Intersectionality Lens to Female Elderly's Mobile Usage Experience under COVID-19: An Intimate or Intimidating Relationship?

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Abstract. Due to the unprecedented COVID-19 pandemic, mobile technologies, services, and Internet connectivity have become critical among the Malaysian elderly as an alternative to staying actively and socially connected. However, the elderly find it difficult to adapt to online technology tools with restricted skills under technology challenges. Studies related to mobile adoption and usage experiences among the elderly during the COVID-19 pandemic or endemic are not rigorously conducted by researchers. Little discussion was focused specifically on aging and gender perspectives, including the importance of an intersectionality lens in understanding the interconnected factors that influence one's ability to benefit from technology. To fill in the research gaps, this paper aims to use an intersectionality lens to identify experiences on how female elderly use their mobile phones and services, as women are constantly underrepresented in Science, Technology, Engineering, Mathematics (STEM) studies. The study employed qualitative case studies method with seven older women in Malaysia, 60 to 77 years old, using multiple data sources through semi-structured interviews, mobile walkthrough, and diary studies. Data were transcribed and analyzed by categorizing the key themes digitally using Nvivo. The findings showed that mobile culture and supportive environment; family roles; socialization; education and economic backgrounds; digital literacy level; well-being; and motivation were interconnected, shaping the experiences of the seven female elderly in accessing, learning, and using their mobile phones. This study has built an understanding of the intersecting factors that can contribute to a more inclusive society, especially in promoting the elderly to embrace mobile technologies in their lives.

Keywords: COVID-19; Female elderly; Gender; Intersectionality; Mobile phone usage

1. Introduction

The impact of the unprecedented COVID-19 pandemic has accelerated the need for digitalization among all walks of life, including the elderly, as they are one of the most vulnerable groups (Chang et al., 2020). The only alternative to stay socially connected are through online and digital technologies in this "new normal" (He et al., 2021), particularly the most basic communication devices like mobile phones and services that have become a necessity to all. Previous studies in Malaysia under the pre-pandemic revealed a mismatch between seniors' requirements and smartphone application design, with many of them still

struggling to keep up with its advanced and complicated functions (Sani et al., 2020; Wong et al., 2018 & 2020). However, the significant growth of the aging population should not be a neglected 'silver surfer' group with their capability to stay connected and work as a mobility aid for communication (Wong, 2020). According to a survey by Malaysian Communications and Multimedia Commission (MCMC) (2019), the penetration of smartphones by Malaysians was nearly 98.7 percent, whereas the elderly contributed 30 percent as smartphone users (MCMC, 2019). The digital gap still exists where the younger age group is adopting smartphones more than the older age group (MCMC, 2019). Nevertheless, researchers do not rigorously conduct research on mobile adoption among the elderly and their usage experiences, especially during the COVID-19 pandemic or endemic.

In Malaysia, female mobile phone users were still relatively lower (41.6%) as compared to male users (58.4%) (MCMC, 2019). Based on the World Economic Forum (2021) reported on the global gender gap (under Malaysia), females had lower percentages in STEM's (Science, Technology, Engineering, and Mathematics) (female 26.20% versus (vs) male 57.33%) and ICT's (Information and Communication Technologies) (female 6.17% vs male 8.23%) education and skills attainment (World Economic Forum, 2021). This reflects that males are still the dominant group in STEM sectors and technological adoption or development. Generally, the key barriers for women to own smartphones and access to mobile Internet are affordability, low literacy and skills, safety and security issues, disapproval by family, and perceived irrelevance (GSMA, 2020; OECD, 2019). Thus, the focus of the current paper is to study female elderly's perspectives on using smartphone technologies and to identify issues and challenges faced by them, in order to create a more digitally inclusive Malaysia (EPU, 2021b).

Furthermore, this study takes on a new leap in addressing the importance of gender analysis by utilizing non-binary perspectives (beyond the biological definitions of male and female). Its intent is to view gender as a social-cultural process (European Commission, 2013) that influences how people perform certain roles or are obliged to certain norms through the usage of technological tools. The adoption of the intersectionality lens (Columbia Law School, 2017) is used to provide a broader perspective on how the experiences of female elderly mobile users can be influenced and shaped by different overlapping variables, and gender itself as a social factor is insufficient to address either dominance or subordinate position (Ceia et al., 2021; Rodriguez, 2018).

