaurants, coffee shops, shopping malls, trains or bus stations, libraries, and other shops. People will get more charging options to choose which one is adaptable for them at a particular time.

If people stay in one place like restaurants or coffee shops, they can use the sharing portable power bank. If people are shopping, they can take the sharing portable power bank also with them. If people have to go to other places, they can take the portable power bank to other places. Moreover, they can return it to another power bank station. So, the sharing power bank project is convenient for people charging on the go. Sharing power bank app also have a map to find where it is in the city then people can find it by the app.

According to this research, it suggests a potential market to implement Tampere's power bank sharing project. Nowadays, there are power sockets, charging cabinets in the existing mobile charging market, and the power bank industry still has the market share. Then add one more convenient charging option for people in the charging market is expectable.

People can have more charging options when they are going outside and without worrying if the battery drained.

6.1 Recommendations

Based on conclusions, the implementation of the power bank sharing project can not only provide more charging options for customers, but also reduce the usage rate of personal power bank, and solve charging anytime and anywhere without taking your own charger or own power bank when people are on the go. The disadvantage of the power bank sharing project is that one still have to use a power bank to charge electronic phones or other devices.

Future studies could study how to implement the power bank sharing in Tampere, or go on to do deep research by expanding the scope of investigation of this topic. Other suggestions as study wireless battery charging whether it is possible to instead of power bank sharing or power sockets in the charging market. Wireless battery charging without contacting the phone is another charging option. It can wirelessly charge phones or other electronic devices such as microwaves or radio frequency signals. If it works well, people can charge their phone or electronic devices via television, fire alarm, clock, or some places to reach target phones or devices. (Singla, 2014)

References

Agnihotri, A. (2016). Extending boundaries of blue ocean strategy. *Journal of Strategic Marketing*, 24(6), 519-528.

Admin. (2020). On-Demand Power Bank Sharing. Blog publication 16 August 2020. Retrieved 15 April 2021 from <https://blog.sodio.tech/on-demand-power-bank-sharing-platform/>

Brick Technology. (2020). Power bank sharing – another shared economy platform? Blog publication 2 April 2020. Retrieved 8 April 2021 from <https://medium.com/@brick.app/power-bank-sharing-another-shared-economy-platform-3c6bed83ba6a>

Belkin. (n.d.) Portable charging & power bank buying guide. Retrieved 18 April 2021 from <https://www.belkin.com/us/resource-center/portable-charging/>

Dehkordi, G. J., Rezvani, S., & Behravan, N. (2012). Blue ocean strategy: A study over a strategy which help the firm to survive from competitive environment. *International Journal of Academic research in business and social sciences*, 2(6), 477.

Degenhard, J. (2021). Smartphone users in Finland 2010-2015. Retrieved 26 February 2021 from <https://www-statista-com.ezproxy.hamk.fi/forecasts/1145108/smartphone-users-in-finland>

Electronicsnotes. (n.d.). What is a Power Bank-portable Charger. Retrieved 16 April 2021 from <https://www.electronics-notes.com/articles/equipment-items-gadgets/powerbank/what-is-a-powerbank-battery-store.php>

Heinrichs, H. (2013). Sharing economy: a potential new pathway to sustainability. *GAIA- Ecological Perspectives for Science and Society*, 22(4), 228-231.

Joshi, A. (2015). Low Cost, Portable and Extendable Power Bank. *International Journal of Scientific & Engineering Research*, 6(4), 87-89.

Kim, W. C. (2005). Blue ocean strategy: from theory to practice. *California management review*, 47(3), 105-121.

Kim, W. C., & Mauborgne, R. (2005). Value innovation: a leap into the blue ocean. *Journal of business strategy*.

Khalid, K., Abdullah, H. H., & Kumar M, D. (2012). Get along with quantitative research process. *International Journal of Research in Management*.

