COVID-19: Unmasking the Digital Gender Divide in a Pandemic

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Abstract

The digital revolution has paved the way to a digital world that stimulates economic growth, develops health outcomes, and raises millions out of poverty by means of new technologies and services. The COVID-19 outbreak hastened the implementation of digital solutions at an exceptional speed, producing unforeseen opportunities for alternative methods to social and economic life. On the other hand, the COVID-19 crisis threatens to repel hard-won achievements in gender equality, further revealing women's vulnerabilities based on their already existing economic, social and political situations. Tackling the digital gender divide is essential to guaranteeing sustainability of women's livelihood. Therefore, the aim of this study is to find out if the COVID-19 crisis is enforcing existing digital inequality keeping in mind that failure to address the gender digital divide will increase gender inequality.

Keywords: Digital revolution, COVID-19, gender equality, digital gender divide, digital inequality

Introduction

The World Health Organization (WHO) deems the coronavirus disease (COVID-19) a public emergency endangering global health [1]. Governments all around the world have taken rigid actions, including but not limited to, maintaining social distancing, shutting public services, schools and universities, and calling off cultural events [2,3]. People are being instructed or directed to stay at home and socially quarantine themselves to prevent being infected [4]. The unceasing pandemic exemplifies an outbreak of an unprecedented scale, which has led to a widely spread fear and ambiguity. This current situation caused by Covid-19 and the worldwide health emergency has resulted in most people resorting to the internet and its services to communicate, interact, and carry on with their job responsibilities from home. Internet services have seen upsurges in utilization from 40 % to 100 %, compared to pre-lockdown levels. Video-conferencing services similar to Zoom have increased ten times in usage, and content delivery services such as Akamai have experienced a 30 % rise in content usage [5]. Therefore, people who are considered to be on the wrong side of the digital divide are totally left out.

Despite the evolution that the world has witnessed over the years in terms of the considerable growth in access and the development of new applications and more affordable computing devices, there are still substantial obstacles to overcome in making sure that women are involved in the transformation to a digitally enabled society. Ensuring that women can effectively take on new digital technologies would promote global productivity and social development [6]. Nevertheless, a closer investigation shows important gaps not only in terms of digital access but also in the aptitude of particular social groups to leverage new technological applications for socio-economic growth [7]. Numerous research show that cultural disparities between genders have propelled, to a certain extent, females towards signing up for technical careers [8,9,10,11], having rejected their presence in the previous two decades [12,13,14,15,16]. Several of these studies have indicated that technology and computers are often deemed men tools [17,18,19,20,21]. One of the potential reasons of such decline may be that females use video games less than males for their leisure, being one of the gateways to technology [18,22,23,24,25,26,27,28,29]. Realistically, the digital gender gap may be associated with the low participation of women in technical careers. In addition, females opt for careers related to health, education, and the services sector, while males choose technical careers such as engineering and computer science, where females contribute to just 10% [30].

The concept of a “digital gender divide” which signifies that there is an inconsistency between women and men’s access to IT technology [31, 32, 33]. According to a 2018 Organization for Economic Co-operation and Development (OECD) report, there are many fundamental reasons as to why there is gender-based digital exclusion [34]. The most eminent causes include restricted access to digital tools in terms of affordability, lack of skill and/or education and lack of technological literacy as well as ingrained gender biases and socio-cultural norms. While connectivity in general is a challenge for developing countries, the aforementioned factors influence women worldwide. Approximately, 327 million more males than females own a smartphone and have access to mobile internet. On average, females are nearly 26% less likely than males to own a smartphone. For instance, in South Asia and

Africa these percentages are exceptionally noticeable as they stand at 70% and 34% respectively [34].

ICTs have the ability to transform industries by offering opportunities to provide services in new and efficient ways, which can reach the most underprivileged sectors of societies. Therefore, the aim of this research paper is to find out if COVID19 crisis is strengthening the worst impacts of the digital gender divide in the Lebanese society and deduce whether Lebanese females who don't have access to digital tools and services will be left behind, aggravating existing gender inequalities.

Literature Review

Gender divide and the role of ICTs

The digital divide is a new form of inequality, which has been added to the already existing types of discrimination. According to Hilbert, the term digital divide refers to "an inequality in the power to communicate and to process information digitally" [35]. In most countries, men have a higher Internet access rate than women have and especially in developing countries and this brings digital gender divide term to the concept [36]. The study of the digital divide has its roots in early forecasts of social inequality in the information society. Originally, information poverty, evaluated through unequal access to Information and Communications Technology (ICT) and the network infrastructure, attracted scholars' attention worldwide [37]. In fact, the unequal access to digital networks and infrastructure, which has led to an unequal access to information and online services that they provide, formed the first phase of the digital divide research [38]. Apparently, the first phase of the digital divide study was characterized by a clear political economic approach. For instance, Pippa Norris referred to ICTs as "a Pandora's box unleashing new inequalities of power and wealth, reinforcing deeper divisions between information rich and poor, the tuned-in and the tuned-out, the activists and disengaged" [39].