This paper aims to use an intersectionality lens to identify experiences of how female elderly use their mobile phones and services under the COVID-19 norm. Section 2 consists of a literature review, followed by methodology, data analysis, and results, and lastly, the discussion and conclusion sections.

2.   Literature Review

2.1. Impact of COVID-19 on elderly mobile usage patterns

Adapting to mobile technology services and the Internet has become critical during the lockdown and social distancing practice. According to the media sources (Chandran, 2021; Noordin, 2020), several elderly in Malaysia were reported to have learned and picked up new digital technologies and skills to assist themselves in their everyday routine, for instance, the adoption of online shopping (i.e. Lazada & Shopee) in order for them to buy their household items, clothes or toiletries while staying indoors. Some had learned to use a laptop or tablet for video-conferencing platforms, such as Google Meet or Zoom, to join online activities, exercises, and also communicate with family and friends (Chandran,

2021). One male elderly revealed navigating social media and e-commerce platforms with the support of his two daughters (Chandran, 2021). Besides, Malaysia's contact tracing app (MySejahtera), e-wallet, mobile banking, online food delivery, and other services have also been found to play a key role in assisting the elderly in living through the pandemic (Noordin, 2020; Tandapany, 2020). A recent study conducted by Ibrahim et al. (2021) during the pandemic observed that older participants could even operate their mobile devices and Google Meet platform independently after the training provided by the researchers. Unfortunately, those elderly who were digitally illiterate or lack of access to Internet connectivity had left many of them in the lurch (Anand, 2021; Seifert et al., 2021).

2.2. Construction of gender

Gender appears naturally and deeply embedded in our social practice; in fact, we are uncertain about how to interact with or judge people without the attribution of gender to them (Eckert & McConnell-Ginet, 2013). Our society mainly operates in a binary system (view gender as only two options or biological definitions of male and female). Therefore, the ways of behaving, roles, and activities are expected to match the biological sex assigned to a person, which shapes what is appropriate for being "male" or "female's" role (Eckert & McConnell-Ginet, 2013). Gender from a non-binary perspective, is defined as "socially and culturally constructed" where people learn behaviors, roles, and norms within the social structures and cultural contexts they live in (Eckert & McConnell-Ginet, 2013; European Commission, 2013; Ton, 2018; WHO, n.d.). According to Judith Butler's notion of "gender is performative", gender is viewed in less normative way, which implies gender identity is formed through the repetitiveness of acts (Ton, 2018). When certain acts are repeatedly performed by one of the genders, it becomes a cultural norm representing gender, and therefore, stereotypes can also be formed. West and Zimmerman's concept of "doing gender" noted that gender is performed or formed through everyday interactions, and behaviors are evaluated based on the societal expectations of gender conceptions (Eckert & McConnell-Ginet, 2013). The construction of gender (Ton, 2018) influences how people perform those roles, as well as socially and culturally, how women are expected to be, obligated to play certain roles within families, such as care, connectivity, communication, or even among communities. Gender represents not only relations and identities but also influences the development and design of technologies or systems, which may enable or inhibit women's participation (Aaltojärvi, 2009).

2.3. Mobile phone is a place for gender performance

Ganito (2010) mentioned that "a mobile phone is a place of gender performance, either to reinforce traditional roles, or to transform gender, constructing new meanings." Mobile phone blur the boundaries across multiple practices (work, professionals, private, leisure) when it is embedded in everyday life (Ganito, 2010), it can be a medium where people carry out their traditional gendered identities, such as activities regarded as appropriate for men (practical work and enhancing digital skills) and women (domesticity and communication) (Lemish & Cohen, 2005). It can also be a medium that enables changes (beyond the traditional practices), for instance, women have increasingly become the power users of technology, with a growing interest in technological devices; they tend to purchase gadgets, learn new digital skills and become producers. This reflects that women are able to perform new cultural meanings through the adoption of mobile phones (Ganito, 2010; Skog, 2002). Thus, mobile phones can empower women to challenge the socially expected gendered behaviors and reduce unequal gender power relationships, particularly to assist the socially marginalized women in attaining socio-economic status (Pei & Chib, 2020). However, it is arguable that mobile phones can also disempower women if they are still bound to the

