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Impacts of the pandemic: Smartphone adoption and usage during the isolation in Finland and Japan

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Abstract

At the beginning of the year 2020, the whole world was in shock after experiencing a global pandemic, COVID-19. In many countries the circumstance led to isolation, people had to stay home and rely on technology in their normal activities. The digitalized world helps in that situation, since using and adopting new technology has become natural for most of the people globally.

This study examines how the COVID-19 has impacted the lives of young adults, having the focus on smartphone usage and adoption during the pandemic time. The previous research on the topic is still quite tenuous and contradictory, so this study reinforces the understanding of the theme. In the empirical research Finnish and Japanese university students are being interviewed and the data is analysed taking existing literature into account. The objective is to determine the possible changes in smartphone adoption and usage during the isolation caused by the pandemic. Also, the cultural perspective is considered by focusing on Finnish and Japanese smartphone users.

The aspect of technology adoption is not a new one being studied for many years. Adding also attitudinal and behavioural perspectives may lead to more complicated and expandable models that try to give a better understanding of why people choose to adopt or reject the technology. It's not simple why people behave like they do when encountering technology, particularly in a special situation like during a COVID-19 pandemic. The results of this study show that both Finnish and Japanese university students have adopted smartphones well before the pandemic, so using them during the COVID-19 along with computers has not caused any major problems concerning the tasks that were traditionally performed without the devices. As the previous literature states, the importance of technology increased when the pandemic started to spread. However, the comparison of computers and smartphones turned out to be an important aspect when studying smartphone usage during the pandemic time. Many mobile applications had become less important since all the contacts were using computers because of remote work and studies. The pandemic situation had changed the platform of communication and other actions partly from the smartphone to the computer.

Keywords

Mobile technology adoption, mobile technology usage, experiential values, mobile applications, pandemic, COVID-19, Finnish culture, Japanese culture

Supervisor

PhD, Professor Netta Iivari

Foreword

I got the inspiration for this thesis when I was studying as an exchange student at Yokohama National University for one spring semester in 2019. It was my first time in Japan and visiting familiar places from the popular culture and internet felt like a dream coming true. While I was enthusiastically watching around, eyes as wide as they can be, all the local people seemed to keep their eyes tightly on their phones. It felt a bit sad to notice how lonely I felt among the mass of people. At the same time, I understood the local people, since also my phone was tightly part of my hand when I was walking around and travelling in my hometown in Finland. When the pandemic struck, the perspective of the thesis changed a bit, but the base phenomenon remained. It was lovely to interview the Finnish and Japanese acquaintances during the isolation, even though the circumstances were a bit unpleasant because of the COVID-19. A huge thank you to all my beloved interviewees!

I also want to thank my patient and compassionate supervisor, Professor Netta Iivari. This has been a long road with ups and downs, but you helped me to continue the process, taught me the secrets of empirical research and reviewed my writing time after time finding so many misspellings and other problems. Thank you!

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Contents

Abstract.....	2
Foreword.....	3
Contents.....	4
1. Introduction.....	6
2. Literature review.....	9
2.1 The beginning of the COVID-19 outbreak.....	9
2.1.1 Isolation life in Finland.....	9
2.1.2 The first phase of corona in Japan.....	10
2.1.3 Using smartphones during the COVID-19.....	11
2.2 Cultural perspective to technology adoption.....	12
2.2.1 Impact of cultural values in technology adoption.....	12
2.2.2 Attitudes towards technology in Finland.....	12
2.2.3 Attitudes towards technology in Japan.....	14
2.3 Models of technology adoption.....	14
2.3.1 Technology acceptance.....	15
2.3.2 Experiential and utilitarian values.....	15
2.3.3 Phone adoption.....	16
3. Methodology.....	18
3.1 Qualitative research.....	18
3.2 Survey study.....	19
3.2.1 Conducting the online survey.....	19
3.3 Interview study.....	20
3.3.1 Sample selection.....	20
3.3.2 Conducting semi-structured interviews.....	21
3.4 Data Analysis.....	22
4. Survey results.....	24
4.1 Participants' background information.....	24
4.2 Usage of smartphone.....	25
4.3 Smartphone adoption.....	25
5. Interview results.....	28
5.1 Opening the interview.....	28
5.1.1 Ambiance during the pandemic.....	28
5.1.2 Phone usage.....	30
5.2 Adoption and usage of mobile applications.....	31
5.2.1 Using familiar applications.....	31
5.2.2 Using different applications.....	33
5.2.3 Mobile phone and spending habits.....	35
5.3 Importance of a mobile phone as a device.....	36
5.3.1 Time spent on phone.....	37
5.3.2 Owning a valuable phone.....	38
5.3.3 The pandemic and phone's important features.....	39
5.3.4 Help and joy from phone during the pandemic.....	40
5.4 Comparing mobile phone and personal computer.....	43
5.4.1 The advantages of phone.....	43
5.4.2 Choosing phone over computer.....	44
5.4.3 The roles of mobile phone and computer.....	45
5.4.4 Phone or computer, the final choice.....	47
5.5 Phone and social communication.....	47
5.5.1 Availability for communication during the pandemic.....	48

5.5.2	Contacting during the pandemic	49
5.5.3	Changes in contacts	51
5.5.4	Social media activity during the pandemic	52
5.5.5	Alternatives to face-to-face conversations	53
6.	Discussion	55
6.1	Summary of the findings	55
6.2	RQ: How has the pandemic affected smartphone usage and adoption?	57
6.2.1	Assisting RQ1: Are there changes in used mobile applications caused by the COVID-19 pandemic?	58
6.2.2	Assisting RQ2: Has the phone usage increased during the pandemic?	59
6.2.3	Assisting RQ3: Has the pandemic led to changes in communication?	60
6.3	Implications for research and practice	60
7.	Conclusion	62
7.1	Limitations	62
7.2	Future research	63
	References	64
	Appendix A. Mobile adoption survey study inquiry	68
	Appendix B. Smartphone usage and adoption during the pandemic, interview questions	73

1. Introduction

Information technology is distinctly diffused and can be noticed as a necessity in the everyday life of common citizens around the world (Lee et al., 2013). When the COVID-19 pandemic started to spread around the world, people had no other option than use technology to pull through the days of the new normal. However, in today's digitalized world almost everyone uses a smartphone, so there were no prohibitive barriers to communication during the time of isolation. The users of smartphones have increased remarkably leading to smartphones becoming a necessity in daily lives (Li, 2021). Using mobile devices has been generalised in past years having them as platforms for entertainment or useful tool (Nakamura, 2015). It would be hard to avoid using any digitalized products even if the desire was to favour traditional practices, especially in times of a global pandemic when people are advised to stay home and contact each other via mobile phones or computers.

Living in a digitalized world gave a good preparation for the times of global pandemic when people had to rely on their technology skills and work, communicate and do everything remotely from their homes. In Finland many people had no immoderate problems with transitioning to remote work, not requiring any special agreements with the employer or education with the tools (Kovalainen et al., 2021). However, as Jasmiina Niininen (2021) states in her study, especially students have had problems with remote education wanting to return to normal studying and have the possibility to see other students on the campus. In Japan, the pandemic isolation has led to problems in homes where working parents had to start studying their remote work tools as well as taking care of their children's education and nursing (Amengual & Atsumi, 2021). The studies show that the pandemic has had an impact on smartphone usage by increasing the time spent on the phone (Rahman et al., 2021). Even though for example the study of Rahman et al. (2021) indicates that staying home leads to a bigger phone screen time number, Li et al (2021) state that the COVID-19 had affected phone usage in an opposite way. They note that phone usage during pandemic time is not as voluminous as before, but instead using Wi-Fi has increased (Li et al., 2021).

COVID-19 has had an impact on every country leading to people over the world in the situation of taking distance from each other and living concerned about getting infected. In this thesis, Finnish and Japanese smartphone users are examined and their technology adaption and usage are studied. For the theoretical support, the previous research about cultural perspectives on technology adoption as well as models of technology adoption is presented. The Finnish and Japanese cultures are quite different, but both countries have an outstanding history with technology.

In Finland, computers have been a part of normal life since the beginning of the 21st century (Suominen, 2000). Young people are generally thought as technology geeks and use computers and mobile applications as default tools in a need of help or entertainment. Technology developed in Finland effectively in the 1960s (Saarikoski, 2004) giving a base for further enthusiasm towards research and entertainment. Computers and the internet have been used for decades for accessing information sources, checking email, working, studying, and seeking entertainment (Kurikka, 2002). Now the smartphones are being an extension of hand and the internet is being utilized all the time. Communication is still the most popular thing to do with the phone but reading news and browsing the internet are also included in the most common activities performed on phone (Hyttinen, 2021).

Japan is one of the countries in which busy streets are being overwhelmed by technology and digital devices can't be unnoticed. Japan's role in the field of technological innovation has been significant for a long time after world wars (Wildenbos & Washida, 2008). Japan is known as a modern country with futuristic technology but at the same time honouring the beauty of nature and maintaining historical traditions are emphasized in the culture. For example, Japanese animation and comics have visualized the future with advanced technology and sci-fi characteristics (Denley, 2018). Mobile phones are used everywhere, they are utilized for buying tickets to train or getting discounts in restaurants (Wildenbos & Washida, 2008). Today's use of technology is partly based on the period after World War II when Japan started to cooperate with foreign engineers and obtain new technology for their industry (Ikeda & Morita, 2016). East Asians are more likely to imitate technological behaviour inside the social network (Lee et al., 2013). In East Asia, where the individual identity is the basis of social network (Hofstede, 1980 as cited in Lee et al., 2013), the adoption of technology can lead to the formation of social groups. Wildenbos and Washida (2008) note that even though mobile devices are used everywhere in Japan, the locals won't speak loudly on the phone or cause any kind of noise with the usage of the device. Respecting the silence in public areas is noticeable in Japanese mobile device behaviour.

In this thesis, the previous research gives a base to the study by inspiring the perspective and helping in the interview plan. Since the pandemic has forced people to adapt and use technology everywhere, it felt suitable for this thesis to have literature related to research about technology adoption in Finland and Japan, and also literature about models of technology adoption. Digitalization and attitudes towards new technology may arouse multiple opinions as well as behavioural differences among all the people who are part of the digitalized world. Some may adopt the technology well and enjoy the new utilities, while others may reject the unfamiliar experiences and prefer alternative options (Chen & Granitz, 2012). There is an ongoing interest in studying the experiential values of consumer behaviour. In other words, products have to be both functionally successful and fulfil also needs of pleasure and give symbolic meanings (Chen & Granitz, 2012). In addition to experiential and utilitarian values, also Davis' (1989) Technology Acceptance Model is widely being used in research on the adoption of technology (Sunny et al., 2018). Davis (1989) emphasizes the aspects of usefulness and ease of use that are being perceived during the use of new technology. Davis' model gives theoretical support for understanding and explaining behaviour in the use of information system implementation (Legris et al., 2003). By using this model as a base, it's possible to extend the perspectives and add for example cultural and individual views to the focus.

Since the COVID-19 pandemic is still quite a topical theme for research, there should be more data for future studies. There are few studies released covering the impacts of the pandemic in the field of mobile technology, however, the results of existing research are differing. This research aspires to give more understanding to the topic in question and give a perspective from the young adults. Having Finnish and Japanese cultures as a part of the research also allows a comparison of the two cultures encountering the same crisis in different locations. In this research, smartphones are at the centre, particularly a comparison of phone adoption and usage before and during the pandemic time. The research questions are divided into one main question and three assisting questions:

RQ: How has the pandemic affected smartphone usage and adoption?

Assisting RQ1: Are there changes in used mobile applications caused by the COVID-19 pandemic?

Assisting RQ2: Has the phone usage increased during the pandemic?

Assisting RQ3: Has the pandemic led to changes in communication?

Empirical research was conducted for this thesis in two parts. First, a preliminary online survey was conducted for mapping the recent experiences of smartphone adoption. The survey was shared with the students at the University of Oulu in Finland and students at the Yokohama National University in Japan. Most of the people who left their responses were Japanese or Finnish, but also some exchange students answered the survey. Questions of the survey generated quantitative data about smartphone adoption confirming that the digitalized world had led to skilful smartphone users around the world. The online survey was carried out just before the COVID-19 pandemic, so the results were the starting point after the pandemic started to spread. When the pandemic started to have an impact on the world, the theme of the thesis was modified, and new material was gathered for smartphone adoption during the pandemic time. The second part of the research was an interview study conducted in 2020 via videocalls. The interviewees were chosen again among the students of Oulu and Yokohama, but now there were only Japanese and Finnish students selected. In the interviews, the Finnish and Japanese students were asked about their smartphone adoption experiences and usage habits. The interviewees compared their life before COVID-19 and after the pandemic had started to spread taking the aspect of smartphone usage into account. Qualitative data gained from the interviews was lightly analysed from the perspective of cultural differences and models of technology adoption. Also, the research questions could be answered after the analysis of the results.

This thesis consists of seven content chapters. The next part includes a literature review followed by introducing the methodology for the research. The fourth part presents a small mobile adoption survey made for supporting the later interview study, which is presented in the chapter five. After presenting the research results, they are analysed in the discussion chapter and finally the thesis is summarized in the conclusion.

2. Literature review

This study focuses on the adoption and usage of smartphones, particularly in the view of Finnish and Japanese mobile technology users. First, the COVID-19 pandemic is described taking technologic aspect into account covering the circumstances of Finland and Japan. In the next part 2.2, the research of cultural values is being declared to have the technological aspect in the focus. In the subchapter, the focus is on presenting Finnish and Japanese perspectives on technology adoption and usage in general, and briefly on a matter of phone centred studies. The last section supports the theoretical side of the topic by taking technological adoption into account.

2.1 The beginning of the COVID-19 outbreak

In this subchapter, the first phase of COVID-19 is being presented from the perspective of the Finnish and Japanese populations having technological adoption and usage in focus. The last part includes findings of previous studies regarding smartphone usage during the isolation in pandemic time.

2.1.1 Isolation life in Finland

In spring 2020, the whole world was experiencing an exceptional era when the coronavirus pandemic started to spread. Also, in Finland, a state of emergency had to be put into practice closing the country significantly in March 2020 (Kovalainen et al., 2021). The limitations and guidelines of occupational health concerning transportation, the use of business premises and physical interaction (Finnish Institute of Occupational Health, 2020 as cited in Lindholm, 2020), as well as the change in consumers' behaviour (Kempas 2020; Blomqvist 2020 as cited in Lindholm, 2020) had led to the increased popularity of remote working and online business (Lindholm, 2020). Distant work had its advantages for instance giving more time to workers since there was no need for travelling between home and office (Kovalainen et al., 2021).

Kovalainen et al. (2021) write in their study that most Finnish people felt that the transition into remote work was quite easy, and they didn't require any special agreements with the employer. In Finland, the change was straightforward because of general trust in employer relationships and employees being aware of their role as a part of society's maintainer, the compulsive nature of the emergency powers legislation and the strong basis of digitalization (Kovalainen et al., 2021). Kovalainen et al. (2021) also note that the tools that were needed in remote work didn't cause much trouble for most Finnish people.

Finnish learning institutions also transferred their teaching from face-to-face lectures to online studies. For example, the premises of Lapland University of Applied Sciences were closed, and all courses were organized remotely after the order given by the Regional State Administrative Agency on 17th March 2020 (Regional State Administrative Agency 2020; Lapland University of Applied Science 2020, as cited in Lindholm, 2020). Lindholm (2020) notes in his study, that the decision wasn't a surprise for the teachers and the challenges, as well as impacts, were considered earlier, online learning has been part of the education for a good amount of time too.

Even though the tools for distant work were easily assimilated by the Finnish students and workers, some difficulties couldn't be avoided. Working at home can be problematic if there are no proper office rooms available; the need for space, time and peace is mandatory for the distant workers (Kovalainen et al., 2021). Kovalainen et al. (2020) write in their paper that changing the home to office mixed up Finnish people's private life having colleagues, customers, students, or strangers brought to their homes via video calls. Even though third-party people were closer to home, lacking proper human contact led to problems (Niininen, 2021). Niininen (2021) notes in her study that students miss normal classroom education including sharing thoughts with other students, networking with new people and peer support. Even though students are creating online communities, they have noticed that getting to know new people is difficult without having face-to-face contact (Niininen, 2021).

2.1.2 The first phase of corona in Japan

In Japan, the first COVID-19 infection was confirmed in January 2020 when one resident returned from his travels in China (Amengual & Atsumi, 2021). Amengual & Atsumi (2020) also write about another occasion in Yokohama, which was highlighted in headlines in February 2020. The Diamond Princess cruise had to be quarantined for having passengers that were infected with COVID-19 (Amengual & Atsumi, 2021). In Japan, new guidelines were presented on 4th May 2020, including propositions for avoiding a virus infection (Nae, 2020b).

Teaching and nursing children became a responsibility of Japanese parents since the Japanese government decided to close all the Japanese elementary, junior high and high schools before the beginning of March 2020 (Amengual & Atsumi, 2021). Citizens got guidance for preventing infections by taking care of hand hygiene, avoiding face-to-face contact, wearing masks and working remotely from home or rotating staff in workplaces (Nae, 2020b). Niculina Nae (2020b) notes in her study that in Japanese small apartments the new daily routines caused stress not only to parents but also to children who had to stay home instead of having all the activities that Japanese schools normally had offered them.

Like in many other countries, also in Japan the university studies transferred from classroom teaching to remote studies organized online using conferencing tools (Nae, 2020a). Nae (2020a) points out that although Japan is often seen as a technologically progressive country, the preparations for changing to online teaching in unusual circumstances were lacking remarkably. The difficult start of remote teaching was caused by multiple things, like the lack of training for using digital tools, students lacking the necessary devices and educational institutions administrating the situation poorly (Nae, 2020b). Nae (2020b) also notes that in Japan the nature of pedagogical styles has been very conservative slowing down the deployment of technological implementations in education. The problems with digital tools are not only ones with Japanese life in isolation. Ueda et al. (2020) write in their study that Japanese mental health conditions can weaken because of the crisis caused by the corona pandemic. It has been discovered that because of the situation, the younger population has considerably poorer mental health compared to older citizens (Ueda et al., 2020).

2.1.3 Using smartphones during the COVID-19

Tejedor et al. (2020) note in their study that the two technologies, mobile communications, and the Internet, have been the biggest transformers in the modern connected society. Using several kinds of mobile devices and social networks the users can contact and collaborate regardless of time and space (Tejedor et al., 2020). When the COVID-19 started to spread, most countries locked down their public areas in order to minimize the risk of increasing the number of virus infections (Ratan et al., 2021). Ratan et al. (2021) state in their study that the recommendations of staying at home and self-isolation led to increased use of smartphones for people trying to connect and stay available for all their close ones.

The time of smartphone usage has been increasing over time, but the most recent pandemic had a major impact on it arousing it notably more (Rahman et al., 2021). Rahman et al. (2021) state that because people were mostly home, it led to bigger screen time numbers. In the study conducted by Tejedor et al. (2020), they note that students use more technological devices during the lockdown, with mobile phones and laptops being the two most used devices. In today's digitalized world using smartphones is a normalized part of life, having no exception in quarantined pandemic times (Saadeh et al., 2021). However, during the time of the COVID-19 pandemic, smartphone usage may have increased to the level of overuse or excessive usage (Ratan et al., 2021). Saadeh et al. (2021) note in their research that because of distance learning, the younger generation is dependent on devices leading them towards smartphone overuse. For the youth, using smartphones can be seen partly as a direct consequence of a pandemic outbreak (Saadeh et al., 2021). Addicted use of smartphones can be defined when the usage aims to replace the encounters of social interaction that are part of human's basic needs (Hytinen, 2021). Overuse of smartphones can cause problems in physical health like pain in the neck or back, and mental disorders like anxiety or depression (Ratan et al., 2021).