Gradually, it became clear that the digital divide is not simply an access problem but a complex multidisciplinary phenomenon closely associated with the political, economic and cultural development of a society. Scholars emphasized that, taking into consideration the numerous aspects of a society's life, "there is more than one digital divide". They also pointed out that the interpretation of the digital divide as a binary division between haves and have-nots is not applicable [37]. Researchers apprehended the complexity of the issue and debated that "digital inequality should not be only the preserve of specialists but should make its way into the work of social scientists concerned with a broad range of outcomes connected to life chances and life trajectories" [40]. The digital divide has drawn the attention of researchers from numerous research areas, including sociology, political and economic studies, anthropology and more [37].

It is worth mentioning that uneven access to digital technologies and media, in addition to an early perception of digital inequality, endorsed the concept of "digital inclusion" as a substitute for considering the digital divide as "digital exclusion". To begin with, it became apparent that policies looking to bridge the existing digital gaps should be directed at building digital inclusion – in technological, economic and usage forms. Concurrently, it was evident that the technological inequalities were mostly determined by "the societal and cultural norms

of the existing society, and there has been a long historical trajectory of how the human race has embraced and advanced technologies over the time" [41].

Technology regeneration is another aspect of digital divide which acknowledges that technologies evolve at extremely high speeds, further exacerbating efforts to relieve inequality [42], as end-users do not use technology equally or at the same speed[43]. For instance, an individual who routinely uses computing devices and the internet might still encounter a gap of not having integrated social media, wearable devices, networked or smart tools, or health information technology into their typical ICT behavior [44]. E-inclusion is, thus, best apprehended along a spectrum; it no longer considers that there are basically "civilized tool-users and uncivilized non-users," which, "can be marginalizing and patronizing in its own terms" [45]. When hypothesizing the digital divide, it is therefore essential to: (1) show it along a continuum; (2) indicate its diametric association with the notion of e-inclusion; and (3) specify its relationship to behavioral measurements (e.g. ICT use) and determinants (e.g. access).

The gender digital divide

Gil et al. presented four obstacles that stop women from accessing and using ICTs and the Internet: Lack of technology education, limited free time, social norms which support men, and financial and institutional restraints [46].

Melhem, Morrell and Tandon clarify how women gain from knowledge less than men because of having particularly less access to technology field and to education in general [47]. Having access to the education is still a bigger obstacle for women when compared to men, knowing that almost two-thirds of the illiterate world population consists of females [48]. Many women require the knowledge of applying technology or in becoming accustomed to it as a reason for not using the Internet. The high rates of women's illiteracy and the absence of ICTs training can be considered as two major issues in joining the information economy. Furthermore, based on UN e-Government Survey in 2012, 90% of the online content is in English, while only one-third of the world Internet users speak English [36].

Women in developing countries worry about domestic responsibilities as well as family and children related issues. Moreover, due to their high burden responsibilities and their roles as primary caregivers, there is not much time remaining to try new technologies. In some cases, along with their other responsibilities, women need to work in order to take care of the family in case they are single moms or to help their spouses in handling the family income [48]. The absence of free time along with their household duties and sociocultural customs that give a low priority to education are the main reasons why many women do not attend school. Another point is the autonomy of using the Internet in case women are provided access it, and to which extent the other family members control their autonomy. The greater the autonomy of use is, the greater they benefit [49].

According to the World Economic Forum report, outdated beliefs and social norms are forcing women into traditional roles and restraining them [50]. Often, technologies are considered to be within the domain of men and the notion of men having control of technology, information and knowledge has reduced women's chances to learn, have access to, use or profit from technology [48]. Many obligations forced through social norms confer

control of technology to men. Gender gap in access, usage and the possession of ICTs is powered by a collection of social norms and cultural barriers, which have a negative effect on women. While more than two-third of women around the world have a lack of access to the Internet, their chances of having education and career opportunities are globally less than men and in some developing countries, they are faced with restraining gender inequalities and discriminations [48].