patriarchal oppression in domesticity and society. For instance, women lack decision-making power in their patriarchal households despite their economic empowerment through the adoption of mobile phones (Pei & Chib, 2020). In the social-psychological perspectives, the masculine assumption collectively shaped the negative stereotype that women were "chatterboxes", "less tech-savvy users," and "less interested in ICT", whereas men were perceived positively as "tech-savvy" and "have higher competence" when it comes to technology adoption and usage performance (Comunello et al., 2016; Gales & Hubner, 2020). Additionally, the biased perception that older individuals were less competent than younger ones in technology usage added more negative stereotypes for female elderly users (Comunello et al., 2016).

2.4. Intersectionality lens for explaining relationships

Intersectionality, introduced by legal scholar Kimberlé Crenshaw (1989) is a theory that originally highlights how marginalized social groups exist on the periphery of society, with unequal access to resources and opportunities (Fehrenbacher & Patel, 2020). The purpose of intersectionality is to illustrate the interconnected nature of more than one aspect rather than independently that influences individuals' or groups' identities and experiences of privileges or oppressions (Rogers et al., 2020). Gender is only one of the social factors people face in every part of the world. It is still insufficient to address either a dominant or subordinate position (Ceia et al., 2021; Rodriguez, 2018). Thus, intersectionality helps to address the other factors expanding to the influence of, for instance, the ethnic groups of Malay, Chinese, and Indian in Malaysia, age, education level, economic status, ability, and religious or cultural practices (Ceia et al., 2021). Based on the theory of intersectionality, all these identities and categories are interlocked, resulting in various experiences and characteristics, including the formation of stereotypes and inequalities among the local female elderly mobile user group.

2.5. Online research set-up and conducts

During the COVID-19 pandemic, conducting qualitative research through online interviews or group interviews has become the last resort due to restricted movement. Researchers have to rely on technologies, particularly video conferencing software, multimedia computer, and connectivity, to enable the setting of interview sessions. Dodds & Hess (2020) identified the advantages of using online group interviews for qualitative research. Their findings showed the benefits of online media when conducting research. The benefits of online interviews enable both researchers and participants to feel comfortable, non-intrusive, and safe; engaging and convenient; direct communication; and easy set-up. However, one key aspect of the limitations is the lack of non-verbal communication. Other issues are poor device set-up and privacy intrusion and access issues.

In sum, the adoption of mobile phones and participation in the digital world not only improves the lives of older populations but also empower elderly females, their families, and communities in helping to reduce gender inequalities. In Malaysia, several gender studies have been found to investigate mainly the interests of students and adolescents in relation to their usage and adoption of digital technologies (Ahmad et al., 2019; Aziz & Aziz, 2020; Maon et al., 2021). However, there is a lack of research and discussion focused specifically on aging and gender perspectives, including the insignificant use of intersectionality as an important lens to understand the formation of power, privileges, and gender inequalities. Therefore, the intersectionality lens is used in this study to better understand the relationships between age, gender, and individuals' unique interaction with mobile phones and services.

3.   Methods

This research employed qualitative case studies as an empirical method in enabling researchers to gain in-depth insight into how female elderly (as individuals) interact and experience their mobile phones within the real-life context (Yin, 2018). As the focus of this study is on the female elderly, thus, the criteria for selecting the participants were female who 1) aged 60 years old and above, 2) lives in Klang Valley (center of the west coast of Peninsular Malaysia), 3) have at least three months of smartphone usage experience, and 4) stay with at least one of the family members. Participants were recruited either from a senior learning community or by snowballing method (introduced by participants).

The study utilized an online medium for conducting an in-depth study of seven cases of elderly women. There are three main activities during the study, which are 1) in-depth interview, 2) mobile walkthrough, and 3) diary writing, followed by a diary explanation designed by the research team, hosted, and led by the first author. Prior to conducting the study, an introductory session was conducted with each participant. They were briefed about the three activities of the study. Their consent to participate in the study was sought by signing the informed consent form. At the end of the study, all participants were given a token to thank them for their efforts and time commitments.