Using devices like personal computers and smartphones is comfortable for today's students (Tejedor et al., 2020). In the study, Tejedor et al. (2020) note that with the help of these devices' youth can perform a variety of tasks easily giving them satisfaction since they are relaxed, distracted and helped to disconnect by the devices. When people had to keep their distance from each other, they used their phones for entertainment, socializing, work and to keep themselves fit (Rahman et al., 2021). Young people tend to spend most of their quarantine time watching videos or sleeping (Saadeh, 2021), and time spent on social media had grown remarkably as well as the usage of streaming and communication applications (Rahman et al., 2021). Rahman et al. (2021) note in their study that especially mobile applications related to distance learning are installed and used more during the time of remote work. Health applications are the second most popular newly installed applications during the pandemic time (Rahman et al., 2021). Even though especially the young people approve of the usage of mobile technology, many students wished to reduce their increased time on smartphones according to the study of Saadeh et al. (2021). Many students also prefer face-to-face contact instead of communication via phone (Tejedor et al., 2020). Saadeh et al. (2021) state that students have started new hobbies like watching movies or series but also activities that are not performed via a screen, like cooking, board gaming, reading, meditating, or drawing.

Most of the previous studies indicate that time on smartphones has increased during the COVID-19 (Ratan et al., 2021; Tejedor et al., 2020; Saadeh et al., 2021 & Rahman et al., 2021). However, Li et al. (2021) state that the novel pandemic had affected phone usage by decreasing screen time. By their study, smartphone engagement, as well as network switches, has decreased while the usage of Wi-Fi networks has increased (Li et al., 2021).

In their study, Li et al. (2021) reason that Wi-Fi access points are used at home in most cases, and people staying indoors have intrinsically raised their use of them. People are not using their smartphones, since they are home nearby their computers and laptops serve as preferred qualities for entertainment (Li et al., 2021).

2.2 Cultural perspective to technology adoption

In this chapter the aspect of culture is being analysed in the context of mobile technology adoption. There has been some research of cultural values in this context and that's being introduced in the first part of this chapter. First the impact of cultural values is presented in brief, following subchapters focusing on Finnish and Japanese attitudes toward technology.

2.2.1 Impact of cultural values in technology adoption

Veiga et al. (2001) state that analysing the impacts of technology adoption from the perspective of cultural values may cause difficulties because values basing on the beliefs of people (as cited in Sunny et al. 2018). Also, the technology owned by individuals can impact to technology acceptance because cultural values can be transformed in distinctive level (Srite and Karahanna, 2006 as cited in Sunny et al., 2018).

The model behind research of cultural values is made by Hofstede (1989) by focusing on power distance, uncertainty avoidance, collectivism, long-term orientation and masculinity in which collectivism, long-term orientation and masculinity are utilised in research of cultural values on technology acceptance by Sunny et al. (2018). Sunny et al. (2018) have discovered that Davis' model of technology acceptance (TAM) can be adapted to cultural values. They found out that instead of masculine culture, feminine attitude may reduce the discomforts of adopting new technologies. Sunny et al. (2018) also note that in countries where collectivism is high (the focus on groups is emphasized) and long-term orientation is being focused on have better chances for positive perceived usefulness (PU) and perceived ease of use (PEU). TAM is presented more precisely in the chapter 2.3.1.

In addition to the study of Sunny, Patrick & Rob (2018) also Lee et al. (2013) have discovered integration possibilities between technology adoption and Hofstede's model (1991, as cited in Lee et al., 2013). Their findings imply that people are more likely to seek information independently from direct sources in individualistic cultures whereas in collectivistic cultures the imitation of other people is more probable. In individualistic cultures the effect of innovation emphasizes and on the contrary, there are social effects impacting imitation in collectivistic cultures (Lee et al., 2013).

Next, the Finnish and Japanese cultures are presented concerning to technology adoption. First the technological evolution in Finland is described followed by the perspective of Japanese to the technology adoption over time.

2.2.2 Attitudes towards technology in Finland

Computers have been part of Finnish technology for a long time having been blended into the everyday environment at the beginning of the 21st century (Suominen, 2000). Like in Japan, also in Finland the beginning of the computer era started after the incidents and

phenomena that occurred after the Second World War (Saarikoski, 2004). Petri Saarikoski (2004) writes in his study that the digitalization of the western world was connected to extensive social and cultural turning points. However, in Finland, the changes were visible only in some technology news since new digital machines and projects were too expensive for the country that was recovering from the war (Suominen, 2000). Starting in 1950 the changes happened fast and after thirty years Finland had become an industrial welfare state in the north (Saarikoski, 2004). At first, a computer was only part of big organizations' areas of adaptation but over time the significance of information technology had become more and more emphasized in the Finnish society (Suominen, 2000). Information technology as a theme was introduced to Finnish citizens by the popular culture giving the possibility for practical experience starting from the 1960s (Saarikoski, 2004). Jaakko Suominen (2000) notes in his study that computers had become an essential part of Finnish everyday life at the beginning of the 21st century.

The Finnish citizens were interested in the information technology and exploited the new inventions for example in a form of online dating, voting aid applications, personal digital assistants (Suominen, 2000). In addition to using technologic applications, Finnish people also participated in technology clubs which originated after 1950s (Saarikoski, 2004). In the research Saarikoski (2004) states that with the help of information technology clubs, the technological knowledge and experience were spread effectively. In 1960s culture of information technology changed, and several thousands of technology oriented Finnish citizens used technological devices (Saarikoski, 2004). In those times the Finnish society started to use computer-assisted classifications of feelings and personalities as a one procedure (Suominen, 2000). However, Suominen (2000) highlights in his study that those were used mainly for amusement purposes for Finnish citizens. By the playful experiments and applications made for fun, the control of information technology was spread, and the interest of video game development was started among the Finnish people (Saarikoski, 2004). Saarikoski (2004) also mentions in his study that in 80's and 90's playing video games was one of the most significant information technology hobbies leading into the situation where personal computer become established in the consumer goods' market and part of furnishing in Finnish homes.

In Finland, the youth have been using technological devices very actively for many decades. At the beginning of the 21st century, almost all youths that participated in Päivi Kurikka's (2002) research were using mobile phones, computers, and the internet. According to a recent study, almost every young person in Finland has now a smartphone (Hyttinen, 2021). Tim Hyttinen (2021) notes in his study that having a smartphone can nowadays be a presumption for university studies. A smartphone is being used for accessing the course material, recording videos or speech from lectures, and supporting learning in any other way (Hyttinen, 2021). Hyttinen (2021) states in his study that young people represent the active generation that absorbs new information with the help of technology but on the other hand, they also need protection against the complicated world. In Finland, the youth have used the internet daily since the beginning of the millennium, for accessing information sources, checking email, working, studying, and seeking entertainment (Kurikka, 2002). Eventually, the social side was emphasized more in the era of smartphones. After communication, the second most popular activity on phone was scrolling social media, reading news, and browsing the internet was the third on the list (Hyttinen, 2021). Hyttinen (2021) discovered in his study that in today's Finland smartphones are used mostly when relaxing at home, riding transit, or waiting for an appointment. Also using a smartphone is common in the bed, in the morning, and when going to sleep (Hyttinen, 2021).

2.2.3 Attitudes towards technology in Japan

In view of Hofstede's cultural value model East Asia, the society is tending to have high long-term orientation (Lee et al., 2013). Lee et al. (2013) declare in those kind of countries values like persistence, relationships and loyalty are being respected and traditions become impediments in the perspective of change. When analysing the technology adoption by Japanese people, the historical changes must be considered (Ikeda & Morita, 2016). Ikeda and Morita (2016) state that in pre-war period, Japanese weren't adopting technology actively but after the war the situation was starting to change. The barrier of technological adoption was reduced after war when Japanese started working together with international companies and new information about advanced technology was gained (Ikeda & Morita, 2016). In general, change demands first a social acceptance but after it has been credited, the invention can spread fast (Lee et al., 2013). Lee et al. (2013) note that "we" mentality is emphasized in East Asian culture basing the technological adoption strongly on social network. Accepting foreign culture in Japanese industry may have been a significant decision for Japanese people but since the results were positive, having foreign knowledge was accepted and exploited little by little (Ikeda & Morita, 2016). By accepting foreign culture, Japanese didn't have to innovate the base for the technology, but they had a chance and ability to develop it (Between Worlds, 2018). The KPMG Ignition Tokyo Board of Director, Tim Denley, stated in an interview of Between Worlds (2018) that in Japan, technology is being accepted by both young and old people and the country has robots as well as balance between human and machine. Still, there can be noticed some backwardness compared for example to artificial intelligence research in USA (Between Worlds, 2018).

Common Japanese citizen is being affected by culture of technological imitation meaning that social systems increase the pressure of adopting new technologies (Lee et al., 2013). For example, Wildenbos & Washida (2008) have analysed Japanese consumers and discovered that mobile technology may play a key role in an individual's life. Some consumer groups may live life through technological innovations or sometimes mobile phone can even fill the gap of human relationship (Wildenbos & Washida, 2008). In Japan the sense of community is highlighted (Between Worlds, 2018), and the community can be maintained with the help of mobile technology.

Nakamura (2015) states that usage of mobile technology was increased remarkably in the 90's century. As noted previously, Japanese people had the expertise for developing a technology that was being comprehended. Using mobile technology was accepted and using internet on the mobile device was also adopted as early as in the year 1999 (Nakamura, 2015). In the research, Nakamura (2015) points out that in the beginning of 2000 century using mobile phone in Japan was common and having camera phones began to be normal as well. Generally Japanese have accepted mobile devices and even use them while taking care affairs that are not related to phone usage (Nakamura, 2015).

2.3 Models of technology adoption

In this chapter, the theoretic aspect of technology adoption is being presented. The first is Davis Fred's Technology acceptance, followed by research models concerning the diffusion of technology. In the final section, the values of experientiality and utility are discussed in the context of attitudes towards new technology.

2.3.1 Technology acceptance

In technology projects, the goal is obviously to stay within the budget however it can be hard to achieve. An important aspect is to pay attention to users and their satisfaction (Legris et al., 2003). One potential model for analysing users is Davis' (1989) Technology Acceptance Model (TAM) which is widely used in the research of attitudes towards new technology usage (Chen & Granitz, 2012). Davis (1989) introduces perceived usefulness (PU) and perceived ease of use (PEU) as two critical aspects for analysing the attitudes and usage of new digital products. In Davis' (1989) model PU stands for the user's thought about how much using the technology enhances job performance. PEU focuses on the effort that decreases due to usage of the system (Davis, 1989). The dimensions have a utilitarian perspective focusing on the beneficial sides of the user experience. However, Chen & Granitz (2012) state that PU and PEU also have positive effects in the view of attitudinal, intentional, and behavioural aspects.

TAM has evolved over time leading to variations of the original model implementation (Legris et al., 2003). Sunny et al. (2018) have integrated an aspect of readiness into Davis' TAM model. With the help of the new element, the adoption of systems can be examined better from the perspective of consumers. In the study, Sunny et al. (2018) declare that readiness pays attention to positive and negative sides like optimism and discomfort multidimensionally. For example, individuals may have optimistic belief and presumption on technology improving their effectiveness or it is possible that they feel new technology is uncontrollable, and people are being overwhelmed by it (Parasuraman, 2000 as cited in Sunny et al., 2018).

By integrating readiness into the model of technology acceptance, the perceptions and expectations of consumers are being considered. Chung et al. (2015) and Walczuch et al. (2007) have discovered that users of high technology readiness will have high PU when using technologies (as cited in Sunny et al., 2018). That is one reason why the aspect of technological readiness should be considered when analysing technology acceptance in today's world of digital profusion.

2.3.2 Experiential and utilitarian values

Technology diffusion and acceptance lead to either adopting or rejecting the new technology (Chen & Granitz, 2012). Chen and Granitz (2012) have extended previously studied technology acceptance models by integrating more experiential variables and analysing the adoption from a broader perspective. When focusing on the results of the models, the situations can be analysed in the view of experiential and utilitarian values by categorising attitudinal and behavioural aspects related to them.

Valuing experiences can be associated with technology rejection when adoption is being prevented and traditional practices respected (Chen & Granitz, 2012). In the study by Chen & Granitz (2012), the researchers describe social rituals, ownership and identity, aesthetics and also immersion and escape as experiential values associated with technology adoption. Social rituals emphasize on habits of sharing experiences with family and friends (Chen & Granitz, 2012). Adoption of technology affects social habits usually by making the experience more personal by making it possible to take care of responsibilities with remote access. Chen & Granitz (2012) state that other aspects of experiential value can be described as ownership or identity. The researchers (Chen & Granitz, 2012) present an example of the digitalization of books and the disappearance of the feeling of owning a physical item. Digital products are not sensible in every sense

giving the base for aesthetics as an experiential value (Chen & Granitz, 2012). The final experiential value described in Chen & Granitz's article (2012) is the aspect of immersion and escape focusing on the disturbance while using technical devices. Technology enables making several tasks simultaneously and that may affect the concentration of individual tasks. People may want to reject the technology adoption for keeping the immersion level safe.

The adoption of new technology highlights the importance of utilitarian values (Chen & Granitz, 2012). Chen & Granitz (2012) describe that accessibility, convenience, ease of use and cost can be drivers for technology adopters that are excited about new technology. Adopters value accessibility and usage of the technology whenever and wherever it's possible (Chen & Granitz, 2012). Chen & Granitz (2012) state that convenience emphasizes on convenience of digital devices and no need of having multiple items for completing the task. Ease of use focuses naturally on succeeding in the tasks without reading any instructions and using familiar user interfaces (Chen & Granitz, 2012). Finally, the researchers (Chen & Granitz, 2012) introduce the aspect of cost referring to a long-term perspective where using digitalized products may keep the price low.

Experiential and utilitarian values give more perspective to the technology adoption. People may be categorized into adopters and rejecters, but some may not fit in either of those categories. Chen & Granitz (2012) declare the aspect of convergence when a user is not sure if the technology has utilitarian or experiential value to him or her. The researchers (Chen & Granitz, 2012) present one example of people reading Japanese comic books both as printed and digitalized versions. These people belong to both dimensions and value experiential as well as utilitarian values (Chen & Granitz, 2012).

2.3.3 Phone adoption

Even though there are some people who want to reject mobile technology, as Nakamura (2015) states, most people have mobile phones. A mobile phone can be adopted in public or private spaces, with familiar persons or maybe as nonverbal communication (Nakamura, 2015). In the research Nakamura (2015) notes that motivations for using a phone can be for example distant communication, internal functions of the mobile phone such as using the applications for enjoyment, working, learning, managing relationships or incorporation. Mobile phones are not only phones anymore, but more like multipurpose tools (Ahmad, 2012). In addition to education and entertainment Ahmad (2012) adds services of information and financial to the list of web-based mobile applications that people tend to use a lot. It's also notable to mention the usage of mobile devices while being alone in public spaces. In today's world, it's easy to notice people using their mobile devices while being alone surrounded by unknown people. Some people have adopted mobile devices as a tool for avoiding engagement with people around or expressing the multiplicity of the phone user (Nakamura, 2015). However, even though mobile phones can be used as signs of needed privacy, Nakamura (2015) also writes that the phone can be used with familiar persons to give communication help, depth or change of subject.

Ahmad (2012) highlights the multipurpose nature of the mobile phone pointing out that as a core product the mobile phone was introduced as a substitute for the fixed-line phone having only a purpose of making it possible to call from anywhere and at any time. In the Japanese mobile phone industry, the functionalities started to extend so that the phone started to resemble a minicomputer, including possibilities like web browsing and data processing (Ahmad, 2012). Ahmad (2012) notes in his study that people started to have various motives behind phone usage, and developers meet those by creating for example

phones specialised for messaging or listening to music. For the users, having many functionalities is not the only important thing in a phone, since the phone must also perform without any problems (Ahmad, 2012).

Taking the hedonic and utilitarian aspects into account, the users assess new mobile data services only from the beneficial perspective (Kim & Han, 2011). Also Ahmad (2012) states that utilitarian value is a more critical criterion when forming a positive mobile data service adoption. When adopting new technology, especially a chargeable one, the justifying is easier to fulfil with utilitarian presumptions (Kim & Han, 2009b; Prelec & Loewenstein, 1998 as cited in Kim & Han, 2011). Functional benefits and productivity cover the utilitarian values of mobile services whereas experiential and enjoyable aspects represent hedonic values (Ahmad, 2012). Kim & Han (2011) state that hedonic consumptions arouse guilt in users, leading to an unwillingness to spend money on those kinds of purchases. The cost of the technology has a great role when analysing the mobile technology adoption: more expensive technology provides a considerably bigger utilitarian value for the user (Kim & Han, 2011). In addition to the price tag, users have their focus on performance when adopting mobile technology (Ahmad, 2012). While performance and price are related to utilitarian values, the dominant role in evaluating hedonic value is taken by information quality (Kim & Han, 2011).

3. Methodology

In this chapter the methodology of this thesis' empirical research is presented. In the first part the qualitative research method is described followed by the two studies conducted for this thesis. First the preliminary survey study is presented and then the semi-structured interviews are briefly described including the sample selection and the content of the interview questions. Finally, there is a subchapter for presenting the data analysis method for the empirical research.

3.1 Qualitative research

Qualitative research is based on the content and analysis of different kind of material being known as empirical study. The research has always some theoretical background such as analysed presentation, resting on the scientific literature and previous research on the topic in question as well as chosen methods and practices of the analysis. Theories in the qualitative research can be categorised in four parts. First theories can be seen as macro and micro levelled substance theories, which are related to phenomenon in question in a matter of its content. Substance theories give a framework to the study being usually presented in the beginning of the study and referred later in the discussion part of the research. In addition to substance theories there are also formal macro and micro levelled theories which are more abstract not focusing on explaining one phenomenon. The third theory consists of ontological, epistemological, and methodological presumptions of the study. This paradigm theory can be noticed in the way how the character of the reality is being understood. The fourth theory category consists of methods and ways of analysis being not always perceived as a theory. Methods and ways of analysis can be noticed in the part of executing the research, gathering the material, and analysing it. (Juhila, 2021b).

It is impossible to give one definition to the qualitative research since there are multiple manners of approaches and analysis. However, some features can be identified appearing in studies in various ways. In qualitative research, one of the characteristic features is to take nothing for granted and question the common sense in order to avoid missing any details. Another characteristic is to prefer qualitative material in the study, including for example texts, conversations, interviews that concern action related to the subject of the study. Also excluding numeral presentation of the material is typical to qualitative research as well as preferring restructured and natural material without taking the context out of the action. The actions, people, practices, or other foci on the study are also usually examined closely being present by participating or observing the phenomenon itself. In the qualitative research the action is in focus and people are appreciated as subjects. The people concerned are also analysed from their personal perspectives which can lead to complicated results that have to be endured in the study. In qualitative research there is usually no causation to be discovered since the material is likely to be compounded in various ways. "Why" questions are usually not in focus since the concentration usually is on "What" and "How" questions. The qualitative research is usually driven by analysis meaning that the result shows up from the material and then it's being compared to prior theories and research results. Last characteristic of the qualitative research is the ability to present new aspects that have aroused due to the research process. (Juhila, 2021a).

In this research the qualitative research method was chosen because of its empirical nature. The objective was to study people and their behaviour and support, compare as well as analyse the research results to the previous literature published on the related

themes. For example, substance theories were used in the literature review explaining the concerned phenomena as well as commenting the results taking the previous research into account. The characteristics of qualitative research can also be noticed for instance in preferring qualitative research material and keeping the atmosphere of the interviews as conversational and natural as possible. Moreover, the selected sample wasn't big enough for presenting data reasonably in numeral format.

3.2 Survey study

Survey study is an important way to collect and examine information for example related to phenomena of the society, actions of people, opinions, attitudes and values. These kinds of interests are both multidimensional and complicated. In the survey study the researcher presents questions to the respondent via questionnaire and then measures the answers without a possibility to change the answers afterwards. Therefore, it is important to plan the survey carefully. (Vehkalahti, 2019).