Latauspiste. (n.d.). Latauspiste. Mobi is a fast-growing nationwide network of mobile charging points. Retrieved 7 April 2021 from <https://latauspiste.mobi/info/>

- Matyunina, J. (2020). Top 8 Best Power Bank Sharing Apps. Blog publication 26 November 2020. Retrieved 27 March 2021 from <https://www.mobindustry.net/top-8-best-power-bank-sharing-apps/>
- Mi, J. (2015). Blue ocean strategy. *Wiley Encyclopedia of Management*, 1-1.
- Mobindustry. (2021). How to Build a Power Bank Sharing App: Must-Have Features and Cost. Retrieved 8 April 2021 from <https://medium.com/mobindustry/how-to-build-a-power-bank-sharing-app-must-have-features-and-cost-690e2f921038>
- Niinimäki, E. (2020). Smartphone penetration rate in Finland 2017-2020. Retrieved on 21 February 2020 from <https://www-statista-com.ezproxy.hamk.fi/statistics/564602/share-of-smartphone-users-in-finland/>
- Niinimäki, E. (2020). Forecast of the smartphone user penetration rate in Finland from 2018 to 2024. Retrieved 23 February 2020 from <https://www-statista-com.ezproxy.hamk.fi/statistics/568091/predicted-smartphone-user-penetration-rate-in-finland/>
- Niinimäki, E. (2020). Mobile phone usage in Finland 2020. Retrieved on 25 February 2020 from <https://www-statista-com.ezproxy.hamk.fi/statistics/867092/mobile-phone-usage-in-finland/>
- Niinimäki, E. (2021). Largest cities in Finland 2020. Retrieved 2 April 2021 from <https://www-statista-com.ezproxy.hamk.fi/statistics/327469/largest-cities-in-finland/>
- Prospective Industry Research Institute. (2019). Market analysis of China's shared power bank industry in 2019: the profit model is gradually clear, and the advent of 5G outlets brings new opportunities. Retrieved 30 March 2021 from <https://bg.qianzhan.com/report/detail/458/190722-35cec60a.html>
- Puschmann, T., & Alt, R. (2016). Sharing economy. *Business & Information Systems Engineering*, 58(1), 93-99.
- Rightech. (n.d.). Power bank sharing. Retrieved 15 April 2021 from <https://rightech.io/en/power-bank-sharing/>
- Radu. (2021). What is a power bank? Power banks explained. Retrieved 17 April 2021 from <https://www.powerbankexpert.com/what-is-a-power-bank-power-banks-explained/>
- Steen, E. (2019). Power bank sharing service ChargeSpot lets you charge your phone on the go. Blog publication 3 July 2019. Retrieved 8 April 2021 from <https://www.timeout.com/tokyo/news/power-bank-sharing-service-chargespot-lets-you-charge-your-phone-on-the-go-070319>

Sukamolson, S. (2007). Fundamentals of quantitative research. *Language Institute Chulalongkorn University*, 1, 2-3.

Swanson, R. A., & Holton, E. F. (2005). *Research in organizations: Foundations and methods in inquiry*. Berrett-Koehler Publishers.

Singla, N. (2014). Wireless Charging of Mobile Phone Using Microwaves or Radio Frequency Signals. *International Journal of Advanced Research in Computer Science & Technology*, 2(1), 1-3.

Teubner, T. (2014, May). Thoughts on the sharing economy. In *Proceedings of the International Conference on e-Commerce* (Vol. 11, pp. 322-326).

Tampere. (2020). Information about Tampere. Retrieved 12 April 2021 from <https://www.tampere.fi/tampereen-kaupunki/tietoa-tampereesta.html>

Vailshery, L. (2021). Phone accessories ownership in Nordics 2019. By age. Retrieved 26 February 2021 from <https://www-statista-com.ezproxy.gavilan.edu/statistics/1189178/phone-accessories-ownership-in-the-nordics-by-age/>

Yaraghi, N., & Ravi, S. (2017). The current and future state of the sharing economy. *Available at SSRN 3041207*.

Zhu, G., So, K. K. F., & Hudson, S. (2017). Inside the sharing economy. *International Journal of Contemporary Hospitality Management*.

Zu, S. (2021). Charge 3-4 yuan per hour What is the "secret" behind the quiet price increase of shared power banks. Retrieved 27 March 2021 from https://www.sohu.com/a/445220432_393779

Appendix 1: Sample one, the survey questionnaire

With the widespread use of mobile phones, battery consumption is getting faster and faster. This survey is about how do you usually deal with this problem if your phone's battery dies or low battery when you are outside.