All of the above meeting sessions were conducted via Zoom video meetings and supported by communication tools, i.e., computer, WhatsApp, Adobe Fill and Sign, and Zoom screen sharing feature. Despite the drawback of not being able to meet the participants in person with insufficient non-verbal communication clues on the bodily reaction, the rest of the non-verbal communication, such as facial expressions, could be clearly seen via the video. The other features and support tools or virtual space provided by Zoom were supportive towards research set-up, such as recording of the sessions, making online interaction with research participants at ease and convenient, non-intrusive, and safe.

The data was collected until it met a saturation point where no new or refreshed data was found (Saunders et al., 2018). After the data collection ended, recorded videos were transcribed into text-based data for data analysis. All the primary data were coded, categorized, and analyzed using NVivo 12 software to identify key patterns (themes) of meanings (Braun & Clarke, 2006).

4.   Results

This section presents the results from the case studies on female elderly's mobile phones and services usage experience in daily lives and their perceptions. The findings were grouped into the following themes and discussed accordingly.

4.1. Participants' Demographic and Mobile Status

A total of seven participants (see Table 1) aged between 60-77 years old were recruited for the study. Since Malaysia is a multi-racial and cultural country, the participants comprised of three main ethnic groups - Malay, Chinese and Indian - to study the diverse mobile culture. All of them are married except P2 is single, and P6 is a widow. There is also no surprise that three of the participants were involved in interracial marriages (P1 with Malay, P3 with Indian, and P5 with Chinese) in Malaysian society. Regarding their employment status, five participants are retirees and three female elderly are housewives. Participants who worked before are supported by their retirement savings or monthly pensions for their living. Two participants work as part-timers or engage in investment activities to earn their passive income. In contrast, participants who are housewives receive income support or pocket money from their spouses or children.

Table 1 Participants' demographics and mobile status

Participants	Age	Race/ Ethnicity	Employment Status	Education Level	Marital Status	Financial Status	Mobile Phone Background
P1	60	Chinese	Housewife	Tertiary	Married (Interracial marriage)	Supported by spouse and children	Huawei smartphone. Had 9 years of smartphone usage experience.
P2	64	Chinese	Retiree	Secondary	Single (All-time)	Retirement fund, investment as passive income	Huawei smartphone. Had 9 years of smartphone usage experience.
P3	63	Chinese	Housewife	Secondary	Married (Interracial marriage)	Supported by spouse and children	Oppo smartphone. Had 4 years of smartphone usage experience.
P4	61	Malay	Retiree	Tertiary	Married	Working savings, passive income	Samsung smartphone. Had 5 years of smartphone usage experience.
P5	62	Malay	Retiree	Tertiary	Married (Interracial marriage)	Monthly pension, supported by children	Samsung smartphone. Had 5 years of smartphone usage experience.
P6	72	Indian	Retiree	Tertiary	Widow	Monthly pension, part-time income, supported by children.	Oppo smartphone. Had 6 years of smartphone usage experience.
P7	77	Indian	Housewife	Secondary	Married	Supported by spouse and children	Samsung smartphone. Had 3 years of smartphone usage experience.

Nevertheless, expenditure for their mobile phone and infrastructure is not much an issue among the participants as their retirement scheme or family members financially support them. Due to its location at Klang Valley, Selangor (the most developed state in Malaysia), most had received tertiary education (i.e., college, polytechnic, university), followed by upper secondary education. Overall, all seven participants owned a smartphone. Before, they had around 3 - 9 years of experience in using smartphones, indicating that they are not new smartphone adopters. Table 1 provides an overview of the demographics and mobile status of the participants.