In the summer 2019 an online survey concerning mobile adoption was conducted as a part of mapping the research problem for this research. The survey had 25 participants including mainly Japanese and Finnish respondents but also few people from other countries as well. The participants were University student acquaintances from University of Oulu and Yokohama National University. The motivation for the survey was to investigate mobile adoption having different cultural perspectives considered. Also, for this research the survey data represents pre-pandemic material of phone behaviour.

3.2.1 Conducting the online survey

In today's digitalized world there could be a lot of research material for conducting a study about mobile device adoption and cultural effects on it, but still I couldn't find studies that had analysis of the theme in question. Taking the future into account, digitalization and people's attitudes towards technological devices are topical themes in the field of information technology. In this inquiry, empirical research method was used because of the desire for gaining knowledge by analysing people's attitudes and experiences. Using a mobile device is common for any human being, so using the knowledge gathered from general mobile device users gives an essential data for this research. Having a better understanding for people's opinions about the increasing number of mobile applications and change of old habits is important in my opinion.

For gathering the data, I decided to carry out an online survey. With an online survey the data could be sorted out easily and the participants could effortlessly fill the survey whenever they had time for it. I wanted to keep the survey quite short and simple, so that participants wouldn't get bored or frustrated. Using Google Sheets was a suitable option for the platform because of its user friendliness and easiness of sharing a link. Also, Google Sheets' analysing tools for survey were beneficial. The survey was shared in social media, among the people from different nationalities and backgrounds in Facebook, Line and WhatsApp. However, majority of the receivers of the survey link were students. The survey was conducted in the end of June 2019.

Questions of the survey included themes of mobile phone usage and attitudes towards digitalization by the means of mobile applications. The first part of the survey focused on general information for gathering information about background of the participants. In the second part I wanted to gather information about the devices and mobile usage habits

while the third part consisted of questions about attitudes towards digitalization and commonness of mobile applications. After the first participant had answered, the final part was clarified by adding more explanation to the questions.

I assume that even though there are people against of digitalization and want to reject the new technology (Chen & Granitz, 2012), most of the participants are used to mobile technology accepting new applications and tools. I don't think that having a different operating system or being from a different country have an effect for the adoption of a mobile device. By saying that, I assume that the impact of globalization and universal digitalization have led to a situation where people have accepted mobile devices as part of their everyday life. However, there can be small differences between the heavy users and light users but nevertheless, as a hypothesis I state that people are accepting the new mobile applications.

3.3 Interview study

Interview is a common way to collect data for the research and its purpose is to gather information and material for answers to the research questions. Interviews can help in the analysis of the facts, experiences or cultural signification or idioms. Different kind of interview types can help analysing the problem from a suitable perspective. One of the interview styles is called semi-structured interview where the questions are not necessarily always presented similarly or formulated closely beforehand. (Hyvärinen et al., 2021).

In the spring 2020 interviews were conducted for acquiring data for the smartphone adoption and usage during the pandemic time. Next the sample selection is presented including a brief description of the Finnish and the Japanese. The subchapter 3.3.2 covers the process of the interview conduction.

3.3.1 Sample selection

The interviewees were mainly university students studying actively at the time of the interviews. One of them (JW12) was just graduated and had started working in a Japanese company. Also, two other interviewees (FM1 and FW6) had full-time jobs along with their studies. Some other interviewees had part-time jobs, but they still studied for the most time of the week.

I interviewed people from two nationalities: Finnish and Japanese. The idea was to get some comparative data from different cultures Finnish and Japanese being an interesting pair to study. The interviewees were young adults, being in the age range of 20 to 30 years. There were 12 interviewees altogether, six interviewees from each country. Finnish interviewees were students at the University of Oulu, five of them studying in main trail and one (FM5) studying currently in the Open University starting his main trail studies in the next semester. The Finnish interviewees were working and studying from home since 16.3.2020 when the general recommendation for distant working was placed. When the interviews started May 14th, the recommendation had been valid for two months.

The Japanese interviewees were students at the Yokohama National University (YNU) one of them being freshly graduated (JW12). One of the Japanese interviewees (JM9) was doing his exchange studies in Germany at the time of interview, but the gathered data could still be analysed same way than for the other interviewees. Other Japanese

interviewees were in Japan, studying remotely from their homes. In the Yokohama National University, the distant teaching had started in the beginning of March. By the time of interviews, the Japanese students had had almost three months of social distance.

Abbreviation	Nationality	Gender
FM1	Finnish	Man
FM2	Finnish	Man
FW3	Finnish	Woman
FW4	Finnish	Woman
FM5	Finnish	Man
FW6	Finnish	Woman
JW7	Japanese	Woman
JM8	Japanese	Man
JM9	Japanese	Man
JM10	Japanese	Man
JM11	Japanese	Man
JW12	Japanese	Woman

Table 1: Interviewees' gender and nationality distribution

3.3.2 Conducting semi-structured interviews

For the research I conducted an interview questionnaire which was utilized in semi-structured interviews. In the semi-structured interview, the interviewees can answer freely since the questions are not tightly defined (Hirsijärvi & Hurme, 2001 as cited in Hyvärinen et al., 2021). All the interviews followed the questionnaire, but the atmosphere was kept natural and conversational. As an interviewer I tried to act as neutral in respect of having minimal impact on the answers, but as Juhila (2021a) states, it is impossible to prevent all the interviewer's influence in an interactive conversation. The interviews were held during 14.-25.5.2020 via Zoom video calls. At that time the first phase of the pandemic was over and social distance was standard of activity globally. Education and work were mostly carried out with distant methods, also other human contacts had to be kept minimum.

I divided the content of the interviews into four parts, which were:

1. Opening the interview
2. The phone and its applications
3. The importance of phone
4. Phone and social life

With the Japanese interviewees, the interviews were carried out in English whereas with Finnish interviewees we talked in Finnish. The first part was about making the atmosphere more relaxed by catching up the interviewees' latest feeling and thoughts. After the warm-up I briefly asked about the interviewee's phone and what does he or she do with it most of the time. The first part was quite short having just general questions for the interviewees. In the second part I asked them about the mobile applications and how has the pandemic affected the usage of them. We discussed about differences in application selections, newly installed ones and money that is used to mobile applications before or during the pandemic. The third part included questions about phone as a device and comparing phone and computer. The interviewees talked about the importance of phone as a device and what they think about owning a valuable phone. They also described the most important features of their phones and if the pandemic had affected them. The last part of the interview was about communication. I asked questions about being reachable during the pandemic and how the contacting has changed. We also discussed about communication methods and the role of computer in the communication of pandemic time. The interviewees also briefly explained their social media habits and the possible changes occurred because of the pandemic.

3.4 Data Analysis

When the qualitative data is analysed by identifying patterns or themes the thematic analysis is used in the process. The method is very flexible not being tied to a specific epistemological or theoretical viewpoint. The identification of important or interesting patterns is the objective of a thematic analysis as well as using the themes to address the research or issue. (Maguire & Delahunt, 2017).

The gathered data was analysed lightly thematically with the help of Microsoft Excel's table tool. I recorded the interviews and made notes after transcription. The data was categorised by the questions and put into tables. The first table included long quotations and analysis from the interviews. The purpose of the table was to see the bigger picture of the empirical research: the interview questions were in the rows whereas the columns included the interviewees. The questions and interviewees were coded with colours and different kind of borders. Below the question rows there were cells for external notes. After the analysis table I made a summary table out of the information gathered before. In the summary table the rows remained for questions and summarised data whereas there were three columns for Finnish, Japanese and summarised answers for the interview questions. I also continued to categorise the questions with the help of colours and border styles.

With the help of the analysis tables and interview videos, I wrote the interview results changing the order of the interview questions a bit. The interview was first divided into four parts including the opening questions. For writing the results, I collected the questions related to comparing phone and computer and made a new subchapter for the chapter 5. In the discussion chapter, the interview results are lightly contrasted with the previous literature and the survey study conducted in 2019. The theories presented in the

literature review were utilised in the discussion without focusing on any particular model alone. After presenting the perspective on the previous material, I summarised the most important result of the interviews by answering the research questions.

4. Survey results

Small survey was conducted for obtaining up-to-date information and actual experiences concerning the theme of mobile device adoption. The survey was carried out by preparing an online form including questions about mobile device habits and attitudes towards digitalization. In this chapter the results of the survey are presented.

4.1 Participants' background information

In the survey there were 25 participants including 11 female and 14 male respondents. Most of the participants were young, 48% of them were 20-30 years old and 32% were 15-20 years old. There were also participants whose age was between 30 and 50. As I wished for, the majority of the participants were Japanese being 60% part of the total. Finnish was the second common nationality followed by single representants of few different countries. Almost half of the participants (48%) described themselves as students and 52% of participants were already employed. The most common field of study was information processing science but there were also other technology-oriented field of studies comprising almost half of the participants' answers. The second common field of study was related to education constituting 16% of the participants.

What is your nationality?

25 responses

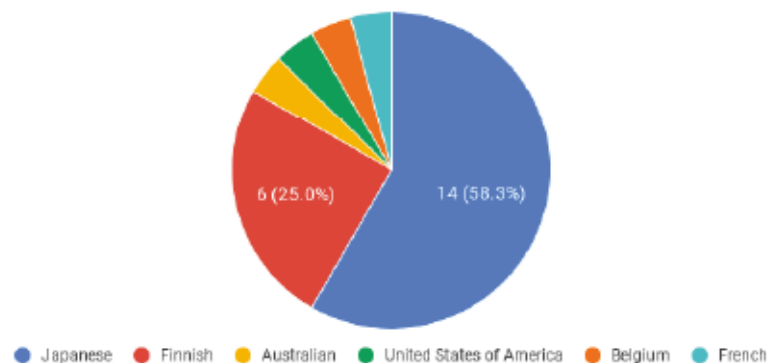


Figure 1. Distribution of different nationalities

All the participants have a smartphone which is not surprising in the digitalized world. Most of the participants had an Android as their operating system and almost every iPhone owner was Japanese only one of them being from United States of America.

4.2 Usage of smartphone

How much time do you spend on your mobile in a day?

25 responses

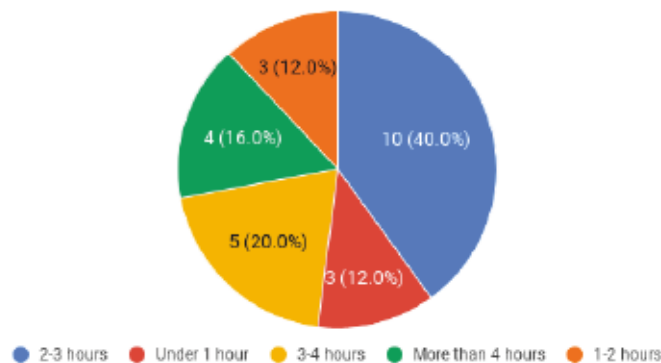


Figure 2. Amount of time spent on mobile device.

76% of the participants answered the amount of time spent on mobile phone in a day being over 2 hours (Figure 2). By the results, an average time amount spent on mobile device is quite high among Japanese and other nationalities. There cannot be seen any correlations between nationalities or operation systems and the amount of time spent on mobile device. In any case, the participants seem to have adopted mobile phones as a part of their lives. By saying that, also the location of mobile device usage varies the most common place being home followed by public transport and school as a shared second place (Figure 3). The purpose of using a phone varies, but communication keeps the first place as the most common reason for using a mobile device. So, it can be seen that the original purpose of mobile phone is still the main function of the device giving a small possibility of aversion towards the need of new features.

Where do you use your mobile device?

25 responses

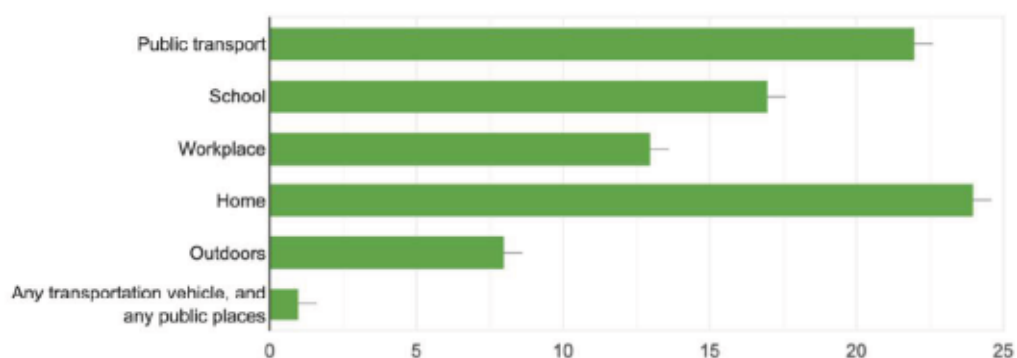


Figure 3. Location of phone usage

4.3 Smartphone adoption

The last part of the survey consisted of three questions concerning the theme of mobile application replacing a physical operating model. The participants were asked to choose

the best number for describing their feelings in certain situations. The scale was from 1 to 5, 1 meaning the most displeased feeling and 5 meaning a satisfaction. When the participants were asked about an adoption of mobile technology, the answers were positive towards digitalization. Over half of the Japanese participants answered 4 or 5 when they were introduced a situation where a mobile application replaces a physical object. Also, other nationalities were accepting the situation in question quite well since no-one wasn't highly against the replacement (Figure 4).

How do you feel if mobile application replaces physical object? (Example: You have to buy a concert ticket online, ... don't sell paper tickets at the store.)

25 responses

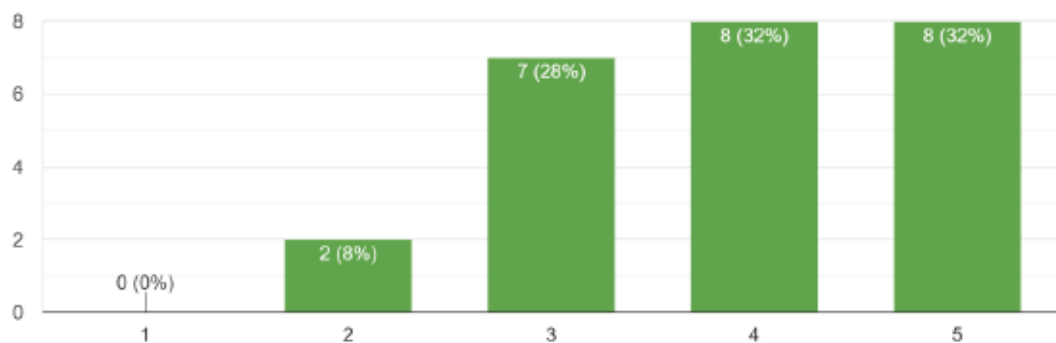


Figure 4. Accepting the mobile device digitalization.

However, the participants answered that having both original operating model and mobile application as two options for the activity leading to the best option for the situation (Figure 5). This is logically the best situation that satisfy both technology adopters and rejectors. In the final question the situation was opposite compared to the first question having only original option available for performing an action. In that case there are no applications that can be used so most of the participants found the situation unsatisfying (Figure 6). By watching the chart, it can be noted that applications are seen useful in today's digitalized world. 72% of the participants feel that the need of mobile applications is remarkable, but the rest of the participants do not mind if there are no applications for performing an activity. There were no significant cultural differences among the answers.

How do you feel if there is a mobile application as an option for physical object? (Example: You can either buy a concert ticket online or go to the store.)

25 responses

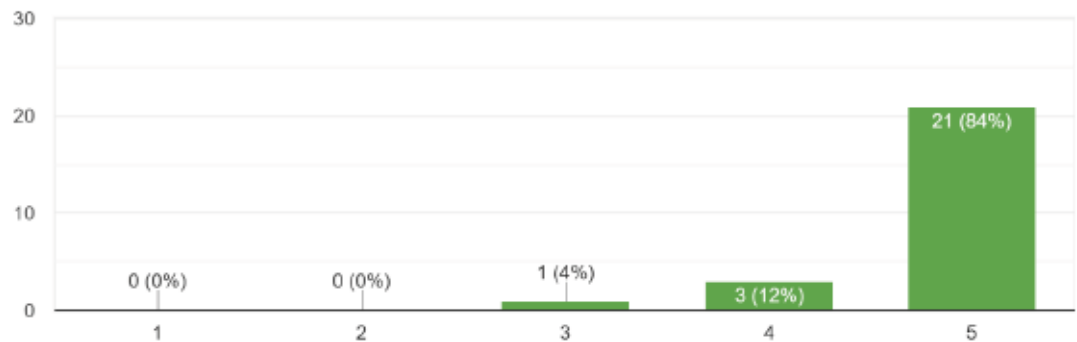


Figure 5. Having both physical object and mobile application as two options.

How do you feel if there is no mobile application available for the physical object? (Example: You can't buy a concert ticket online, you have to go to the store.)

25 responses

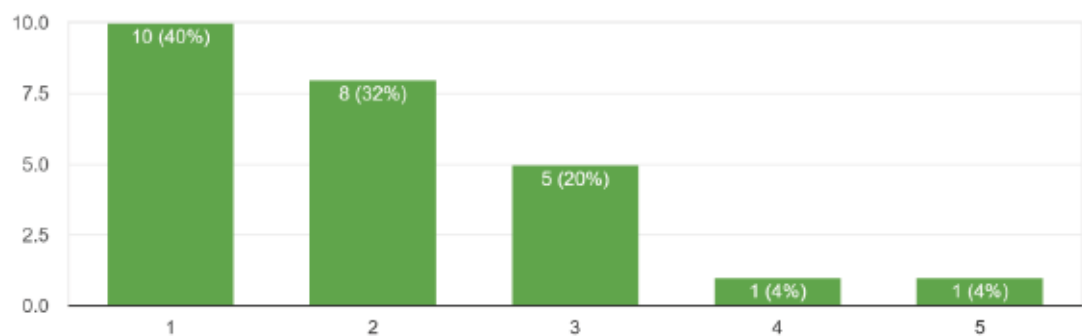


Figure 6. Missing the mobile application for performing the action.

5. Interview results

In this chapter, the interview results are presented. 5.1 includes the opening of the interview by taking look at the interviewees' feelings about the pandemic situation and mapping out a bit of their mobile technology adoption. The next subchapter concerns mobile phone applications and how the interviewees' application usage has changed after the pandemic has started. In 5.3 the theme is to present the interviewees' feelings about the importance of mobile phones continuing the theme by comparing phones and computers in the subchapter 5.4. The final part consists of presenting the results of communication-themed questions. The interviewees are referred to with anonymised abbreviations presented in chapter 3.2. Opening the interview

The interview started with discussing about feelings of living in the pandemic time. The interviewees compared life before and during the pandemic describing the feelings of change. Opening part of the interview included also general questions concerning interviewee's mobile phones. The interviewees were asked to describe their phones and briefly tell how much they use them.

5.1.1 Ambiance during the pandemic

As the social distancing had already been defined as a global operating model in the media, the interviewees had got through the early phase of the COVID-19 pandemic. Generally, all the interviewees had gotten used to the prevailing situation and adapted their conventional routines to correlate the new normal. They had gotten more time to their everyday life and come up with new alternatives for previous activities. Finnish interviewees were all feeling fine, and they had accepted new guidance of staying home and avoiding physical contact as much as possible. However, half of the Finnish interviewees said that the situation still affects their mood negatively forcing to stay away from friends and family. The other half emphasized that their life had not changed much since they had already gotten used to working and producing school assignments at home before pandemic time. Among the Japanese interviewees there was a bit more variation between the feelings and attitudes towards life with minimum physical contact. Even though all the interviewees had accepted the situation and modified their lifestyle in their own ways, one of them was very upset and one was feeling happy. Japanese interviewees were not used to spending so much time home and they had adjusted to it a bit differently. Most of them did not enjoy spending time alone but one of the interviewees got peace and relief for the hasty lifestyle by having more time away from all the people around.