According to Chadwick et al., since ICTs play an important role in collecting and sharing information, using those technologies can increase power and control in society. They explain how access to ICTs among disempowered groups who have limited economic resources has been minimized. More than 1 billion people live in developing countries and in rural areas and are surviving with an average of $1 to $2 per day [48]. The collection of laws, policies and social norms in these countries build barriers for women and refrain them from developing their skills and earning higher incomes. Therefore, they are considered minorities when it comes to having access to or using new technologies, or being able to afford technologies that might support them economically [47, 48]. The prevailing gender discrimination may negatively influence women in all aspects of political, social and economic empowerment as well as in labor markets. Furthermore, this discrimination hinder women's education and training opportunities and consequently the allocation of financial resources for doing business [51].

Determinants of COVID-19 related Internet uses and outcomes

Digital inequality research proposes that the massive amount of web-based information and communication options around the COVID-19 pandemic are probably difficult to obtain and theorize for sections of the general population. Some regularly examined personal categorical inequalities are gender, age, personality, and health [52]. Earlier research discovered that males and females vary in their internet activities; females are more likely to use the internet for email and social media; while males are more likely to use the internet to attain information [53, 54]. Age in general has a negative impact on all types of internet uses and outcomes [52]. In the COVID-19 crisis, older people are particularly susceptible; therefore, it is very imperative for them to know how to act and stay safe.

An individual's personality may hamper or motivate their engagement in specific COVID-19–related activities. The cognitive appraisal theory proposes that individuals reveal two types of cognitive appraisal processes in a crisis [55]. The process begins with an assessment of the crisis as a possible source of danger or life disruption. If the crisis is not viewed as being dangerous, it is not considered a stressor and does not need intervention. Conversely, if the crisis is considered relevant, it is viewed as a stressor and must be further assessed by comparing the demands of the crisis and the person's resources [56]. At this point, personality is added to the equation [56]. There is a consensus related to the Big Five model when personality traits are analyzed. This model suggests five personality traits of agreeableness, neuroticism, conscientiousness, introversion, and openness [57]. However, there is no clear understanding as to whether these traits contribute to or diminish resisting disturbance [56]. In addition, there is no consensus on how the Big Five personality traits are associated with internet use [52, 58]. For example, conscientiousness is connected to people who abide by rules. On one hand, one might debate that this would lead to a greater need for information on how to act. On the other hand, the internet is unrestricted, and rules and

procedures are largely absent. When associating personality traits with internet use for psychological acclimatization to the COVID-19 crisis, it is not apparent whether these traits will assist or hamper COVID-19–related internet uses and outcomes.

Education is the most examined positional categorical inequality in digital divide research, and is expected to play a role in the present context. People with higher levels of education are more prepared to understand web-based information and profit from internet use [52]. Glied and Lleras-Muney theorized, "Improvements in health technologies tend to cause disparities in health across education groups because education enhances the ability to exploit technological advances. The most educated make the best use of this new information and adopt newer technologies first." Education is one of several reasons contributing to digital exclusion. However, regardless of the reason, knowledge and behavior gaps created in this way have frequently presented a depressing propensity to remain unbridged for years, and even for decades [59].

Methodology

In order to achieve the aim of this research paper, the authors used a web-based survey and drew upon a sample collected in Lebanon. The survey comprised two sections: section one was designated to collect demographic information about the participants (including gender and educational level), while the second part identified their input regarding Lebanese females' access to technology and whether COVID19 has increased the digital gender divide.

In the first section of the survey, the educational level ranged from primary school to postgraduate degree. This was followed by ten closed questions that were used to collect data in order to draw generalized conclusions based on statistical analysis. By answering those questions, respondents provided the authors with a clear understanding of how different people use the internet to meet their information and communication needs and the results they obtain from their internet use in relation to the COVID-19 pandemic (see Appendix 1).

Results and Discussion

This research paper collected quantitative data through a survey which was circulated through Google Forms. Survey answers were collected from Lebanese females and males who live in different areas of Lebanon, between the periods that extended from January 20 till February 3, 2021. The study was able to collect around seventy three responses. The aim of the survey was to provide a broader understanding of the digital gender divide in the case of a major health pandemic by using the ongoing COVID-19 crisis as a context for empirical work.

The gender of the respondents was almost equally divided between males and females as females constituted 51% and males 49%. 73% of the respondents held postgraduate degrees, 25% undergraduate degrees, 1% high school degrees, and 1% had a primary school education level.