4.2. Female elderly mobile usage experiences

Participants described their general experiences and relationships regarding their smartphone and mobile services usage. Five sub-themes emerged under this theme:

4.2.1. Connectivity and Accessibility

Connectedness and accessible are the main aspects for the female elderly to develop intimacy with their mobile phones, whether in their everyday lives or during the lockdown imposed. Participants were still able to foster close connections with their family members, friends, and acquaintances mainly via the usage of WhatsApp (a popular communication app in Malaysia) video calls, voice, or text messaging. Besides, the participants experienced accessibility because it is convenient for them to reach a particular person, sources of information, and services anytime or anywhere. Mobile phones could be identified as a "time-saving" tool that allows the participants to keep themselves updated, make purchases, join online activities, and schedule appointments without much effort.

"Usually, [when using] *smartphone, we are very happy with WhatsApp because near and far you can just connect within seconds, you know." (P3)*

It is also interesting to learn about Malaysia's unique mobile culture and how participants of various ethnic backgrounds use their phones to stay connected with their families and social networks daily. The findings reported a similar pattern among the Malay, Chinese and Indian participants, where they tend to send greetings and wishes (in an e-card format of their own language; see Figure 1) as part of every morning routine or during any celebrations in their social groups. P5, who is engaged in an interracial marriage, is an open-minded woman who always takes the initiative to design e-cards associated with different languages and send them to her family groups to maintain close and harmonious relationships:

"Yes, like I will put up our family photos [refers to editing] *you know, when Hari Raya, Chinese New Year in our family photos to be the wishes, then we can post it. We did it a lot here because my family has Christians, Buddhists, Hindus, and Muslims."*
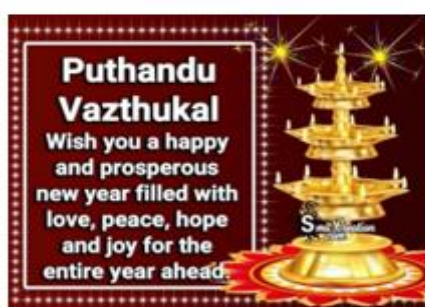
(Translated as- Tamil New Year celebration)   (Translated as- Good morning, friends; live a simple life)

(Translated as- Happy Eid al-Fitr to families)

Figure 1 E-card greetings sent by participants with different ethnicity

Nevertheless, connectedness is associated not only with kinships and friendships but also with the extent of social connectedness to any happenings occurring nationally and internationally. Reading news (i.e., politics, social affairs, COVID-19 updates) is quite a common activity for all the participants to keep themselves updated and connected with the outside world while being retired or at home, as P7 expressed her sentimental feelings after reading online news of an Indian young man:

"Then while browsing through the Google, [I] *came across the hanging of NaD* [Nagaenthran Dharmalingam, a Malaysian due to his injustice execution case], *felt very sad." (P7's diary)*

4.2.2. Essentiality and Dependency: An "intimate" Relationship for Fulfilling Basic Needs

Smartphone has become an intimate tool to all the participants in the sense that they felt insecure, desperate or even "despair" without it, as they conveyed:

"Without a phone, we're desperate." (P6)

"Very important, this phone, it's like our second IC [Identity Card] *already.* [If I] *don't have a phone, I can't survive." (P2)*

Since the implementation of the lockdown, the participants have developed a stronger bond with their smartphones. The participants were increasingly becoming dependent on their phone as it was essential and helpful in many ways to serve their daily routines and needs. Their mobile phone assisted them in coping with the feeling of isolation and anxiety while staying at home or indoors for a long period during movement control orders (MCO) imposed by the Malaysian government. When asked how they felt about their relations with smartphones, one of them stated:

"Of course, we spend more time with handphone than anything else... I mean, we [used to] *travel, we go out, we don't spend so much time on the phone, you see, now* [during the lockdown] *you got nothing else but the phone." (P1)*

Apart from communication, several participants revealed that they spent more time accessing information (i.e., news, updates, live videos) through mobile web browsers, applications (such as Google and YouTube), or social media platforms. Other mobile services, such as location-based apps, tend to ease traveling and provide location guides, online shopping, food delivery, e-banking, and e-wallet, which were essential apps for household convenience with minimal traveling. In terms of safety, Malaysia's contact tracing app (i.e., MySejahtera) was created to facilitate contact tracing efforts which were compulsory for all Malaysians, including the elderly, during the COVID-19 outbreaks.