“Well, nothing special, I’m feeling fine. Of course, not as fine as normally in spring, I can’t enjoy all the usual things (because of limitations and event cancellations). For me the life hasn’t changed as much as maybe for some people, I have been studying from home since last Autumn.” (FW4)

“We have to stay home. They say always on the news “Stay home! Stay home!” I’m becoming crazy! I want to go outside. Many Japanese tend to stay home and play games or watch animation, but I tend to go outside. ... I want to go free; I hope no more “Stay home!” on news.” (JM10)

The pandemic naturally affected to the lives of interviewees, but the strength of the impact varied widely. Even though the pandemic implicated worldwide changes to everyone's

daily life, the interviews indicated that as a matter of fact the lives were not that different compared to time before the COVID-19. When the Finnish people were asked if their life has changed or not, only one of them (FM1) said that his life was considerably different compared to the time before the pandemic. Two of them (FW3 and FW6) said that their lives were slightly different while remaining three Finnish interviewees told that their lives were almost same than before the pandemic. Interviewees stated that they are used to being home, and all the routines were quite easily adapted. These were answers of two Finnish interviewees when they were asked if their life has changed:

"I have studied remotely since September, so I have been home a lot. There was only one group task at the university but other than that I have not visited there. Group fitness classes have turn into home exercises." (FW4)

"Well, not so much because I had worked a lot from home anyway, even before the remote work recommendation. I only used to visit university now and then, other than that I work home." (FW6)

All the Japanese interviewees felt that the effects of pandemic had notably changed their lives, and for two of them (JM8 and JM10) the changes were so markable that they even felt trapped in their homes. However, all the changes did not affect negatively since the interviewees seemed to get more time when there was no need to travel from one location to another. This theme was also noted by one of the Finnish interviewees.

"Until March I had to go to the university to participate minken (school club) and I had part-time job at grammar school. So, until March I was very busy but since April, I haven't gone to minken or part-time job anymore. So, I have got a lot of free time." (JW7)

When interviewees were asked to specify the differences of the life before and during the limits of pandemic time, several themes stood out. All the interviewees' comments were related to human contact and social interaction, highlighting the importance of seeing friends and family. Among the Finnish interviewees, leaving from home was decreased because of the cancelled events or lectures, recommendations for weekly grocery shopping times or for example by contact studying turning into remote studying. However, one of the interviewees (FM1) noted that he was spending more time outside after pandemic limits. He discovered new outdoor activities for keeping his mind and body healthy during the isolation. He and other interviewees emphasised the norm of staying home and refrain from physical contact. One of the Finnish interviewees (FW6) noted that she was worried about her relatives' health more because she couldn't meet them. She also mentioned that being almost always home also has its benefits, scheduling had become easier when there were no transitions demanding a great amount of time.

"There are many aspects. Before there were more variation and rhythm (in life), now I'm always home. On the other hand, scheduling is now easier because everything is taken care of remotely. Days are similar, I'm working a lot." (FW6)

Also, another Finnish interviewee said that he felt that requirements for having an active life had loosened and he could relax more home. He said that:

"It's more like not having an option for going anywhere. It's possible to have an almost good conscience and sit home thinking that going anywhere isn't possible so it's ok to just stay. The change is that normally there are options even though the decision ends up to same result. Now the conscience won't be bad because it's acceptable to be home." (FM5)

Among the Japanese interviewees the general feeling about the changes was quite negative but still having a bit more time in the schedules came up as a positive aspect. A couple of interviewees mentioned that studying had become more challenging because of remote study methods. One of them noted that keeping the concentration is hard home when there is not much space, and all the leisure time's temptations are nearby. Another said that having a real human contact was essential for learning especially new languages. There were multiple new causes of worry, for example uncertainty of getting back to normal life, having problems with keeping the sleep pattern and being lonely. One of the interviewees (JM10) also mentioned that he felt sad walking outdoors where there used to be a lot of people, vivid traffic and shops that were open for customers. Two of the Japanese interviewees commented the changes as follows:

“Even though I don't wanna work; I prefer staying home, now I'm kind of excited to go out and see someone.” (JW12)

“YNU (Yokohama National University) has a lot of nature, and it's like wide and has a lot of green: that's a good environment for studying. And there is a café near the library. When I study home, the first 30 (minutes) goes well but then I become sleepy and tend to do other things like playing games and guitar.” (JM10)

5.1.2 Phone usage

Instead of owning the most expensive and latest mobile device, having an average phone that works was highlighted as the most important aspect in the interviewees' opinion. One of the Finnish interviewees (FM2) said that he is coping with many problems using his phone till it's completely broken and unusable. Also, another Finnish interviewee (FM5) told that his phone was not always working properly but he still wants to keep using it since the problems are not that significant. While two of the Finnish interviewees mentioned owning a phone that has some problems, rest four of the Finnish interviewees said that their mobile devices are not the newest models but quite new and operational. All the Finnish interviewees were Android phone owners, half of them having a Huawei Honor phone, and rest three having smartphones from LG, Samsung and OnePlus. A major part of Japanese interviewees had iPhone only two of them having Android as an operating system in their LG and Xperia phones. The Japanese didn't comment much their mobile devices but most of them thought that their phones were ok and worked well enough. One of the Japanese interviewees said that he would like to buy the newest iPhone but because of pandemic situation, he can't go to the shop. One Japanese (JW12) was thinking about changing her iPhone to Samsung because of her current iPhone's low battery capacity.

Determining the amount of phone usage was a bit difficult for the interviewees. All of them usually have their phones nearby and generally they think that their phone usage rates are quite high. One of the Finnish interviewees (FW6) estimated that she uses her phone about four to six hours per day and she felt that her amount of phone usage is quite high. Two of the Finnish interviewees (FW3 and FW4) and were a bit unsure about the usage level, but they felt that it may be quite high. One of the Finnish interviewees (FW6) could tell straight that in her opinion she uses her phone a lot whereas the rest two of them said that the usage is not that voluminous. Finnish interviewees commented, inter alia, that phone feels like an extension for hand and it's easy to imperceptibly glance it.

“It (phone) is always with me; I feel that something is missing if I forget it somewhere. I must carry it like my housekeys if I'm not home. I feel limited if it's not with me.” (FM1)

All the Japanese interviewees felt that they use their phones a lot, two of them even using their phones and computers simultaneously (JM9 and JM10). One accentuated that of course his phone is always near him stating that nowadays phones are naturally used a lot. Japanese interviewees commented:

“Every class that is hold, and also learning management system is online. We use pc and smartphones a lot so we can connect the systems. Maybe almost eight to nine hours a day, so yes that’s a lot. I tend to have a headache (because of that).” (JM10)

Communication stood out as the most common act of phone usage while browsing the content in social media applications having the second place in the comparison. Finnish interviewees came up multiple answers when they were asked what they do with their phones most of the time. Three of the six Finnish interviewees mentioned communication and four of them added social media applications to the list. One of them (FM2) utilized his phone mainly as an internet modem, other one (FW3) took care of her health with the help of health monitoring applications. Different kind of social media applications were listed by the Finnish interviewees, as well as watching videos and reading cartoons or news. One of them (FW6) noted that her phone is a fast help for boredom. Among the Japanese interviewees SNS (Social Networking Service) was mentioned multiple times, meaning that the social media applications were the most common for them. All six of the Japanese interviewees mentioned communication and four of them felt that social media feed is one of the most common phone use cases as well. They said that phone is also often used for educational or entertainment purposes, for example as a support for hobbies and studies or a way of spending time by playing games or watching movies.

5.2 Adoption and usage of mobile applications

In the interview the mobile applications were discussed by asking questions about application usage changes after the pandemic had started and taking look into applications in the aspect of old and newly installed software. The interviewees were asked to describe the reasons behind using phones and think about the possible changes during the pandemic situation. In the final part of the section, the interviewees talked about their spending habits related to payable mobile applications.

5.2.1 Using familiar applications

When the interviewees were asked to describe the usual reason behind using a mobile phone, the most common answer was related to seeking entertainment with the help of different kinds of applications. When six of the interviewees mentioned entertainment, only three of them came up with communication as their first answer.

Four of the Finnish interviewees mentioned that boredom often leads to phone usage. A couple of them said that they tend to use their phones in the morning as a part of their routines or just because they don’t feel like getting up just yet. In addition to using phones for entertainment purposes or as a part of routines, also other reasons were mentioned. One of the Finnish interviewees (FW3) said that her phone is the most important tool for tracking her health, whereas one (FM2) brought up taking care of important everyday tasks like using a mobile bank or study management application. One of the Finnish interviewees (FW4) mentioned communication as their most usual reason behind using the phone.

“In the morning when I wake up, I check Instagram and messages. After that I may not use it, maybe in the evening. If I’m bored, I will play chess game. ... And of course, Tuudo (study management application) and Nordea’s applications (mobile bank).” (FM2)

The Japanese interviewees’ reasons behind phone usage included same themes as Finnish people’s answers. Two of them mentioned the seek of entertainment and two also spoke about communication being the most common reason of using phone. It was mentioned that phone is easy for any kind of task: looking for information about anything, taking care of studies, playing games. One of them (JW12) pointed out that it’s easy to use phone for anything because of its small size; only one hand is needed for using it.

“Easy to open, easy to handle and it’s small; needs only one hand. If you want to use laptop, you have to turn it on first and it needs passcodes. If you want to use tv, first you have to stand up to get there, press buttons and connect channels. Since smartphone is small, it’s easy to bring it everywhere. Smartphone is always nearby.” (JW12)

Taking the changes of pandemic time into account, the usual reasons behind phone usage had changed for half of the interviewees. However, the majority of Finnish interviewees answered that they use phones in pandemic time for different reasons than before the pandemic, whereas the majority of Japanese interviewees said that their reasons behind phone usage have remained same (Figure 7). It turned out that phones’ entertainment value was decreased for Finnish people and grown for Japanese people.

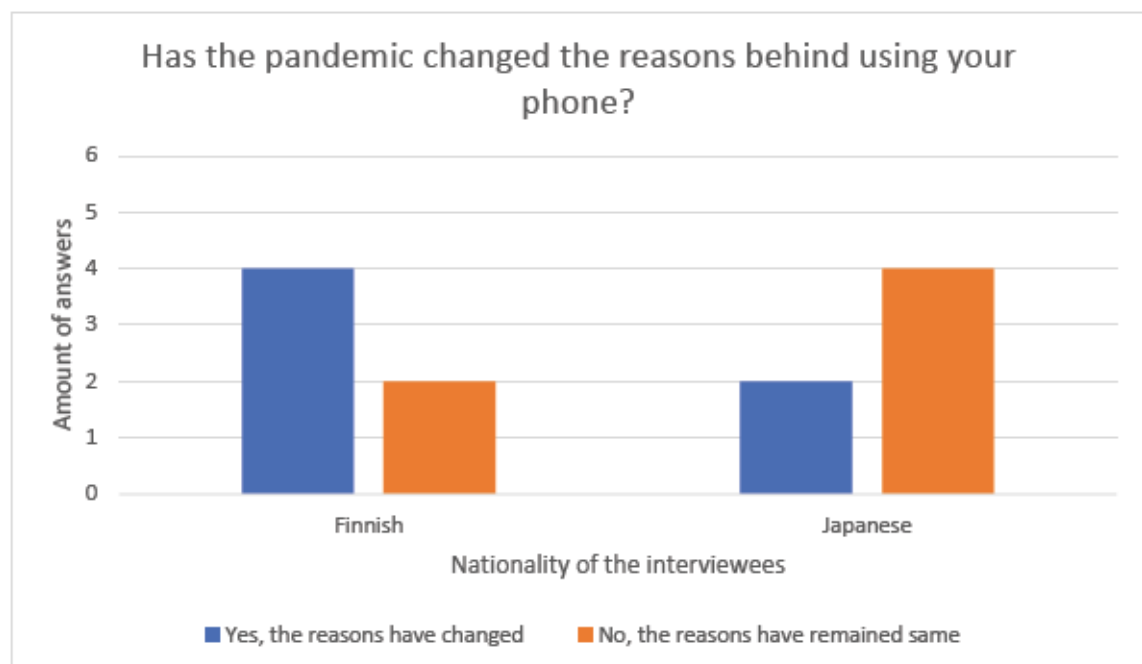


Figure 7: Answers to the question about phone usage in pandemic time

Referring to the impact of the pandemic on phone usage, also the used applications had changed a bit for the interviewees. Even though six of the interviewees said that pandemic didn’t have an influence on the reasons behind phone usage, only three of the 12 interviewees commented that the applications in use have not changed. It turned out that the interviewees mostly used applications from familiar categories but the rate amount between the applications may have changed. Communication applications seemed to lose their importance while applications for entertainment or spending pastime appeared to be popular among the interviewees.

5.2.2 Using different applications

Five of the six Finnish interviewees told that they started using at least slightly different phone applications during the pandemic time. They highlighted that the need for a certain type of applications was decreased for example usage of applications for checking bus timetables or lecture halls likewise communicating with friends about gatherings. Two of the Finnish interviewees said that using WhatsApp for communication had decreased. Four of them mentioned that they started using applications that they hadn't been using before. The interest in global news was mentioned as one of the reasons behind application changes and another interviewee said that she is now using health applications more than before the pandemic time. Three of the Finnish interviewees mentioned that they had downloaded a new social media application (TikTok) because it had gained popularity among young people globally.

"I feel that using WhatsApp has decreased. Because I used it for checking what other people are doing and could we do something together. So, now when there are no plans, I'm not interested (in using WhatsApp). (FW3)

"Well, the reasons may not have changed much, I grab my phone because of the same reasons (than before the pandemic). Maybe, at least in the beginning of the pandemic in March and April (in year 2020) I tended to browse everything unnecessary. Then I started to feel that maybe I could limit using my mobile phone a bit." (FW4)

"The most common reason for using phone is that I haven't managed to get up from my bed yet, I think that's about 80% of my phone usage. I use my phone now less than before because I'm using my computer when I'm home. If I'm somewhere outside, then I'm using my phone of course but now I have not been outside a lot. I'm not watching videos on my phone; I want to have proper displays." (FM5)

"I think I'm using less WhatsApp. Nothing else comes to mind, so not as much as WhatsApp than before. That may be because my friends are also using computer now, no one is working at offices, and they all have the same sleep pattern as I do. We don't need to use WhatsApp because we are all online on computer. I thought that I would use my phone more now on pandemic time but it's the opposite." (FM5)

The majority of Japanese interviewees said that they did not notice a change in the reasons behind using phones after the pandemic has started but still four of them said that they had started using different applications. It seems that using mobile phone feels same than before pandemic and it's normal to have changes in application usage. Also, Japanese interviewees said that communication was decreased because of limitations in group gatherings but in contrary to Finnish interviewees, they emphasized the increased importance of video and game applications. One Japanese interviewee (JW7) said that she plays mobile games more than before pandemic time and other interviewee (JM8) commented that he didn't change his application usage routines much, but he still changed his karaoke hobby from going to traditional karaoke to singing with karaoke mobile application. Also, one more Japanese interviewee (JM11) stated that the importance of entertainment had increased as he had started to use more streaming applications on his mobile device. One of the Japanese interviewees (JM10) commented that in his opinion playing mobile games and consuming other applications for entertaining purposes had increased among his Japanese acquaintances after the pandemic time had started. He instead started to yearn for other activities than using technical devices in his leisure time, so he started walking outside and enjoying fresh air. The interviewee stated that because of remote lessons he had to use more his phone for studying purposes. Another Japanese

interviewee (JM8) also mentioned that she started using video call application because of remote lessons, while one Japanese interviewee (JM9) said that he had only started using different applications on computer, not on his phone.

“Yes, I use more game applications and of course Zoom. I have never used Zoom before the pandemic. It’s a new application.” (JW7)

“I spend more time (with phone and computer), more than I would have thought before; time has maybe doubled. One of my hobbies is boardgames, but now we can’t play them with friends. There is one website which lets us play boardgames online, so we talk via discord with computer or smartphone, and we play together.” (JM9)

“Before the pandemic I mainly used Line (communication application) but in this situation I always watch movies with my phone. In these days I don’t have to send messages to any friend because we can’t meet. I started muscle training and a new application help me to train. And I also watch movies from Amazon Prime.” (JM11)

Even though half of the interviewees said that the pandemic time has not affected their mobile phone usage habits, the majority of interviewees (nine of twelve people) had started using new applications in the pandemic time. The amount of free time had increased and both Finnish and Japanese interviewees had started using mobile application that support their free-time activities. The focus on using new mobile applications was to spend time either on improving skills or just having fun with games and other entertainment.

Most of the Finnish interviewees had started using new applications during the pandemic. However, two of them didn’t remember having any need for new applications, and they noted that because of isolation the importance of computer had grown so that using phone had decreased. One of the interviewees (FM2) commented that he doesn’t use his phone much at home because instead of using his small device with bad battery, he can carry out same tasks with his computer which has two sizable monitors. Other interviewee, that didn’t remember downloading any new applications (FM5) said that his phone has a bug which complicates downloading new applications and that may have an impact on his lack of using new applications. It can be noticed that these both interviewees had some technical problems with their mobile phones and partly because of that they didn’t have an urge to download more applications to their phones.

The previously mentioned social media application, TikTok, was brought up by half of the Finnish interviewees when they listed their new applications. Also, other applications for entertainment like video streaming and mobile comic applications were listed as well as other applications that support their hobbies and interests. Some of the interviewees had downloaded new applications for improving skills. One of them (FM1) downloaded a mobile tuner for his guitar and he also bought a sport watch because pandemic time gave him motivation for exercising more. Because of the new watch, he also started using new health application which was connected to his new device. Other interviewee (FM2) downloaded multiple applications as a support for drawing. During the pandemic time she had deepened her knowledge and started thinking about making her hobby into a job. In addition to social media applications and software for self-improvement, also video call applications were mentioned. One interviewee (FM1) downloaded Skype application to his phone so that he could contact his work colleagues better. A couple of interviewees mentioned Zoom as a new application for the interview and contacting with friends.

“Google’s news application has been a new one and I have actively used it recently. And actually, I have installed Crunchyroll (Application for watching animation videos) during the pandemic but I’m not sure if this unusual situation has affected to it. On the other hand, I might have not installed the application if there was a possibility to be outside and meet friends. ... Another thing is, that this situation may have affected to the amount of exercising because it is the only thing that can be performed outside. Along with that, I bought a sport clock and I have installed a mobile application for that.” (FM1)

Some of the Finnish interviewees didn’t value much of the mobile applications. One of them (FM5) commented that the application store mainly consists of useless software, and the application marketing style also disgusts him. He finds it difficult to find proper applications because of the number of poor-quality applications. Other Finnish interviewee (FW6) noted that many of her mobile applications have become useless after pandemic time has started. She hasn’t used for example a calendar application or university related applications since nowadays she usually uses her computer as a substitutive device.

Almost all the Japanese interviewees had started using new applications recently too. Only one of the six interviewees (JW12) answered that she thinks that she doesn’t have new applications on her phone, but she also added that downloading new applications is so easy nowadays that she may not just remember that she has new applications. Half of the interviewees mentioned downloading new applications because of distant studies and one of them (JM10) wants to highlight that he hasn’t downloaded any new games because he thinks that the current situation drives him to use technology so much that he doesn’t want to spend his leisure time on his phone. Other comments on new applications include entertainment applications, but only one of the interviewees (JW7) mentioned games, while three of the interviewees listed other applications that support their hobbies. One of the interviewees (JM8) downloaded a karaoke application which was substituting going to the Japanese karaoke booths. Another interviewee (JM9) had a new movie application that helps him with a hobby of making videos. One of them (JM11) had started exercising during the pandemic time and wanted to download an application that helps him build muscle.