1. What is your gender?
 - a. Male
 - b. Female
 - c. I prefer not to say
2. How old are you?
 - a. 15 to 24
 - b. 25 to 35
 - c. More than 35
3. What country are you from?
4. Do you have an income monthly?
 - a. Yes
 - b. No
5. Which system does your smartphone use?
 - a. IOS
 - b. Android
 - c. Others
6. Do you use your phone frequently most time in your daily life?

- a. Yes
- b. No
- c. Maybe

7. Do you flustered when you are outdoors and meet your battery color is red as "red panic"?

- a. Yes
- b. No

8. Did you meet the situation that your phone with dead battery or low battery in public places?

- a. Yes
- b. No

9. Is it necessary to make your phone or other devices with enough electronic power when you are outdoors?

- a. Yes
- b. No
- c. Maybe

10. Did you buy a portable power bank for recharging your phone?

- a. Yes
- b. No

11. Did you always take a portable power bank or charger on the way when you go out shopping, coffee, to meet, or do anything else?

- a. Yes
- b. No
- c. Maybe

12. Is it convenient when you are carrying a portable power bank or a charger on the way?

- a. Yes
- b. No

13. Do you want to find a way to recharge your phone without carrying your power bank when your phone's battery is dead in public places?

- a. Yes
- b. No
- c. Maybe

14. Do you want to pay for recharging your phone when you are outside?

- a. Yes
- b. No
- c. Maybe

15. How much is reasonable for recharging the phone when outside?

- a. 0.5 euro per 30 minutes
- b. 1 euro per hour
- c. Any suggestions

16. What do you usually do when your phone's battery died outside?

- a. Use charging power sockets
- b. Use a portable power bank
- c. Use the charging cabinets
- d. Use the wireless charging points
- e. Any other options

Appendix 2: Sample two, the survey questionnaire

With the widespread use of mobile phones, battery consumption is getting faster and faster. This survey is about how do you usually deal with this problem if your phone's battery dies or low battery when you are outside.

1. What is your gender?

- a. Male
- b. Female
- c. I prefer not to say

2. How old are you?

- a. 15 to 24
- b. 25 to 35
- c. More than 35

3. What country are you from?

4. Which system does your smartphone use?

- a. IOS
- b. Android
- c. Others

5. Do you use your phone frequently most time in your daily life?

- a. Yes
- b. No

6. Do you worried when you are outdoors and meet your battery color is red as "red panic"?

- a. Yes

b. No

7. Did you meet the situation that your phone with drained batteries in public places?

a. Yes

b. No

8. Is it necessary to make your phone or other devices with enough electronic power when you are outdoors?

a. Yes

b. No

9. Did you buy a portable power bank for recharging your phone?

a. Yes

b. No

10. Did you always take a portable power bank or charger on the way when you go out shopping, café, to meet, or do anything else?

a. Yes

b. No

11. Is it convenient when you are carrying a portable power bank or a charger on the way?

a. Yes

b. No

12. Do you want to find a way to recharge your phone without carrying your power bank or charger when your phone is dead in public places?

a. Yes

b. No

13. Do you want to pay for recharging your phone when you are outside?

a. Yes

- b. No
- c. Maybe

14. How much is reasonable for recharging the phone when outside?

- a. 0.5 euro per 30 minutes
- b. 1 euro per hour
- c. Any suggestions

15. What do you usually do when your phone's battery died outside?

- a. Use charging power sockets
- b. Use a portable power bank
- c. Use the charging cabinets
- d. Use the wireless charging points
- e. Any other options

16. Do you know any mobile phone's charging points for customers in public places of Tampere? If yes, what is that, and how is it?

- a. Yes
- b. No

17. Do you know any wireless charging points of mobile phone for customers in Tampere public places? If yes, what is that, and how is it?

- a. Yes
- b. No

18. Do you know any charging hot spots for a mobile phone in Tampere public places? If yes, what is that, and how is it?

- a. Yes
- b. No