Due to the MCO, all female elderly utilized their phone to aid them in maintaining good health and well-being (in the aspects of physical, emotional, and mental health). For instance, the participants recognized the importance of playing brain teaser games to stimulate their brains and prevent old-age diseases such as dementia. Some of them engaged in virtual exercises, leisure, or spiritual activities to continue to stay fit and active. One of the participants (P2) reflected in her diary and wrote:

"Singing exercises your heart and lung, and releases endorphins, making you feel good."

4.2.3. Discovery and Exploration of the "wonder" of application features

Positive affection (relates to moods, feelings, and attitudes) can be one of the key motivators for participants to continue learning or using mobile apps and services. As such, participants expressed their new discovery and pleasure of using various mobile apps. These discovering experiences resulted from a mixture of affection and discovery feelings (such as enjoyment, excitement, fun, etc.) and learning experiences:

"Love this wonderful social website where we can collect and share, imagine of anything you find interesting." (P2's diary)

"The [crossword puzzle] *game was quite the brain teaser and I enjoyed myself." (P3's diary)*

The findings also revealed that smartphone benefits most participants due to the existence of free app or web-based services, unlimited cloud storage and membership privileges, particularly free communication services, which could assist female elderly in establishing family and social ties (locally and globally) without worrying about the cost. In this regard, the participants expressed their sense of enjoyment and satisfaction of these services:

"It's great that we can talk free of charge on WhatsApp!! How awesome (P6's diary)

"Shopee [e-shopping app] *you will have free delivery, or you have coins* [rebate voucher]*, you can collect coins... benefit for Shopee user." (P1)*

Besides, few participants expressed their gratitude not only to the invention of mobile phones but also to the "pandemic", because both had afforded them more opportunities to empower or enrich themselves intellectually and digitally.

4.2.4. Concerns about online fraud and security issues

Despite the advantages and affection (intimacy) feeling towards their mobile phones, one of the biggest worries by all participants are issues on cybersecurity (hackers) and frauds (scams and fake news). Many of the female elderly (4 out of 7 participants) had experienced receiving scams or unknown calls and messages (6 out of 7 participants) received fake news before, which made them anxious and cautious. Therefore, they were very mindful in handling any calls and took every protection measure they could to prevent online scams and frauds. They took the initiative to download security apps (TrueCaller ID), read or share news to increase fraud awareness with friends and family, filter fake information, and check for reliable sources.

"I stopped forwarding or you know, when I received something, I'm very cautious about what I forward to, and I always say, 'please check if it's genuine.'" (P4)

"You have to be really aware of the danger of your accounts, scams, and all those; that is the most difficult part." (P5)

Moreover, security and trust issues have posed a challenge among female elderly participants, particularly those who were less tech-savvy in the penetration of mobile banking, e-transaction, and payment services in the current society. Two participants revealed they preferred not to adopt it or use it with the guidance of family members:

"Very worry about scams. That's why I dare not do anything online, but even going banking online, I resisted a lot." (P3)

"So basically, I still pay cash at the counter or I go to the Petronas [petrol station] *and pay that kind of thing. I haven't really used the online payment just yet." (P4)*

4.2.5. Challenges faced by aged users

Other potential barriers reported by the participants were old-age barriers, lack of motivation, and circle of support. As they age, it is common for the elderly to experience a deterioration in visual and cognitive abilities. Five participants commented the phone screen size is still restricted for them to view a bigger picture whenever they want to read information or participate in online activities. Therefore, they use it interchangeably with

their computers. Log-in to an app with a password is a challenge for the female elderly as they tend to forget their password easily.

"I forgot my password. Maybe people like us, we are very careless about the password, you know, not like you young people…" (P3)

Besides, few factors caused motivational issues. For example, the participants discontinued the use of some mobile applications or features that were inconvenient or complicated to use; three participants were quite conservative about advancing themselves in using their mobile phones due to some self-perceived reasons, such as retiring from work, low level of digital literacy, or security knowledge. Four out of seven participants reported that they lacked immediate or empathetic support from their family members and were forced to self-learn and seek external help.