“Well (all my mobile applications are) almost same, but recently I installed an application for singing - like singing in karaoke. ... I have to spend a lot of time in my house, and I like to sing. It’s fun.” (JM8)

“Adobe Scan is a new application for me, also Zoom and Teams for video calls. I haven’t installed any games; I don’t tend to play games because I rather go outside to the park. I think using phone and pc too much is bad for my body and health. I need refreshment” (JM10)

5.2.3 Mobile phone and spending habits

Five of the twelve interviewees said that they spend money on their phone applications, three of them were Finnish and rest two Japanese. Two of the Japanese interviewees had very negative attitude towards money usage on mobile applications and said that they don’t want to spend money on digital content for phone because of their personal principles. When the interviewees were asked if the pandemic time have had an influence on their expenditure habits, the general opinion was that the pandemic hasn’t changed anything. However, a couple of the interviewees said that the pandemic may have had an impact after all.

The general ambiance was that corona hadn't impacted Finnish interviewees' spending habits concerning mobile applications. Half of the Finnish interviewees said that they don't spend money on mobile applications. One of them (FM2) mentioned that he doesn't feel a need for using chargeable mobile applications, however he would be willing to support mobile development companies if there was a suitable application for his needs. Other Finnish interviewee (FW3) commented that she only buys games for her computer and the third interviewee (FW4) added that there is a lot of free content on mobile app stores, and she is satisfied with them. Other half of the Finnish interviewees were used to spending money for mobile applications and they all had bought chargeable goods on mobile before the pandemic time. One of the Finnish interviewees (FM1) had bought an application for analysing sleep and other application for watching videos on mobile and other electronic devices. These purchases happened during the pandemic time, but he said that it didn't have a major impact for those decisions. Remaining two Finnish interviewees also commented that the pandemic time didn't affect their mobile purchases. The most common theme on mobile or computer purchases for Finnish interviewees during the pandemic time was the need of entertainment.

"I bought a subscription for Crunchyroll. Normally I may have not used money for that" (FM1)

"Well, Pokémon Go coins, food delivery orders... Before the pandemic I have bought something small, applications that cost maybe a couple euros. I don't think I use any chargeable applications right now. For the video games I have used money a lot during the corona, I have bought entertainment for the times of boredom." (FM5)

Among the Japanese interviewees spending money on digital goods was not as common as for the Finnish people. Majority of the Japanese interviewees (four out of six people) were not used to buying mobile applications or making other in-app purchases. Three of them seemed to have quite strict opinions on avoiding a waste of money on digital goods. One of them (JM10) commented that according to his strict policy, he does not want to spend money to digital goods at all, he wants to buy concrete and physical objects instead. Although he is fine with purchasing goods via online stores since he is planning to buy a guitar from Amazon.

"Only for Prime Video, but I already installed it before the pandemic. I just use. the application more nowadays." (JM11)

"I don't do that. If I buy something I can't stop buying more." (JW12)

One of the Japanese interviewees (JW12) commented that the government had recommended avoiding using cash and choosing other means of payment instead. She highlighted that this was a major step forward in Japan since cash has been the most common payment method before. The interviewee said that they have had campaigns that encourage people by giving a discount for the customers who pay with credit card or mobile application. However, she thinks that it's not easy for Japanese people to give up their old habits so she foresees that the country will return to cash payments after a while.

5.3 Importance of a mobile phone as a device

One part of the interviews was to discuss about the importance of mobile phone as a device. The topic was divided into four parts consisting of several interview questions. In the first part the interviewees were asked if their time on mobile phone had changed after

the pandemic was started. The second part consisted of thoughts about having a valuable phone and how the pandemic had affected that. In the third part the interviewees were asked to describe the most important features of phone and the possible changes that the pandemic had caused. The fourth part included two questions: “Has your phone helped you during the pandemic time?” and “Have you used your phone to enjoy your time during the pandemic?”. The interviewees were also asked to explain their answers.

5.3.1 Time spent on phone

Interviewees were asked if their mobile usage had been increased after pandemic has started and the answers divided quite evenly. Both Japanese and Finnish interviewees commented that using personal computer had become a common habit since they all spend most of their days at home. However, having a lot of free time had also led to spending time on mobile phones. Two of the six Finnish interviewees (FW3 and FW4) answered that their time on mobile devices had increased while half of the Japanese interviewees agreed to them.

Three of the Finnish interviewees stated that being home makes it possible to use more other devices than mobile phone, which has the main function of being useful when larger devices are not available. One of the interviewees (FM5) mentioned that computer has always been his main device, also another interviewee (FW6) said that mobile phone has usually been a substitute to her computer. The interviewee added that she usually used her phone when not being home for example at the university or waiting somewhere and being a bit bored. Two of the Finnish interviewees noted that their mobile phone usage had increased. One of them (FW3) said that taking care of her health had become more important and she had found out that mobile applications are suitable for monitoring that. Another interviewee (FW4) said that she thinks that checking phone and browsing social media applications may have become more common since she has more time now. She commented that it is easy to check mobile phone imperceptibly and that’s why she wanted to consciously reduce phone usage.

“I felt that I didn’t have energy for anything because I was so much on my phone (in the beginning of the pandemic time). Group fitness classes and other appointments had been cancelled so it was very easy to leave home on sofa and browse phone. There haven’t been any compulsory meetings; I have had a lot of free time. I must have forced myself to do something beneficial.” (FW4)

“Time on phone has decreased. Because I feel, that before the pandemic I mostly used my phone when I wasn’t home: I was sitting at the university or somewhere being a bit bored. At that time, I was using my phone a lot. But at home I don’t have that kind of circumstances so often.” (FW6)

Half of the Japanese interviewees (JW7, JM11 and JW12) said that time of their phone usage has increased after pandemic has started. Reasons behind that change lied under the increased amount of leisure time, being bored at home, and using phone for entertaining purposes. Same themes came out also in Finnish interviewees’ comments. Those three whose time on mobile hadn’t increased after the pandemic, had differing reasons behind their answers. One of them (JM8) said that he can’t use mobile phone more because his eyes won’t tolerate any excessive time spent on watching screens. JM9 had similar comments that the Finnish interviewees, reasoning that mobile phone has only been a substitute for his computer having now less reasons for phone usage. He added that his phone has been a useful help while cooking and not having enough room for

computer. The last Japanese interviewee (JM10) stated that his phone habits have not changed and using computer is now common for university studies. He also said that even though he has new mobile applications, he doesn't spend more time with his phone. The focus of communication has changed from the phone to computers.

"Yes, because I have a lot of free time and at home, I have a Wi-Fi so I can use my phone. We can't meet face-to-face and ask questions about classes, so I use my smartphone and SNS application." (JW7)

"No, because my eyes get tired easier than other peoples' eyes. Even if I have free time, I often spend my time cooking or baking some sweets." (JM8)

5.3.2 Owning a valuable phone

None of the interviewees thought mobile phone as a status symbol but having a valuable phone was still desirable if the phone had the features that interviewees appreciated. The ratio of quality and price was naturally the most important matter when buying a new phone. For a couple Japanese, having an iPhone was preferable since it's a popular device in Japan.

For the Finnish interviewees, most important was to have a phone with desired functionalities and properties. None of them wanted to have a certain phone model or operating system but one of the Finnish interviewees (FW3) agreed that usually the phone she wants is one of the most expensive ones and thus having a valuable phone is somehow important for her. Another Finnish interviewee (FM5) stated that the appearance of the phone is important for him.

"No, not in my opinion. It is not important to show off with the phone and highlight the financial status of mine. If the phone works well enough for me; it is possible to do all the things I want to do with it, I will buy the second cheapest model. Not the most expensive nor the cheapest one." (FM1)

"Well fifty fifty. By no means would I want to have worse quality phone than I have right now. Because it is important that I can install millions of applications and test them and play. That would not be possible with my previous phone. But it doesn't have to be the best of the bests." (FW3)

Three of the Japanese interviewees (JM8, JM9 and JM11) said that they don't mind having an inexpensive mobile phone. Also, JW12 said that in this pandemic situation, she doesn't care much of her phone's value. However, one of them (JM11) still would like to have an iPhone because the surrounding people of him own that too. Also another Japanese interviewee (JM10) said that he prefers iPhones as well, since many of his friends have one and he is interested in the newest model's properties. He hasn't had an opportunity for going to the store yet, because of the pandemic situation. None of the Japanese interviewees said that having a valuable phone is straightforwardly important for them, but for example one of them (JW7) commented that she needs all kind of features that will raise the price tag of her phone. She specified that particularly now her phone is important device for her studies.

"In my opinion, the price doesn't matter so much, but it is important to have the features that I need. (Good camera and fingerprint authentication)" (JM8)

“Hmm well, I don’t care about the value. I’m more interested in the phone itself. I have iPhone 8 and I want to buy iPhone 11, the latest model, but in this situation, I can’t go to the shop and buy it. So, I have to wait.” (JM10)

When the interviewees were asked if the pandemic have had an influence on their feelings about having a valuable phone almost everyone said that their opinions have not changed. None of the Finnish interviewees found any differences about their thoughts about valuable phones and one of them (FM2) pondered that having only a few contacts may have an impact for that. He doesn’t have many people to call or send a message. Amongst the Japanese interviewees one (JW7) said that on pandemic time she values more her phone and thus having a quality phone is important. Another Japanese interviewee (JW12) said that she used to value an expensive phone but now she has not need for all the expensive features. She added that having one of the latest models was still quite important for her.

“For me the value of the phone used to be that the battery lasted for a week but now it lasts less than ten hours. The pandemic time hasn’t affected for the fact that I don’t need a valuable phone. If I had more people to contact, then the answer could be different.” (FM2)

“If I didn’t have this phone (good quality iPhone) I couldn’t watch university’s videos of classes (distant studies during the pandemic).” (JW7)

“Well now it (having a valuable phone) is not important for me, but maybe one year ago it was more important for me. That has changed because I wanted to have an expensive phone with a better camera, but now I have a proper camera. I have been thinking to change to Samsung, it’s a lot cheaper than my iPhone.” (JW12)

5.3.3 The pandemic and phone’s important features

Camera was the most important feature of a mobile phone for many of the interviewees. Japanese interviewees seemed to concentrate on the usefulness, beneficial applications, and the size of phones when Finnish people listed more technical attributes. Interviewees were also asked if the pandemic had changed their opinions about the most important features of mobile phones. Half of the interviewees stood behind their previous opinion, but other half thought that the pandemic did have an influence. The distribution of the opinions was even between Finnish and Japanese interviewees. For example, the importance of camera decreased after pandemic started, whereas the importance of data storage size was considered a bit more important. Also, the convenient size of the phone wasn’t as important as before since the interviewees started to spend more time home and there wasn’t need for carrying any devices far away.

Half of the Finnish interviewees (FM1, FW3 and FW6) mentioned that having a phone with a good camera was important for them. Many of the important properties concerned technical features, only one interviewee (FW6) mentioning the physical size of the mobile phone. Two of the Finnish interviewees (FM1 and FM5) listed over four important technical features while one (FW3) thought that camera alone was the most important property of the phone. All kind of features were mentioned but in addition to camera, the size of the disk space and resolution of the screen were both mentioned in two interviews. One of the Finnish interviewees (FW4) also added that usability and accessibility should be considered so that her grandparent could use a smartphone and connect with her family. When the Finnish interviewees were asked to compare their opinions about the

important features before and after pandemic time, half of the interviewees said that the pandemic had changed their thoughts. One of the interviewees (FM1) emphasized the importance of communication and another (FW4) added that she has not use for camera while being home during isolation. One interviewee (FW6) noted that she needs more space for the applications that she wants to try now that she has more free time.

“At the moment the most important thing in phone is that I can reach my close ones, so that I don’t need to struggle for the sake of communicating with people.” (FM1)

“If I now bought a new phone, I would think about the camera. I want to use camera a lot, so it has to be good. And then the size of storage! Always the storage space runs out at some point, and it is annoying. Those are the most important things. Also, it must fit into my hand, it shouldn’t be too big or too thick. The importance of storage size has been highlighted during the pandemic. That’s the reason I can’t install any new applications, because I don’t have enough space for them.” (FW6)

Japanese interviewees had variation in their answers to the question about the most important feature of mobile phones. Like among the Finnish interviewees, also Japanese (JM8 and JM11) mentioned the camera being one of the most important features. Also, small size being a convenient property of the mobile phones was mentioned two times (JW7 and JM11). Other important features mentioned were for example social media applications, fingerprint authentication, applications for music making and disk space. Three of the Japanese interviewees stated that their opinions about the most important featured had changed since the pandemic time had started. Two of them (JW7 and JM10) said that the small size of the phone isn’t that important anymore. JM10 said that it had led him thinking about buying more devices since being home gives opportunities for bigger and better devices compared to phone as a multipurpose device. JM9 noted that now it’s important for him to have a phone that makes it possible to make videocalls smoothly and supports his hobbies. One of the Japanese interviewees (JM11) commented that his opinions about the most important features haven’t changed since the computer or other devices haven’t replaced his phone.

“The most important point is that we can bring phone to everywhere. Now I can use my personal computer, so the degree of the importance has changed.” (JW7)

“I watch videos in my kitchen when I’m cooking. My computer is also near me, but I use my mobile phone because it’s easier to use. But maybe camera is the first thing I think when I buy a new phone.” (JM11)

5.3.4 Help and joy from phone during the pandemic

Almost all the interviewees answered affirmatively when they were asked if the mobile phone had been helpful during the pandemic time. Finnish interviewees highlighted the importance of communication especially between them and relatives living far away. Japanese interviewees thought about the importance of free time and entertainment; mobile phones have helped them to enjoy their time home alone. Entertaining applications were also mentioned by a couple Finnish interviewees (FW4 and FM5).

Half of the Finnish interviewees (FM1, FW4 and FW6) said that mobile devices have been most helpful with communication during the pandemic. FW6 commented that she has called her family members a bit more than before and she thinks that the communication has become more important. One of them (FM1) added that his phone

applications have also helped him staying up to date with the important news, limitations, and new regulations. One of the interviewees (FW3) felt that her phone had become very important for her health monitoring whereas others (FM2 and FM5) said that phone hadn't helped them much. A couple (FW4 and FM5) commented that phone is helpful when they are bored. FM2 would like to stay away from his smartphone but simultaneously he needs his phone for accessing the internet and being able to study. Even though the phone itself may not feel important, it can be secondarily necessary for carrying out for everyday tasks.

“Well, finding the news application has been good because it has made it easier to read topical news. I don't have time to browse all the different sites and now I don't need to when the articles are easily available. It's important for me to know and understand the global situation now.” (FM1)

“Well, I can't think anything right away. I don't think that it has, well of course it is good to have a phone, but there is no change to normal situation. It has helped me same way; help when I'm bored, that is the biggest help, I think. Entertainment is the most important benefit. Phone is very helpful when I need map or bus timetable, but a very big part of using my phone has always been entertainment or something to kill time.” (FM5)

Among the Japanese interviewees only one (FM1) mentioned that phone was helpful as a matter of communication device. She commented that during the distant lectures she communicates and studies with her friends via phone. The majority of Japanese interviewees (JM9, JM10, JM11 and JW12) stated that phone has helped competing against boring moments in isolation. A couple of them had started new hobbies and mobile phones had had an important role including useful applications for them. For example, one of the interviewees (JM10) said that he had learnt new skills concerning his interest in music and podcast, and he has found out that there are good mobile applications for creating new songs and podcast tracks.

“Without phone or computer, I would have nothing to do, so no I have at least something to do.” (JM9)

“Yeah, it helps me a lot. I could not watch videos without my phone so I have always had my phone so I can't imagine how I spend my time at home alone.” (JW12)

Enjoying time had been in Japanese interviewees' minds already when they were asked about the helpfulness of the phone but also almost every Finnish interviewee agreed that they had used their phones to enjoy their time during the pandemic. Phones bring a bit variation to spending a lot of time on computer and contacting people also feels refreshing during the pandemic. Among the Japanese interviewees only two (JW7 and JM9) mentioned communication as enjoyable entertainment while four of them (JW7, JM8, JM10 and JW12) said that watching videos from YouTube was enjoyable via mobile application.

When the Finnish interviewees were asked how they had used phone to enjoy the time during pandemic, the answers were quite various. One of them (FM1) pointed out that he uses now more other devices, but mobile phone is important tool when using streaming services. He also added that during the pandemic, having contact with other people is quite enjoyable and using phone is partly used for those purposes too. Social media was mentioned by three Finnish interviewees (FW4, FM5 and FW6) and two of them (FW4 and FW6) told that they had started browsing TikTok as a new application. FW4 noted that when she gets bored, phone is the easiest way to find entertainment and that's why

she likes to watch for example funny TikTok videos. She also mentioned that depressive corona news started to find their way to every social media feed making it harder to enjoy time with phone. FM5 mentioned that she used to enjoy her time more by her computer, but now she has to study and work with it. That's why she wants to enjoy her time with phone for variation. One of the interviewees (FW3) commented that she would be bored if she didn't have her phone besides the computer. She said that applications on phone feel often handier than those on computer, so she tends to use her phone more often. All but one (FM2) said that phone has helped them to enjoy time during pandemic. FM2 was indignant about the hassle of modern mobile applications and people are always on their phones.

"It (phone) causes nothing but harm. It is handy that I can have it with me all the time, but it is also the downside of it. Using Instagram is a good way to check how people are doing without having to ask them directly. But is it social at all anymore? More like antisocial. It doesn't encourage communication. Once I asked my friend on Facebook messenger that how is he, and he only answered that "Look my Facebook page". Is the world going to that? It was an eye-opening moment for me." (FM2)

"Yes, phone has brought me joy. Especially TikTok and YouTube videos. I may watch YouTube videos for hour or two in a day from my phone, and then more on my computer. Also, it is nice to read people's stories from reddit and watch images there." (FW6)

Four of the Japanese (JW7, JM8, JM10 and JW12) interviewees mentioned YouTube when they were asked how they enjoyed their time with mobile phone. YouTube's mobile application felt easier to use compared to its browser version. Videos were also on focus for the rest two of the Japanese interviewees. Another of them (JM11) said that he watched movies and used streaming services via his phone while another (JM9) said that he enjoyed making own videos with his phone. In addition to videos, also games, making music and sports application were mentioned among the Japanese interviewees. None of these were mentioned by the Finnish interviewees. However, both Japanese and Finnish interviewees did have some mutual ways to enjoy time with phone: comics and social media were mentioned by also Finnish and Japanese interviewees. Additionally chatting was listed by Japanese interviewees (JW7 and JM9) when they thought about enjoying time with phone.

"My new hobby is to watch Japanese comedy, Manzai, and also animation on YouTube. Mobile phone is faster than my PC, so even though it is small I use it because it works better." (JM10)

Mobile phone feels important for all the interviewees. Finnish interviewees though that having a mobile phone is a necessity; people assume that everyone is reachable via phone and if they are not, people will become worried. One of the interviewees (FM2) was even frustrated how important it is to have phone always nearby. Another interviewee (FM5) verified that phone is a final option if the person can't be reached via computer or chat applications. Like one of the Finnish interviewees (FW3) commented phone being like a small computer, Japanese interviewees emphasized the small size of mobile phone, making is easy to use and carry, not to mention all the possibilities that you can do with it. Some of the mobile applications feel easy to use compared to desktop versions but many of the Japanese interviewees noted that on pandemic time they had started to prefer using computer. One of them (JM9) stated that he uses now more his computer, because of better power capacity.

“Anyway, the thing is that everyone has always a phone. If I have a team in some game, we always collect each other’s phone numbers in the beginning of the game and set up a WhatsApp group. For example, if someone is sleeping, and we are not seeing him in game, we are calling him because he probably has his phone nearby. It is kind of a secondary option for contacting; if we can’t get an answer via computer, we try to call via phone. I also must consider that for many people phone is more important than computer, and they answer to phone calls more likely than a discord call via computer. I won’t call to my parents using discord, they are just afraid of computers and won’t want to learn how to use them.” (FM5)

5.4 Comparing mobile phone and personal computer

In the interviews the relation of mobile phone and personal computer were discussed. First, the interviewees were asked to describe the advantages of mobile phone in comparison to other technology. That was followed by a question concerning situations of choosing phone over computer, in a case that both devices could be used for performing the action in question. The interviewees were also asked to think about differences before and during the pandemic time. The chapters 5.5.3 and 5.5.4 include the interviewees thoughts about comparing the roles of computer and phone, having them to think about a situation when they could only have one of the two devices.