Furthermore, P3 and P7 participants reflected that smartphones could negatively affect their well-being. For example, they were aware that they spent too much time on their phones due to addiction, and it caused them eye-strain issues and nuisance (bombarded with excessive information). Hence, the awareness to control and the determination to refrain from spending long hours on their phones should be a solution to curb the challenges.

4.3. Perceptions of their male counterparts of using mobile phones and services

Although the male respondents were not involved in this research, their female counterparts had provided perceptions of their male counterparts. A mixed perception occurs that their spouse generally has some differences from them. Relatively, the participants perceived that their spouse had more interest in their "male-oriented" topics of interest (i.e., technical, engineering, and adventurous topics) or as aligning to the gender norms that their spouse were less socialized by using the phone and had more authority in the financial decision; whereas topics related to gossip, household purchase matter, entertainment, and exploration of apps features are more dominance among the females. Indeed, there is an obvious difference between the gendered use of the mobile phones and apps of choice:

"I personally think no differences between the gender on the [digital] *knowledge, it is more of… interests rather than the gender-based." (P1)*

"[…] he [husband] *is not the customer, so usually purchased, I will be the one who purchased." (P1)*

"He [husband] *is more into YouTube and looking at what people send messages and all that* [read info and text-messaging]*; he doesn't play games at all." (P7)*

"[…] my husband will download all the [apps]*… he's into cars and engineering and things like that. So, he always looks at all that kinds of stuff." (P4)*

On the contrary, there are also participants who observed that their spouse is less tech-savvy and a conservative user (use only the basic or necessary functions) compared to themselves. P1 and P5 had mentioned that their spouse tends to seek technical assistance from them.

"He's also like me, not so much of smartphone…" (P3)

"He's not IT savvy. Sometimes he sorts of jealous, you know, envy [laugh], because we are more advanced than him." (P5)

5. Discussion

The intersectionality lens in this section explains the key interconnected factors that shaped the female elderly's mobile usage experiences (Figure 2). The findings showed several contributing factors that influenced the relationship between female elderly and their mobile phone intimacy as follows:

Figure 2 Key factors identified that shaped female elderly's mobile usage experiences

5.1. Female elderly and their access to mobile infrastructure and apps

Firstly, the participants could access mobile infrastructure and mobile apps (i.e., devices, mobile broadband, and telecommunication services) without many hindrances. This indicates that the supportive family and mobile culture environment are essential for their daily phone usage, such as monthly bill payments, seeking information, e-purchasing, etc., especially since they are living in an urban context that is undergoing rapid development to Industrial Revolution 4.0 and digital society (EPU, 2021a). The factors that influence the female elderly to learn digital skills are education background, digital literacy level and prior computing experience acquired through their previous working experience. These intersecting backgrounds determine their confidence level and learning attitude when adapting to new technological devices. Besides, it is imperative to have a higher level of mobile literacy to educate and protect themselves from online scams and frauds which are very rampant in this digital era.

5.2. Motivating factors leading to women's mobile adoption and advancement in new skills

Secondly, the findings revealed that mobile phones enable female elderly to perform family and social roles conveniently as well as have the autonomy or flexibility to organize their everyday lives and personal interests. It is found that women are still bound to their traditional gender roles as family caretakers. Mobile apps and online services offer many conveniences to female elderly for their weekly and monthly purchasing or executing their household responsibility without much depending on their family members, as indicated by Sitorus et al. (2019) in the mobile banking context that the intention to continue adopting banking services were strongly impacted by satisfaction, compatibility, ease of use and usefulness. Connectedness and accessibility are the main reasons for female elderly to

own mobile phones. According to Ndukwe (2020), "mobile phones afford women the opportunity to build and maintain multiple relationships," from family and social ties to casual acquaintances for shared interests and needs, as well as it could be a "melting pot" of culture and language for individuals with a different ethnicity to embrace diverse culture in the Malaysian context. The mobility of a phone allows female elderly to freely access resources (without time and geographical barriers) to constantly keep themselves updated and enhanced with knowledge, skills, and general information, which is why they build a close relationship with their phones.

Mobile phone has also played a role in increasing female elderly's resilience and adaptability in responding to many challenges (Berawi, 2020; Sofyan et al., 2021), including health challenges faced in a pandemic and endemic situation, while still being able to keep active and productive in an optimistic way. Commonly, the elderly face health challenges for depression, anxiety, old-age diseases, and declination of physical ability (World Health Organisation (WHO), 2021). The present study has discovered that mobile phone is useful and beneficial for female elderly in self-care, supporting their overall health and well-being, and developing a culture for them to practice a healthier lifestyle. The independency gained by mobile phones enables them to spend time healthily, cope with loneliness, and enrich their lives meaningfully.

Hence, the prevalent use of mobile phones and services has positively triggered their intimacy and engagement with their phones. This has resulted in their high motivation to self-learn and acquire new digital skills.

5.3 Demotivating factors to women's mobile phone adoption and skills advancement

On the other hand, the overlapping factors that cause intimidating experiences to the female elderly are aging barriers, lack of digital literacy and supportive environment, security concerns, and negative well-being in using mobile phones and services. Even though they received technical support (from family or externally), generation gaps existed. Some participants have perceived difficulties in getting guidance and support from their children (young people) on mobile technical know-how. In fact, they mentioned their children are still willing to help or support them, but as they were committed to their work, they couldn't spend much time in providing supportive guidance. Hence, it causes some misperceptions between the female elderly and the younger ones, where the younger ones are sometimes perceived to be impatient. However, this may not always be the case. Some misconceptions maybe happen between the generations.

5.4. Empowerment and gender transformation

Lastly, this research also re-examined the stereotypes and power relations associated with gender and technology. The lens of female elderly on their male counterparts revealed the gender differences primarily on usage purposes, interests, and division of roles, implying they encountered less constraints from their family, religious and social-structural contexts in terms of technology access and usage, but the reinforcing of traditional gendered roles still perpetuates. The intersecting background (i.e., urban or sub-urban location, highly educated, economic empowerment, etc.) has placed this group of female elderly users in a more privileged and empowering position which constitutes to more equal gendered power relations between them and their family members (Pei & Chib, 2020). They not only have the authority in decision-making from household to personal matters or in helping their spouse with online tasks and purchasing a phone, but they also value every opportunity to learn technologies more than men. As a result, as female elderly are becoming the power users of the smartphone, their experiences and interests have progressed, which enabled them to keep abreast or even compete with the male users.

Ganito (2010) and Haraway (1991) highlighted that "technology can empower women or at least allow for gender transformation," males in this case, are not necessarily portrayed as advanced mobile phone users or have a strong interest in learning digital skills as compared to their female counterparts.

6.   Conclusions

Overall, the pandemic has enriched the lives of the female elderly's mobile usage experiences and built strong and intimate relationships with their devices compared to the intimidating experiences. Mobile phones have promoted connectivity, reachability, intellectuality, and well-being, especially during the lockdown when mobile services are becoming essential. The themes or factors identified are the general trends of findings based on this group of participants only. The intersections of gender grouping or variables (male and female) have shown the differences in mobile usage and experiences. The intergeneration group (elder and young people) has shown differences in perception toward each other's free time and ability to help troubleshoot on mobile phone. The culture or ethnicity attribute did not show much difference in general, but the socio-economic (i.e., mobile expenditure, self-investment in digital skill class), educational background, and supportive environment did possess significant impacts on mobile phone usage and experiences.

Limitations and Future Works

This study's sample sizes were limited; therefore, it might be argued that the participants were not representative of the aging population at large of the Malaysian aging population. The main principle of qualitative research is for researchers to gain in-depth and rich insight of certain social phenomena, behaviors, or lived experiences of an individual or focused group. The study did not aim to generalize the findings, so it could be concluded that the researchers had investigated the "advanced" senior smartphone users' group in-depth. Additionally, the researchers are aware of the biases imposed in this study as it focuses on female elderly residing in the urban and suburban areas where they experienced more technical advantages in terms of accessibility and mobile usage capability. The future study plans to investigate the older-aged group elderly (70-80 years old) in Malaysia living in semi-urban, lower-income groups of, their experiences and behavioral patterns in mobile phone usage, incorporating gender and intergeneration perspectives.

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