5.4.1 The advantages of phone

The interviewees were asked to think about features that work better on mobile phone compared to other devices having possibilities for same actions. Mobile applications were often preferred in contrast of computers’ desktop software. For example, communication applications, mobile payment application MobilePay and social media applications were mentioned. Phone is always nearby and thus it can be used quickly unlike other devices which can be far or switched on slowly. Also, camera was mentioned by both Finnish and Japanese interviewees. Taking photos with phone is far more common than using cameras.

Finnish interviewees had various features that they preferred on mobile compared to other devices. Two of them (FW3 and FW6) commented communication being still the most convenient to be handled with mobile phones. One of them (FW3) noted that she contacts via phones because phones are probably near everyone, and mobile applications also notify about the messages. Three of the Finnish interviewees (FM1, FW3 and FW6) also mentioned that mobile applications can be better than their browser versions. Mobile applications may have more functionalities or using them is just faster. Mobile banks and payment applications were mentioned a few times, also email and twitter got listed by the Finnish interviewees. According to Finnish interviewees, phone’s main advantage is its size. Phone was described as small computer, which can be easily carried with.

“At least MobilePay is handy, I prefer paying with it compared web bank if it’s possible. But for invoices and rents, bigger payments, I rather use computer. I haven’t got used to paying those with phone. And reading email is also easy with phone. Sometimes I watch YouTube videos on my phone, if I feel too lazy for going to computer.” (FW4)

Among the Japanese interviewees, entertaining applications were mentioned multiple times. One of the interviewees (JW7) commented that she only uses her computer for studying and mobile phone is for communicating, listening to music, or playing games.

Also, other Japanese interviewees said that they tend to spend their free time with phone applications rather than on computer. One interviewee (JM10) noted that phone has many handy built-in features like microphone and camera, and he likes to use applications that benefit those properties. A couple of Japanese interviewees mentioned the advantage of phone's physical size as well as the ease of use of the mobile applications. JM11 said that it's easy to cook while watching a video on phone and JM8 added that he only uses computer when he has a spare time. While mobile phone seemed to keep its popularity among the Japanese interviewees, one of them (JM9) noted that having video calls is easier with computer having the camera steadily built in the laptop instead of keeping a phone in hand for a long time.

"Last semester I used smartphone more because I was not home. When I was at the university, I had to use smartphone more than computer because in some courses it was difficult to open the laptop, but I could use my smartphone for example as a dictionary." (JM9)

"For studying, the Adobe Scan is the best one. I commented on Twitter that Adobe Scan is a goddess for my studies. With Adobe Scan I can write on paper and use my phone's camera to make it digital." (JM10)

5.4.2 Choosing phone over computer

The interviewees were asked to describe situations when they choose a mobile phone instead of executing same action on computer. The most common reason behind using phone was having a rush. The Finnish interviewees also mentioned having individual or small tasks or computer being shut down at that moment. The Japanese interviewees added communication and YouTube's mobile application to their list of actions that are preferred to perform with phone instead of computer. When the interviewees were asked to compare time before pandemic and current situation, the choices didn't change much. Interviewees have more time now, thus they tend to choose computer instead of mobile phone. However, the mobile applications are still being used if they work better than desktop or browser versions.

Among the Finnish interviewees, mobile phone was most chosen when the task was desired to be performed quickly and there wasn't computer or other devices available. Also, a couple of them (FW3 and FW6) commented that they usually choose phone for communication purposes. Some useful mobile applications were also mentioned, like mobile bank, ticket applications for example for flight tickets, application for checking timetable for the local bus, social media applications like TikTok where the size of mobile phone's screen is perfect for the short video clips. One of the interviewees (FW6) mentioned that some of the applications use location information which cannot be used as easily with computers. All the Finnish interviewees commented that the situations when they choose phone instead of other devices have not changed after the pandemic has started. Some of the interviewees (FM1 and FW6) said that they have more time to be on computer and one of the interviewees (FM5) verified that he had continued to use phone when the desired applications are better on mobile.

"Well, at least it has a camera. It's possible to take photos with phone unlike with computer. That thing is better. Hmm, what other thing could be better, I must check. ... I don't do a lot of things with phone so I could almost go back to having an old Nokia phone. But I know that people don't like calling so it would be pointless in that sense." (FM2)

“Maybe the communication applications are better on phone. Maybe I prefer the phone after all. I may reach people faster with phone because it is more likely to have phone nearby than computer.” (FW3)

The Japanese interviewees emphasized the size of mobile phone choosing phone for the actions because it's convenient smallness. Two of the Japanese interviewees (JW7 and JM8) mentioned the lack of time or willingness to perform tasks quickly. One of them (JW7) commented that it is easier and faster to use phone than computer. She has communication application (LINE) also on computer, but according to her it is more convenient to use the application on phone. A couple of interviewees (JM11 and JW12) commented that they tend to watch videos mainly on phone, while one of them (JM10) said that he likes to organize his studies on phone and one (JM9) commented that he chooses phone when he is going to write Japanese. Among the Japanese interviewees the pandemic didn't have a major impact on their choice of technologic device but some of them commented that they are now using more computer. One of them (JM9) said that he often chooses computer while phone is being a backup option and one (JM10) said that he now communicates partly on computer. Others said that they still use their phones normally, a couple commented that choosing a mobile phone is their main selection.

“Before the pandemic I talked to my friends only with phone but now I use other applications like discord and zoom on computer. If I use them on my phone, I can only see one face but if I use my computer, I can see multiple people. So, normally I use computer to connect with people. But If I use YouTube application, I choose my phone because it's not heavy like my laptop.” (JM9)

5.4.3 The roles of mobile phone and computer

The interviewees felt that mobile phone's role hasn't changed much after pandemic started but the importance of communication has increased. The Finnish interviewees didn't say that they had any special relation to their phones, and other features than communication didn't feel important at pandemic time. However, a couple Japanese said that they prefer mobile phone instead of computer because of its easiness of use.

Almost every Finnish interviewee felt that phone doesn't have any special role among the technic devices only one (FW3) saying that to her mobile phone is a bit more special than other devices. Other two interviewees noted that mobile phone is not special as a device, but it has still quite important functionalities. One of them (FM2) said that his phone acts as a substitute for devices that are broken or not available. His modem is not working so at the time he gets internet via his phone. Other of the two interviewees (FW4) commented that phone is not incredibly special, but she thinks that it has still more important role to her compared to computer. One of the interviewees (FM1) said that only the core functionality, which he declared to be calling, has been emphasized during the corona pandemic. Other features are no longer as important as before, since all his technic devices are now nearby.

“The phone is more important now. If I want to keep track on my blood sugar, I have to have my phone always nearby. Before I could forget my phone to bathroom, and I didn't care. Even though phone is special for me, computer still feels more important (as a device).” (FW3)

“Hmm special well, normally computer is more important than phone, and it still is. Actually, phone has better value only when calling, specially to family members. I could

imagine that before the value cap has been smaller, and now it is bigger, I think. The computer is even more important nowadays.” (FW6)

Half of the Japanese interviewees (JM8, JM11 and JW12) felt that phone has a special role among technic devices during the pandemic. Using phone has been common for some of the Japanese interviewees, and they prefer using phone than computer (JM8 and JM11). One of them (JM11) said that the time on computer has remained same but the actions on it have been replaced by studies. One of the Japanese interviewees (JW12) noted that phone includes functionalities that are missing from her other devices making the mobile phone special for her. Other half of the Japanese interviewees didn't feel that pandemic time had affected the importance or speciality of phone's role. They think that the important features of the phone have remained same, or computer has replaced some of the time that they had spent with phone before.

“Maybe it is easier to use mobile phone compared to something like laptop or computer. I watch YouTube videos both on phone and computer; when I want to listen to music, I use my cell phone and when I want to watch movies, I use my computer.” (JM8)

The importance of computer had notably increased among the interviewees during the pandemic time. Computer is now always near and often turned on because of the mandatory work or studies, and that is why it's also being used more for the tasks that were used to be handled with phone. However, particularly Japanese interviewees felt that phone was still quite important and half of them hesitated when they thought about the importance comparison between phone and computer. The importance of computer had increased but the mobile phone might have felt a bit more important than computer.

Almost all the Finnish interviewees commented that computer feels now more important than mobile phone. Only one of them (FW4) said that even though she uses computer more than before, the pandemic hasn't affected the importance of mobile phone. All the other Finnish interviewees stated that they now use more computer and there isn't so much use for phone anymore. They commented that computer has all the necessary features and better usefulness, it is always turned on so it's easy to choose it instead of phone. One of the interviewees (FW6) also said that she doesn't need to use her phone to contact her spouse anymore because they both are working home.

“I use computer now more than normally because I am home more (than before the pandemic). The amount of phone usage has remained same. I have been inside all the time and even if I had a lack of things to do, I don't need to use my phone. I have my computer here and I don't have to play with my phone when I have two screens (on computer).” (FM2)

Japanese interviewees stated that they also value computer now more than before the pandemic time. Half of them (JW7, JM8 and JW12) said that computer and phone feel as important while two commented (JM9 and JM10) that computer is now more important than phone. One of the Japanese interviewees (JM11) felt that he still likes more his phone than computer. He said that he only uses his computer for studies those not being the most critical issue for him. The importance of computer feels very personal, since one of the interviewees (JW7) commented computer having a particularly important role for her, because of the distant studies. She said that computer is now much more important than before. Also, another interviewee (JW12) noted that computer has become her new everyday device along with her phone so now she has started to use computer more diversely. Two of the Japanese interviewees felt that computer is now more important than phone because of the distant studies and inability to work normally at part-time jobs.

“I think that normally smartphone is more important than computer but now computer has become a bit more important compared to phone. I spend more time with both but after I started editing videos the importance of the computer increased more.” (JM9)

5.4.4 Phone or computer, the final choice

Even though computer felt very important compared to phone in the current pandemic situation, the interviewees had to think hard which of the devices they could discard. The Finnish interviewees stood up for computer while all the Japanese interviewees chose to keep the phone. Japanese interviewees rationalized that even if some of the tasks are harder to execute on phone, everything is possible after all. They also noted that computer doesn't work as a communication device as well as phone.

Most Finnish interviewees (FM1, FM2, FM5 and FW6) chose computer when they had to decide between it and phone. Almost all of them had to take time to think about the answer being aware of the advantages of mobile phone. Most of them rationalized their answers with the fact that they will need computer for their work and studies and nowadays communication is possible with computer too. One of the interviewees (FM1) added that computer has more functionalities than phone; he likes to play videogames with it. Also, the small size of phone is not so important now at pandemic time. Another interviewee (FM5) commented that life could be easier if he chose phone, but even so he thinks that the computer is so important for him that he wouldn't want to live without it. Two of the Finnish interviewees (FW3 and FW4) answered that they would prefer phone if they had to choose between it and computer. Phone includes many useful features, like microphone, camera and GPS. Also, communication is more reliable with phone; computer can't always be turned on or fit in the pocket.

“It would probably be easier to live without a computer, notable easier. But because my phone has mostly value as an entertainment, I can benefit my computer for the same entertainment. I am not watching YouTube videos or play with my phone; I think I'm a bit snob because I need a fine and big screen. I choose my computer because it's so much more important than my phone.” (FM5)

Among the Japanese interviewees, phone was chosen rather than computer when they were asked to choose either one. Half of them (JM8, JM9 and JM10) had a bit hard time choosing the answer but they still wanted to prefer phone over computer. Japanese interviewees stated that with a phone, almost any task can be performed and writing Japanese is easier with phone's keyboard system. One of them (JM8) also noted that he must choose phone, because he uses it all the time. Even though Japanese interviewees chose mobile phone, they still pointed out that computer is more useful for some tasks for example relating to studies.

“Mobile phone. There isn't a thing I can't do on smartphone that I can do on laptop. For example, calling someone: I can do that on my phone, but I cannot do that with my laptop. I mainly use my laptop to do documents, but I can do documents on smartphones too.” (JW12)

5.5 Phone and social communication

The last theme of the interview was phone and social communication, including questions about being available during the pandemic and contacting people with both phone and

computer. The interviewees were asked how well they are reachable now and has the pandemic situation affected that. Next, they were asked to describe their contacting habits including the number of contacts, styles, and devices. Changes in contacts were also analysed by asking: “Do you now contact those people, who you wouldn’t normally call or send messages to?”. In the following part the activity on social media was discussed and the changes that occurred after the pandemic had started. Finally, the interviewees talked about their alternatives for face-to-face communication in the pandemic life and they also added more comments that came into mind after the interview.

5.5.1 Availability for communication during the pandemic

Almost every interviewee noted that it is now easier to reach them by phone than before pandemic. At home it is easy to hear the phone ringing since the voice can usually be turned on and phone is nearby. Also, the connection is usually quite good at home unlike for example in train. However, some of the interviewees stated that the pandemic situation hasn’t affected their reachability since they have always been easy to reach. In contrast to that, other interviewees commented that previously they may have not answered but now they think that it’s better to be available for other people. One of them (FW3) said that she has more energy to answer calls now when she doesn’t have so many other things to do.

Five of the six Finnish interviewees told that they can be now reached more easily by phone than before pandemic situation. One of the interviewees told that he has always been well reachable meaning that at the time of pandemic people are likely to answer their calls. The interviewees have a feeling that it is now important to answer phones and they have also improved their reachability. One of them (FM1) told that he installed a software to his phone that his co-workers can contact him more easily. Some of the Finnish interviewees (FW3 and FW4) said that they don’t want to worry their relatives and that’s why they answer the phone even though normally they may have not done that. One of the interviewees (FM2) also noted that normally he would spend his time at the premises of university’s student association which are located underground and hereby phone connection has not usually been very well.

“For my parents certainly yes, maybe my friends haven’t contacted me so much. Or I don’t know, I think I react a lot faster than before. I have never liked to answer fast or so, but now it feels that answering is not as big burden as before since there are not so many things going on.” (FW3)

“Well, yes, I think I’m better reachable now. Previously I was running back and forth on weekdays so I may not have had enough time to talk on phone. But now at home my work is so flexible that I can’t think why I couldn’t be reachable in the middle of the day. I’m reachable almost always now.” (FW6)

The answers among the Japanese interviewees were quite similar compared to Finnish interviewees. Like among the Finnish interviewees, only one Japanese interviewee (JM10) said that the pandemic hasn’t affected his reachability which has always been as good as it can be. He said that he has always answered his phone, even in the middle of lectures or other important circumstances. Other interviewees commented that they are now more likely to answer a phone, for the same reasons that the Finnish people had. Phone is always near and noticeable. At home, teachers or employers cannot control the use of phone so it’s easier to answer the calls anytime.

“Yes, it is (easier to reach me by phone now,) I think. It is because, well for instance I can answer phone calls now anytime. Before the corona I couldn’t answer because of noise or being in train.” (JM8)

“Well, it’s much easier to reach me. Before the pandemic, even though I was just a student, I couldn’t always answer my phone for example during part-time job or class. Now I can use smartphone whenever I want.” (JW12)

5.5.2 Contacting during the pandemic

The interviewees commented that they have contacted particularly their relatives more than before the pandemic. Also, when meetings with friends couldn’t be arranged, they transformed live conversations into video calls. The interviewees told that they had to come up with online alternatives for associating with friends, but especially Japanese interviewees had also enjoyed their time alone in a peace.

Most of the Finnish interviewees (FM1, FW4, FM5 and FW6) said that they have now contacted more people than before the pandemic. A couple of them (FW4 and FW6) noted that they have been a bit worried especially about their older relatives and by calling them the interviewees have looked after them. One of the interviewees (FW3) commented that she doesn’t contact more because there is no appointment to arrange and thus no special things to communicate about. However, she noted that her communication hasn’t either decreased since she now calls more to her parents. One of the Finnish interviewees (FM2) stated that he doesn’t contact more people now since he only follows his friends’ lives via social media and contacting people doesn’t feel necessary.

“I would say that I call more to people, especially to my family. It is because I can’t see them now.” (FM1)

“Well, it hasn’t changed much but I have called more to my granny. It hasn’t been long since I called her.” (FW4)

Four of the Japanese interviewees (JM8, JM9, JM10 and JW12) answered that the pandemic has affected their communication habits by increasing the amount of contacting people. The interviewees want to relieve the feeling of loneliness, communicate with family that lives far. Two of the Japanese interviewees commented that they are now contacting their friends by calling videocalls and having social evenings called “online drinking”. While most of the Japanese interviewees had started to contact people more, two of the interviewees (JW7 and JM11) noted that they haven’t changed their contacting habits after pandemic had started. They said that they enjoy time alone and don’t feel an urge to contact people more than before.

“Maybe, communication on phone has decreased a bit changing into video calls on computer. We are talking about homework in Zoom meetings; Zoom meeting communications have increased a lot. I’m still having quick chats via phone calls but for longer ones I use computer and Zoom.” (JM10)

“I contact people less than before pandemic. Because we can’t go to outside; we don’t have any appointments, so I don’t need to send any messages. Before the pandemic I only used Line to agree about appointments for example eating lunch with friends.” (JM11)

When the interviewees were asked how they usually contact people, messaging was the most popular answer. The Japanese interviewees habituated themselves to calling more

than Finnish interviewees and they also mentioned having video calls unlike the Finnish interviewees. Also, Japanese said that their communication habits have changed more than Finnish interviewees'. They were used to meet each other and now video calls have replaced their gatherings. One Japanese interviewee and three Finnish interviewees noted that they only make calls when they have something very important in their mind. Sending messages with both phone and computer was common, but using phone was a bit more frequent.

Most of the Finnish interviewees stated that they prefer messaging to calling and using WhatsApp was the most common mobile application. Two of them (FM2 and FM5) also noted that they nowadays use more computers for communication and half of the interviewees (FM1, FM2 and FM5) stated that their main communication device is computers. Having a phone was kind of a backup option and one of them (FM2) commented that he wants to use the phone only for important calls. For the Finnish interviewees, phone calls are for important and special occasions, sending messages feels more natural and convenient. However, the pandemic has partly affected communication habits by increasing the number of calls. Half of the Finnish interviewees (FM1, FM2 and FW4) said that the pandemic hasn't affected much, two (FW3 and FM5) stated that it has had a little impact and one (FW6) said that it has had a significant impact on her. During the pandemic, she installed new mobile applications for communicating and the computer has had a bigger role for her. One of the interviewees (FM5) noted that his communication habits have changed a bit because of the lack of face-to-face meetings.

"I have noticed that I communicate more with computer. With phone I communicate via messages and call if I have something very important to talk to. This has remained same before and after the pandemic has started." (FM1)

"For my parents and sisters, the communication methods have remained same, calling it is. For others I have used Discord, Zoom and Google Meet, and then there is that Microsoft's Teams. There are a lot of those, applications on computer. But Discord can also be used on phone, so sometimes I have used it on phone." (FW6)

Half of the Japanese interviewees said that sending messages via communication application (LINE) was their most common way of contacting people. Also, other half were used to sending messages via LINE, but they also call with the application. Two of the interviewees (JW7 and JM11) noted that they rarely call to anyone, one of them (JM11) added that he only makes phone calls at emergency situations. However, video calls were mentioned by many of the Japanese interviewees and calling them was new and arose from the impacts of the pandemic. All but one (JM11) stated that the pandemic had affected their communication habits having computer as a new common communication device the biggest change. One of the Japanese interviewees (JM8) stated that there are now more ways to communicate, and another interviewee (JW7) said that her friends have included video calls into their weekly routine. Even though it has become common to communicate via computer, the Japanese still stated that their main communication device is mobile phone. Four of the Japanese interviewees (JW7, JM8, JM11 and JW12) said that they usually use phone for communication and rest two of them (JM9 and JM10) chose computer as their main communication device.

"Before the pandemic I had never used Zoom and I rarely called anyone. My friends use Zoom, and they call each other once a week, but this (the interview) is my first video call. I have never attended a video call before." (JW7)

“Before the pandemic my main tool was LINE, so I rarely made video calls or LINE calls. Now my main tool is still LINE, but we also use Zoom, LINE’s video calls and WhatsApp. Before pandemic, 90% of my communication was sending text messages but now I can say 70% is messages and 30% is either calling or video calls. I didn’t use my laptop for videocalls before.” (JW12)

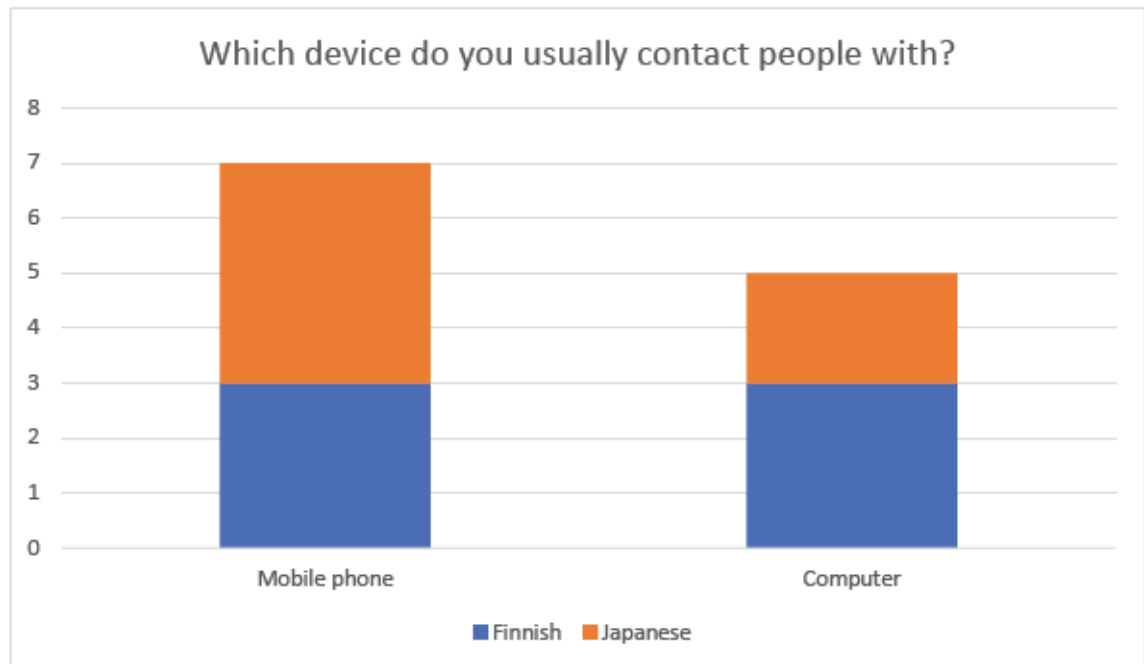


Figure 8: Mobile phone is still more commonly the chosen communication device

5.5.3 Changes in contacts

The interviewees were asked if they now contact those people, who they wouldn’t normally call or message to. Contacting people has become a bit more frequent among both Finnish and Japanese interviewees. The pandemic situation had brought people together by giving a common situation for those who normally don’t have anything to talk to. The interviewees had contacted old childhood friends and some acquaintances who they hadn’t had time to contact before. Also, having more communication with relatives was common for many of the interviewees.

Most of the Finnish interviewees commented that they had contacted some people that they were not used to contact before the pandemic. Some of them (FW3 and FW6) said that they had contacted some friends that they hadn’t been in touch for a long time. One of them (FW3) also said that having a video call isn’t normal for her and she has tried that now in the pandemic situation. Half of the interviewees (FM2, FW4 and FM5) commented that they were now more in contact with their relatives than before. They call to their parents, grandparents and other relatives that live far away. Also, one of the Finnish interviewees (FM1) said that he has now started to contact his colleagues.

“Yes, I call to my granny. Normally I wouldn’t call so much because I would go to have some coffee with her. And I also sent a message to my other granny, because it wasn’t possible to visit her on Mother’s Day.” (FW4)

Four of the Japanese interviewees (JW7, JM8, JM9 and JW12) commented that they had now contacted more people that they didn’t contact before the pandemic. Like few of the

Finnish interviewees also a couple of Japanese interviewees (JW7 and JW12) had contacted their childhood friends. One of them (JW12) also commented that she also had started to communicate with her colleagues via phone, like one of the Finnish interviewees as well. The other (JW7) stated that she now has more time than before; also, other people are online more often so it's easy to connect with them. Calling or messaging doesn't feel like interrupting the receiver like normally, and it's also possible to remember to contact old friends. One of the Japanese interviewees (JM8) also noted that the situation has led him and his close ones to communicate more and that's why he also contacts people more now. The last Japanese interviewee (JM9) lives in Germany and he commented that he now can contact his Japanese friends since the time difference doesn't impact so much when everyone stays home. He said that having a bad sleep pattern doesn't disturb his studies when everything is carried out remotely.

"Yes, last month I had a video call with my high school club activity friends, and we planned to have a class reunion after one month. If the pandemic didn't happen, I may not have contacted those friends." (JW7)

5.5.4 Social media activity during the pandemic

Most of the interviewees stated that their activity on social media hasn't changed after pandemic. There was a bit diversion between Finnish and Japanese interviewees, most of the Finnish saying that they don't notice any change whereas half of the Japanese interviewees noted that their activity on social media has changed. Interviewees from both nationalities said that they hadn't added so much content of their own because there is nothing to publish. Swiping other people's content and reading news from social media updates has been common among the interviewees. A couple of them also noted that they now browse more than before, because of increased amount of free time.

All but one (FW6) of the six Finnish interviewees said that they haven't noticed any change in their social media activity. They keep in touch with close people, may not update own social media but follow other people's publications and read short stories same way as before the pandemic. Even though the activity didn't change, one of the interviewees (FW4) stated that she had installed a new application, TikTok. She said that social media stands as an entertainment until it becomes boring. She also mentioned that the old social media applications she used to browse didn't have as much content as before pandemic, leading into searching entertainment from new applications. One of the Finnish interviewees (FW6) said that her time on social media had grown after the pandemic had started. She also thinks that social media has value as an entertainment, but moreover she can also keep herself up to date on the world's situation with the social media. Having phone as a source of amusement is partly explained because of working and studying the whole day on computer. Changing from computer to phone gives a bit variation to the days at home.

"It has increased, precisely Instagram on phone is that kind of application which is opened all the time brainlessly. I'm not sure about other applications, I may have opened Facebook's application also more often. Probably I just want to know what's up with other people, my close friends are active on Instagram and Facebook." (FW6)

Half of the Japanese interviewees said that their activity on social media had changed after the pandemic had started. Two of them (JW7 and JM9) noted that they have now spent more time on social media whereas one (JM11) said that he uses now less social media applications compared to time before pandemic. Those who are on social media

more than before commented that it is convenient to read topical information about the pandemic on social media and noticing other people spending time there helps staying connected to friends and close ones. The interviewee who doesn't spend as much time on social media as before commented the all the days are so similar that there is nothing interesting to see or post on social media. Other half of the Japanese interviewees stated that their time on social media has remained same after the pandemic had started. One of them (JM8) said that he has replaced time spent outside with other activities like cooking and baking. Another interviewee (JM10) said that he wants to keep his time on phone limited consciously and the last interviewee (JW12) noted that she hasn't anything to post but she still wants to browse social media when there is time for that.

"Yes, I use Twitter a lot. Now the prime minister updates news about the pandemic and many people are following him on social media saying he is right, or he makes mistakes. I check these comments about politics and my time on social media has increased." (JW7)

5.5.5 Alternatives to face-to-face conversations

During the pandemic face-to-face communication was diminished for all the interviewees and they had to make up alternative communication habits. The Finnish interviewees said that they used phone calls specially for older relatives, but otherwise using computer had become more common way of communication along with messaging. Japanese interviewees commented that they had partly replaced face-to-face communication with phone calls or video calls. Some of them were not used to make calls at all so they usually used messaging.

Four of the Finnish interviewees (FW3, FW4, FM5 and FW6) said that they had partly replaced face-to-face communication with calls. They started to call to their friends that they met before pandemic, also to relatives who are old or live far away. One of the interviewees (FW3) said that phone calls were not normally part of her general communication habits, and she felt a bit stressed about thinking about calling to people. However, at the time of pandemic she had to cope with calling if she wanted to talk with someone. She also commented that positively she now started to have more time to prepare for the calls, so it helped her to have contact with her friends. Two of the Finnish interviewees (FM1 and FM2) commented that they had not replaced face-to-face conversations and they didn't call much to anyone. One of them (FM1) said that he only calls those who he was calling before the pandemic, but he sends more messages to his friends. Other interviewee (FM2) agreed with him saying that he only calls to his close relatives like he always has.

"At least with granny I have, I'm calling her now when before I used to go and visit her. With my dad we mostly send messages to each other." (FW4)

Half of the Japanese interviewees (JM8, JM10 and JW12) had changed their communication habits by replacing face-to-face conversations with calls. They commented that new applications on computer had had a big part in their communication habits during the pandemic and as a new thing, especially video calls became a part of their weekday routines. Other half of the Japanese interviewees commented that their communication practices had remained same than before the pandemic. One of them (JW7) said that she enjoyed her time alone and had arranged only individual video calls. Another interviewee (JM9) stated that the pandemic didn't affect his communication habits since he lives far from his family and thus, he was used to contact his relatives in other ways than arranging face-to-face meetings. The last interviewee (JM11) said that

the video calls felt not comfortable for him, and he wasn't ready to step out of his comfort zone. He said that he prefers sending messages to his friends and enjoys his free time alone in peace.

"No, I don't communicate nowadays. Before this situation I didn't use phone calls and I can't get used to using phone calls or video chats. I don't want to change my (communication) style." (JM11)

"Yes. I use video calls not only with my childhood friends but also with my co-workers. If it was normal situation, we would do izakaya (go out to eat Japanese style dinner) together and drink in person but now we do online nomikai (spending time and drinking together via video call)." (JW12)

Phone and social aspect during the pandemic had changed somehow for all the interviewees. Some of the Japanese interviewees felt relaxed when they had time to be alone and having additional communications didn't feel necessary. Staying home had become a bit boring for some of the interviewees and they felt that they have not much to talk to or post to social media. It was difficult to make an initiative for the conversation. One of the Finnish interviewees (FW3) said that she had discovered new functionalities from her phone; in a shortage of web camera the phone can become one. She thought that having a phone is important as a multipurpose device in a situation like the pandemic. Another Finnish interviewee (FW4) said that communication feels easy when there are so many applications and technology that can be exploited. All the contacts are online so there is no problem reaching the people in need.

"Communication style has changed a bit, there are now group calls when before those didn't exist in my surroundings. We are talking in Discord and having distant social evenings together. I learned that I could make a web camera out of my phone!" (FW3)

"It is fortunate that there are many applications for contacting people. It has been made very easy to communicate with video calls, text messages etc. however you want to. There are a lot of options for that." (FW6)

6. Discussion

In this chapter, the research results are being analysed and compared to the literature presented in the chapter 2. First the summary of the research is presented taking the existing material into account by contrasting their previous results and briefly analysing the research material using the theoretic models. In the subchapter 6.2, the research questions are being discussed and answered based on the results of the interviews. The last subchapter covers implications that this thesis provides to the research and practice.

6.1 Summary of the findings

In this study the aspects of Finnish and Japanese mobile phone adoption and usage were analysed using existing research results and material, conducting a small survey and interviews for up-to-date knowledge. The interviews were carried out in 2020 when the corona pandemic was taking over the world giving a perspective for this research. The pandemic in question was extremely topical at the time, so the research question is related to mobile phone and mobile application adoption and usage during the COVID-19. The sample selection was targeted at Finnish and Japanese university students also giving a perspective of different cultures in a time of common crisis. With the research material introduced in the literature review, the perspective of attitudes and cultural aspects were analysed being therefore relatable to the research question. The research material consisted of different perspectives of cultural values and technology adoption taking also mobile technology adoption into account. In the literature, there was also COVID-19 related material presented giving an important base for this research. COVID-19 related literature covers studies about life in Finland and Japan during the first phase of the corona pandemic as well as existing research about phone usage during the pandemic time. In addition to literature also an initial survey study was conducted in 2019, before the COVID-19. The purpose of the survey was to study phone adoption and usage in a digitalized world, and it gave a good understanding of the starting point before the pandemic started to change normal lives.

Conducting the mobile adoption survey in the summer of 2019 gave a base for this research. 14 of the participants were Japanese while 6 of them were Finnish, there were also five representatives of other countries having 25 answers altogether. The survey implicated that the young adults are phone adopters by having no problem using mobile applications instead of traditional procedures including for example paper tickets or having face-to-face contact when running errands. The digitalization was visible in the results of the interviews since none of the interviewees was complaining about using technic devices. Only one of them could be described as a smartphone rejecter since he wanted to go back to the old days when there were no smartphones or social media. However, according to him he also benefits from the functionalities of the smartphone and only criticises the way today's communication is shallow and asocial.

The COVID-19 pandemic has had its influence on people's lives globally. Using computers and phones was in a key role during the time of social distancing providing a possibility to work from home. Similar findings arouse from this research and previous literature related to mobile technology and COVID-19. Kovalainen et al. (2021) noted that the transition to distant work gave relief from the daily hustle and both Japanese and Finnish agreed with the statement. Life in isolation implicated cancellations of events and hobbies, working from home and impossibilities to travel. Even though the free time increased among the young adults, they also encountered problems. Niininen (2021)

noted that students miss face-to-face contact and Ueda et al. (2020) wrote that mental health problems increased after the isolation started. In the spring of 2020 people were getting used to the new normal and the atmosphere was partly melancholic but mostly understanding and calm. Some of the interviewees felt frustrated because of remote studies but most of them had adopted the situation yearning a bit for face-to-face gatherings. Saadeh et al. (2021) listed new hobbies started during the pandemic, including movies, cooking and drawing which were common among the Japanese and Finnish interviewees in this study. Many of the Finnish and Japanese interviewees had started using new mobile applications during the pandemic including tools for distance studies and health-related applications, as Rahman et al. (2021) also discovered in their study.

From a perspective of technology adoption, the Finnish and Japanese interviewees had quite a positive attitude towards technology. For starters, having interviews via video call was not a problem for anyone even though some of them had to familiarise themselves with the tools first. Also being home and getting used to new normal life with distant connections felt natural or even relaxing for some of the interviewees. David's (1989) TAM model and the aspects of perceived usefulness (PU) and perceived ease of use (PEU) can be noted in the discussion of results. According to interview results, the phone had been a great help for multiple purposes during the COVID-19 pandemic. All the interviewees have gained PU from their smartphones during the pandemic time since they were used to utilising the phones' features already before the isolation. In addition to communication, the phone had been for instance a useful tool for staying updated with the most recent pandemic directions and a source of inspiration for new hobbies during the time of isolation. The interviewees found entertaining videos on phones in the middle of the pandemic and also could take care of themselves by monitoring their health with phone applications. However, for many interviewees, the PU value seemed to be higher before the pandemic outbreak, since during the isolation the need for a small and convenient phone wasn't so obvious compared to the time when people could move around.

Without targeting any separate applications, the young adults seemed to adopt new technology well in a need of completing daily tasks related for example to distant work or studies. Smartphones are common multitools today (Ahmad, 2012), so adopting new applications during the isolation didn't cause any major problems for young adults. All the interviewees were used to utilising their smartphones easily in a need of help in the time of isolation, so in addition to PU value, also PEU value seemed to be quite high among them. The smartphone had become an extension of hand before the pandemic so searching for new applications and including them in their daily routines wasn't difficult for the interviewees. When comparing the PEU values of the smartphone and computers during the pandemic, the different use cases were emphasized. The smartphone was generally easier and faster to use, and the mobile applications were also often preferred because of their good usability. The interviewees listed for example mobile bank, YouTube, social media, and LINE chat application as software that they tend to use on their smartphones instead of a computer. The aspects that reduced the smartphone's PEU value were the difficulty of typing and the small screen size. Even though it was also mentioned among the interviewees, that Japanese was easier to write with a smartphone than with a computer keyboard, the most of them preferred writing longer texts with a computer and also doing important tasks, like paying big invoices, by having a computer's big screen in front of them.

In the research, Finnish and Japanese cultures were taken on board in the analysis, the main target still being the impacts of the pandemic. As the research results indicate, the two countries in question do not have major differences in a view of mobile phone

adoption and usage. According to previous research, there are for example differences in the independency of information seek in diverse cultures (Hofstede, 1991, as cited in Lee et al., 2013). Lee et al. (2013) state that collectivistic cultures the social effects are also visible in technology adoption, leading to imitation along with the technology adopters and the possibility of higher PU and PEU values (Sunny et al., 2018). Both Finnish and Japanese are industrious phone users but during the COVID-19 pandemic, the Japanese saw a slightly more value in their phones. Finnish people changed their source of communication and entertainment from phone to computer, but the Japanese wanted to keep using their mobile phones more even though the computer was also nearby. Still, also Japanese noted that the importance of computers has grown after the pandemic had started, even though the phone had not lost its priority. For Finnish people, the phone had mainly value as a substitute for a computer: even though it's faster to use a phone, the computer handles the demanded tasks better. It can be figured that the PU is more important to Finnish since even if PEU is better on phone, the higher PU on the computer surpasses choosing a phone. Japanese people preferred using phones for communication, watching videos on YouTube and being in a hurry. The convenience of phones compared to computers was highlighted, so having a valuation of PEU seems to be a bit higher than among the Finnish young adults.

The results of the research implicated that mobile phone has utilitarian and experiential value for young adults. Technology adoption leads to immersion and a change of social rituals (Chen & Granitz, 2012), as can also be seen in the time of the COVID-19 pandemic and the use of mobile phones. Mobile phones are always nearby and during the time of isolation students and remote workers are almost always available for phone calls or other communication that normally may have been impossible because of unsuitable location. People have immersed themselves in the world of technology by using both computers and phones several hours in a day, staying home away from others. During pandemic time everything is taken care of with computers or phones: working, studying, communicating, music lessons, parties, concerts and even buying the groceries. Most people are adopting the developed smartphone technology well, but there are also those who can be described as technology rejecters. However, even though mobile technology development feels unpleasant, the rejecters must adapt to modern technology if they want to manage in today's digitalized world.

6.2 RQ: How has the pandemic affected smartphone usage and adoption?

In the main research question, the impacts of the pandemic are analysed related to smartphone usage and adoption. Half of the interviewees felt that the COVID-19 hasn't changed the reasons why they grab their phones and start using them. There was a bit of difference between the nationalities, Finnish people used phones mostly because of boredom while Japanese peoples' source of motivation for phone usage was more diverse including entertainment, communication and searching for information. The Japanese interviewees valued the phone more as a source of entertainment while Finnish interviewees preferred bigger screens and used computers instead. For all the interviewees used applications had changed: using for instance tools for public transport and maps had become useless while applications for video calls and new hobbies were now relevant. Almost all the interviewees had started using new mobile applications during the pandemic, adopting new applications is easy and quick. When there is a need for technical tool, it is easy to check if there is a mobile application for that.

According to previous research, phone usage had increased during the pandemic (Ratan et al., 2021; Tejedor et al., 2020; Saadeh et al., 2021 & Rahman et al., 2021). There also was literature which had asserted the opposite by claiming that phone usage had decreased and using Wi-Fi had increased (Li et al., 2021). In this study, the results show that most of the interviewees' phone usage hadn't increased and some of them commented that using phones is now unnecessary since they have other technology nearby. However, the results were not distinct since many of the interviewees also said that their phone usage may have increased. Using phones had become so natural to the interviewees that they tend to use it much even though using other technology at home had increased remarkably.

The phone's importance as a communication tool had decreased since being home and sitting in front of the computer had increased the use of desktop applications for chatting and calling. Especially Finnish interviewees noted that they started to communicate via computer when they noticed that all their contacts are online too. Also, Japanese interviewees said that computers had become more popular as a communication tool, but most of them still preferred using a mobile phone. Japanese are used to communicating via the LINE application, which has a good mobile interface. Therefore, some of the interviewees didn't want to start using the desktop application, because its usability was stated to be a bit worse.

6.2.1 Assisting RQ1: Are there changes in used mobile applications caused by the COVID-19 pandemic?

All the interviewees had noticed changes in the use of mobile applications during the pandemic. The familiar applications for communication or social media had been in use before the COVID-19 and after the pandemic had started, but the amount of use may have changed. For some of the interviewees, the usage of social media applications had lost its meaning since they had nothing to post there because of event cancellations. However, especially Finnish users felt that the increased amount of time had driven them to use more social media applications and seeking for entertainment from new social media applications as well. Japanese interviewees commented instead that they are now watching more videos on their phones and entertaining themselves with YouTube and games. New applications were installed during the isolation partly because of the necessity caused by COVID-19, but also because it has become a natural procedure already before the pandemic time. The interviewees were not counting the applications they install on their phones, since it's effortless to install new applications quickly and for free. When the interviewees browsed through their mobile applications they found new applications for entertainment, healthcare, social media (TikTok), hobbies and distant studies.

The isolation caused by the COVID-19 pandemic led people to fortify themselves in homes surrounded by technology. Mobile phones were usually used in a hurry; all the shortcuts in commands had made it quick to use any applications either there was a need to navigate somewhere using a map application or time to call a partner and ask for additions to the shopping list. At home with all the time and technology, many mobile applications lost their necessity. Mobile applications had been a help in boredom; a source of entertainment when waiting for an appointment or arrival at the destination. During the isolation, Finnish interviewees started to utilize their bigger screens by playing games on a computer and watching videos on TV. Anyhow, some of them admitted that the phone is still an easy source of entertainment being always near and accessible. Some mobile applications have established their place among the desktop and mobile software having

good usability and an interface that is familiar to their users. Especially Japanese interviewees preferred the mobile applications in general, praising the convenience, user-friendliness, and the rapidity of use. Also, Finnish interviewees told that they sometimes take care of tasks on the phone instead of on a computer if they happened to be in a hurry or have just one separate task to finish.

6.2.2 Assisting RQ2: Has the phone usage increased during the pandemic?

Even though most previous studies have found out that smartphone usage had increased during the novel pandemic (Ratan et al., 2021; Tejedor et al., 2020; Saadeh et al., 2021 & Rahman et al., 2021), in this study the results are differing. As Li et al. (2021) state in their study, also the interviewees of this study highlight the use of computer instead of phones.

Most Finnish interviewees didn't use phones more during the pandemic because of multiple reasons like other devices being nearby at home, computers being more important, and phones being just a substitute for a computer. Half of the Japanese said that the increased amount of pastime had also led to increased time on the phone, but the other half stated that their phone usage time has remained the same or even decreased. The reasons behind that were for instance being on a computer instead and having health issues because of staring at a small screen.

Among the interviewees, the combined time spent on the phone had decreased remarkably since some of the interviewees had decreased their phone usage. Taking the decreased time on the phone into account, the results show clearly that phone usage hasn't increased during the pandemic (Figure 8).

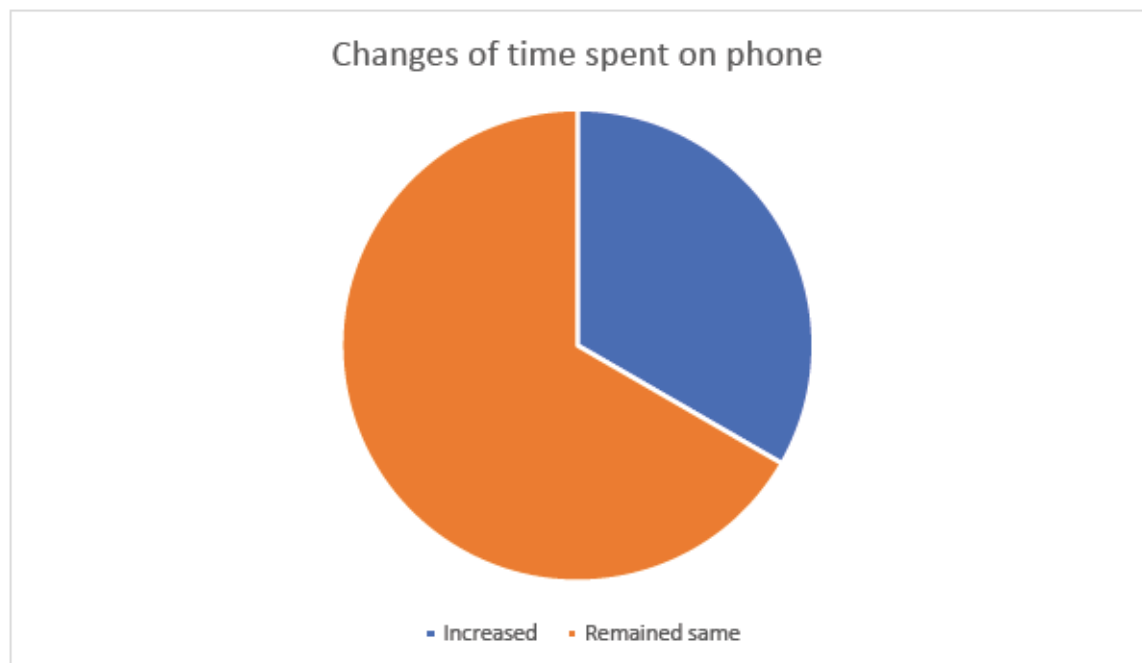


Figure 8: Pandemic's impacts on time spent of phone

6.2.3 Assisting RQ3: Has the pandemic led to changes in communication?

Almost all the interviewees stated that during the pandemic they can answer the calls at any time, unlike before the isolation time. A couple of them stated that they were extremely well reachable also before the pandemic, but all the other interviewees told that it was now easier to reach them by phone than before the pandemic. Besides the phone, the computer had also become a valuable tool for communication. For many Finnish interviewees, a computer was clearly the primary device for communication during the isolation whereas the phone was being a substitute for situations where the computer was for some reason turned off or in the other room. The phone was also chosen when the communication was targeted to older people or relatives, who used phones instead of computers as a long habit. Having two devices for communication ensures availability at any time of the day.

For the Japanese interviewees, the phone hadn't lost its primary purpose as a communication device. Calls and messaging were often conducted by phone, but computers had become a new option as well. For both Japanese and Finnish interviewees, video calls were a new type of communication but instead of phones, they tend to use computers for that. Having a bigger screen is more suitable for video calls, especially if there are multiple participants with cameras on.

The COVID-19 pandemic had changed the ways of communication in the view of device and type selection, number of contacts and persons that are targeted. The pandemic led people to contact others more and also contacting those, whom they hadn't contacted for a long time. Being in an equal situation around the world encouraged people to catch up with their childhood friends and acquaintances living far away.

6.3 Implications for research and practice

This research was accomplished for gaining a better and deeper understanding of smartphone adoption and usage during the COVID-19 pandemic. The Japanese and Finnish sample selection was chosen for taking the possibilities of cultural impacts into account. The starting point of phone adoption and usage was investigated with the help of existing material and by conducting a small survey study. The research provides a continuum for the research of smartphone adoption and usage in today's world of change.

The research field related to the COVID-19 pandemic is still growing and this study provides a new perspective deepening the analysis of the impacts of the pandemic on phone usage and adoption. The previous studies had multiple implications on pandemic's impacts on time spent on phones. By claiming that phone usage time hasn't increased during the pandemic time, this study provides an opposite aspect compared to the previous studies' most common research results. From a cultural perspective, the research between Finnish and Japanese was slightly deepened in this study. Having interviewees from the two nationalities helped to discover many similarities but also some differences between the two countries. In general, Japanese phone usage habits were slightly different during the pandemic time, including more entertainment and communication compared to Finnish interviewees.

This study also provides information for associated groups like students, remote workers, teachers, and mobile technology developers. Many of the studies presented in the literature review target young people, like the mobile adoption survey study and also the

interviews of this research. The experiences had by the interviewees can be relatable not only for other Finnish and Japanese students but also for young adults around the world. Using smartphones and being forced to stay at home concerns all the people globally. Many of the feelings had by the interviewees may be familiar to the people who had to start working remotely during the isolation. Also, teachers and employers may get an interesting perspective of students and employees during the pandemic time of distant studies and work. In the field of mobile technology, the pandemic may have caused changes. This research can give an aspect of mobile application user and their needs during the isolation time.

7. Conclusion

Smartphone adoption and usage are continuous in today's technological environment, being an interesting topic to study and analyse. In 2020 the technology adoption and usage underwent an extensive change when people were obliged to stay home and use technological devices to manage life underneath the COVID-19 pandemic. This research gives a base for understanding the attitudes and experiences of phone users during the pandemic.

The presented literature gave a theoretical base for this study presenting viewpoints and models for the analysis. According to the conducted mobile adoption survey and interview study, the young adults seem to get both utilitarian and experiential values from using phones during the pandemic time. The phone is being used as a useful tool when doing chores at home as well as a source of joy when scrolling social media feeds or watching YouTube videos. However, using a computer instead of a phone had become more common since the possibilities for getting enjoyment are seen as more versatile on the computer. By the research, Japanese young adults are more likely to use a mobile phone in the seek of entertainment while Finnish tend to use other devices at home. However, the learned habits stick and both Finnish and Japanese keep using the familiar mobile applications during the pandemic time.

The pandemic had various impacts on phone usage and adoption. Some of the previously used applications became useless and other applications got installed because of their utilitarian or experiential values. People got more time when the events and other gatherings were cancelled so some of them started new hobbies which possibly led them to install mobile applications related to the new activities. Some of the people felt that using social media wasn't interesting anymore, since they had nothing to upload there. At the same time for example TikTok was getting more popular with the global video trends that also entertained the interviewees of this research. According to the survey study, phone usage was quite high even before the pandemic and for some, the time on phones increased even more after the pandemic started to have an influence on lives. However, in this study, the time spent on the mobile phone had generally remained the same before and during the pandemic. Even though the time on the phone had remained the same, the communication had increased according to the research results. This is because during the pandemic it was common to have both phone and computer as contact devices, and video calls were also put to use as a new type of communication.

7.1 Limitations

A part of the limitations of the thesis can be declared as the amount of English material in Japanese technology adoption studies. Also, the cultural perspective of Japanese and Finnish technology users was lightly studied before also giving possibilities for future research. When implementing the interviews, the language barrier complicated the extensive answering of the Japanese interviewees. As I couldn't speak Japanese fluently, we had to manage in English which impacted the depth of some conversations. In Japanese, the interviewees could have explained better their experiences without having difficulties because of speaking. The number of interviewees was not very high causing a quite narrow view of the theme: with a larger sample selection, the results may have been clearer.

Since the research was conducted during the COVID-19, also the pandemic caused complexities in a sense of finishing the research. As a student at University of Oulu I also tried to maintain a full-time job and studying during the pandemic. Time management and taking care of health got problematic and led to delay of the research. At the same time, the scope of the research was quite wide and hard to keep distinct.

7.2 Future research

In this thesis, the theoretical models related to smartphone adoption and usage as well as the cultural perspectives were not analysed very deeply. The literature gave support for the viewpoint of interview questions and discussion part, enabling a more precise analysis in the future research. This study gives a base for deepening as well as extending the Technology Acceptance Model in cultural and psychological perspective. Japanese mobile technology adoption could be analysed by taking cultural values like social network into account. Also, Ikeda and Morita (2016) noted that especially studying the periods before and after World War II have a significant consequence in today's technology adoption. The goal of the research is to give better understanding of attitudes and behaviour behind technology adoption by limiting the topic by concentrating on Finnish and Japanese culture. Because of there is research made based on countries like USA (Sunny et al., 2018) and South Korea (Lee et al., 2013) other cultures should be studied for better accuracy of the results.

This research can be extended by adding better qualitative as well as quantitative understanding by studying phone users as well as their attitudes after the COVID-19 pandemic. In this thesis, the phone usage and adoption are examined before the COVID-19 pandemic and during the first spring of COVID-19. As we now know, the pandemic wasn't going to end soon at that point, so the usage and adoption experiences may have changed after the first phase of COVID-19. Comparison of the mobile application adoption and usage will be relevant for a long time in the future.

During the interviews, the relation of computer and phone became relevant. Over time, people have used computers and then started to use phones instead, but during the COVID-19 pandemic they returned to using computers more. Has "the new normal" led to increased use of computers? The post-pandemic relation of computers and smartphones could be a relevant theme to study.

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Appendix A. Mobile adoption survey study inquiry

20/05/2022, 19:56

Mobile usage habits

10. Which one is the most usual place for using the mobile device?

Merkitse vain yksi soikio.

- Public transport
- School
- Workplace
- Home
- Outdoors
- Muu: _____

11. What do you usually do with your phone?

Merkitse vain yksi soikio.

- Communicating and social media
- Playing games
- Camera
- Reading news
- Watching videos
- Online shopping
- Checking the weather
- Checking the timetable for public transport
- Using health applications
- Muu: _____

Do you like using
mobile phones?

Mobile devices and applications are everywhere. Example: Do you mind if tickets for an event are on your phone and not on paper?

How would do feel on the following situations?

Please answer 1 to 5, 1 meaning that you don't like the situation and 5 meaning that you think the situation is good.

20/05/2022, 19:56

Mobile usage habits

4. Which of these describes you? *

Merkitse vain yksi soikio.

- Employed
- Not employed for pay
- Homemaker
- Student
- Other

5. What is your field of study / profession? *

6. Do you have a smart phone? *

Merkitse vain yksi soikio.

- Yes
- No

If you answered "No" to the previous question, you can skip the next section and continue the survey from the third section.

Using mobile phone
applications

In this section you will be asked to answer questions relating the habits of using mobile devices.

7. Which operating system do you have?

Merkitse vain yksi soikio.

- iPhone
- Android
- BlackBerry
- Symbian
- Other
- I don't know

8. How much time do you spend on your mobile in a day?

Merkitse vain yksi soikio.

- Under 1 hour
- 1-2 hours
- 2-3 hours
- 3-4 hours
- More than 4 hours

9. Where do you use your mobile device?

Valitse kaikki sopivat vaihtoehdot.

- Public transport
- School
- Workplace
- Home
- Outdoors
- Muu: _____

10. Which one is the most usual place for using the mobile device?

Merkitse vain yksi soikio.

- Public transport
- School
- Workplace
- Home
- Outdoors
- Muu: _____

11. What do you usually do with your phone?

Merkitse vain yksi soikio.

- Communicating and social media
- Playing games
- Camera
- Reading news
- Watching videos
- Online shopping
- Checking the weather
- Checking the timetable for public transport
- Using health applications
- Muu: _____

Do you like using
mobile phones?

Mobile devices and applications are everywhere. Example: Do you mind if tickets for an event are on your phone and not on paper?

How would do feel on the following situations?
Please answer 1 to 5, 1 meaning that you don't like the situation and 5 meaning that you think the situation is good.

12. How do you feel if mobile application replaces physical object? (Example: You have to buy a concert ticket online, they don't sell paper tickets at the store.) *

Merkitse vain yksi soikio.

	1	2	3	4	5	
😊	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	😞

13. How do you feel if there is a mobile application as an option for physical object? (Example: You can either buy a concert ticket online or go to the store.) *

Merkitse vain yksi soikio.

	1	2	3	4	5	
😊	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	😞

14. How do you feel if there is no mobile application available for the physical object? (Example: You can't buy a concert ticket online, you have to go to the store.) *

Merkitse vain yksi soikio.

	1	2	3	4	5	
😊	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	😞

15. Do you have comments about using mobile applications?

Appendix B. Smartphone usage and adoption during the pandemic, interview questions

The questions will focus on your relationship with your mobile phone and how things have changed after the pandemic time has started. The interview consists of four parts: 1. Opening 2. Mobile phone's applications 3. The importance of mobile phone 4. Mobile phone and social life

The questions are quite similar with each other, so it's possible that some of them are being answered before I even ask them. But I will ask all of them even though we may have discussed about the same thing before.

You can always ask me if you don't understand what I'm saying. And there is no hurry, it's okay to take your time and think as much as you want.

1. Opening the interview

1.1. Catching up!

- 1.1.1. How are you?
- 1.1.2. Has your life changed because of corona virus?
- 1.1.3. What is different now? How?

1.2. Using phone

- 1.2.1. What kind of mobile phone do you use?
- 1.2.2. Do you use it a lot?
- 1.2.3. What do you do with it most of the time?

2. The phone and its applications

2.1. Why do you usually use your phone?

- 2.1.1. Has the pandemic changed the reasons behind using your phone? Why?

2.2. Are you now using different applications than before the pandemic?

2.3. Have you started using new applications during the pandemic?

- 2.3.1. If yes: What kind of applications? Why?

2.4. Have you used money for mobile applications before or during the pandemic?

- 2.4.1. If yes: What kind of applications?

2.5. What kind of applications/features are better on your phone compared to other technology? Why?

- 2.5.1. Clarification: What is the best thing or application in your mobile phone?
- 2.5.2. For example: When do you choose your phone instead of computer? (Even though it's possible to use either of the devices.)
- 2.5.3. Have you noticed difference during the pandemic?

Do you have other comment about using phone applications during this pandemic time?

3. The importance of phone

3.1. Are you now using your phone more than before the pandemic? What could be the reason?

- 3.1.1. Or are you maybe using it less?

3.2. Is it important for you to have a valuable phone?

- 3.2.1. Like expensive or trendy, as a "status symbol"
- 3.2.2. Has the pandemic affected to it somehow? Why?

3.3. What are the most important features in your phone?

- 3.3.1. When you are usually buying a phone, which features are the most important
- 3.3.2. Why?
- 3.3.3. Has the pandemic time changed those?

3.4. Has your phone helped you during the pandemic time? How?

3.5. Have you used your phone to enjoy your time during the pandemic? How?

- 3.6. Does your phone have a special role compared to technic devices during the pandemic?
Why?
 - 3.6.1. Is your phone very important for some things you do in this time?
 - 3.6.2. Or do you like for example computer more?
- 3.7. If you could only have mobile phone or computer, which one would you choose?
Why?

Do you have other things to say about how important the mobile phone is to you?

4. **Phone and social life**

- 4.1. Is it now easier to reach you by phone than before pandemic? How well are you reachable by phone?
 - 4.1.1. When someone calls you, do you usually notice it and answer the phone? Or sends you a message?
 - 4.1.2. Is it always like that? Do you answer your phone more often now? Or check notifications more often?
- 4.2. Have you contacted people more after the pandemic has started? Why?
- 4.3. How do you usually contact people?
 - 4.3.1. Do you call, send messages, make a video call or something else?
 - 4.3.2. Have there been changes after the pandemic has started?
 - 4.3.3. Do you usually use your phone or maybe computer?
- 4.4. Has your activity on social media changed after pandemic? Why?
 - 4.4.1. Line or Instagram. Are you using other social media channels, Tik Tok?
- 4.5. Have you replaced face-to-face communication with phone calls?
 - 4.5.1. For example, if you used to see your friends have you now called them video calls or something else?
- 4.6. Do you now contact those people, who you wouldn't normally call or send messages to? Why?
 - 4.6.1. Maybe professor or teacher? Or family members?

Do you have other comments about using phone for social reasons? Or anything other things?

It was the last question. Thank you so much!