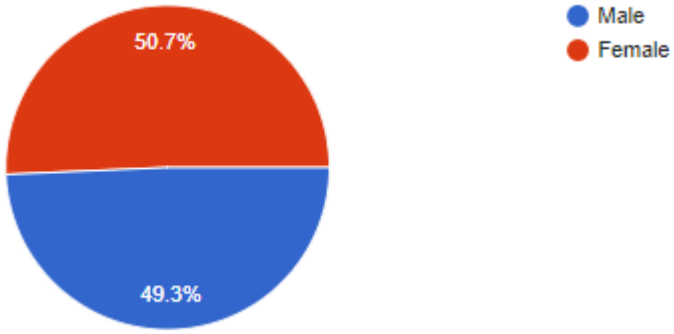


Fig. 1. Respondents' gender

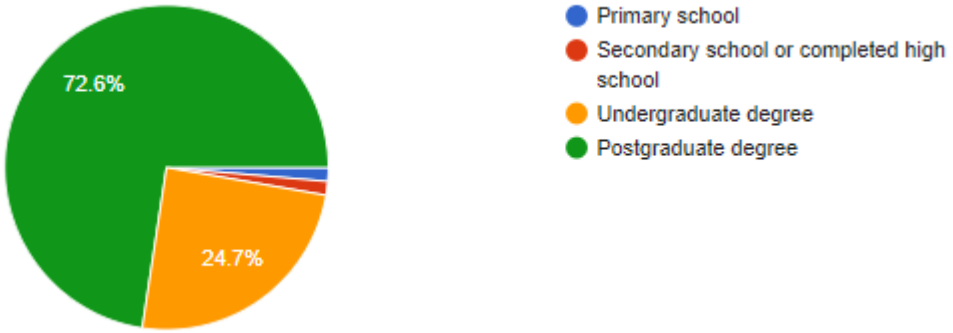


Fig. 2. Respondents' educational level

The opportunities computing devices offer are known to be associated with disparities in internet uses and outcomes. Since each device has its own explicit characteristics and advantages, a greater diversity of devices offers a wider range of use activities and outcomes [60]. To measure material internet access, we considered four devices used to connect to the internet, which included smartphones, desktop computers, laptop computers and tablets. All of the respondents own a personal mobile device. However, 33% of male respondents use of all these devices to access to internet while 16% use only smartphones. As for female respondents, 38% use all of the above-mentioned devices to access the internet and 3% use only smartphones.

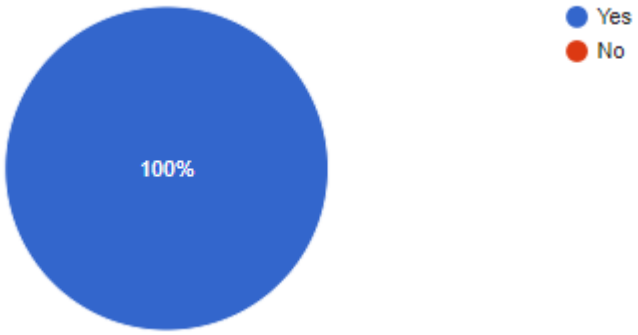


Fig. 3. Respondents' possession of a personal mobile device

“Access to the Internet is defined as a process of appropriation that starts with general attitudes toward the Internet and advances to having physical and material access” [60]. When asked how often the respondents have access to afore-mentioned computing devices, 92% of male respondents said that they have access at least once a day while the percentage of females was higher at 97%. While no female respondents had access to the internet once every few months, 3% of the male respondents did.

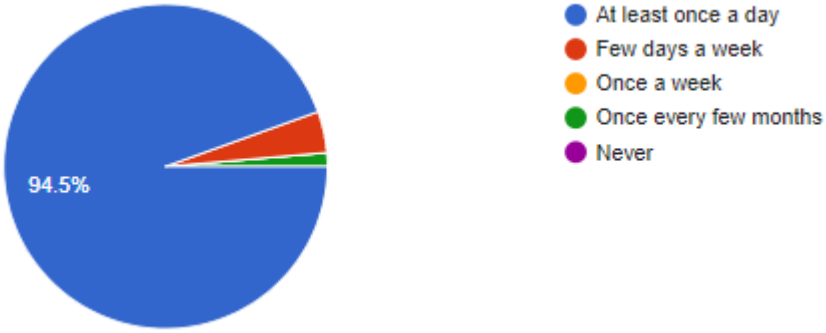


Fig. 4. Respondents’ frequency of access to the internet

Regarding gender, contrary to common internet use, men were found to be more likely to participate in communication-type COVID-19–related internet usages during the crisis than women were. A probable explanation is that men and women may react to crisis news in different ways [61]. When asked about how they have access to COVID news, 67% of male respondents said through digital devices while the percentage of female respondents who used digital devices to access COVID news was 86%. Similarly, when asked if the internet has been essential during the coronavirus outbreak, 64% of male respondents believes that it has been while 73% of female respondents thought that the internet has been essential during the pandemic.

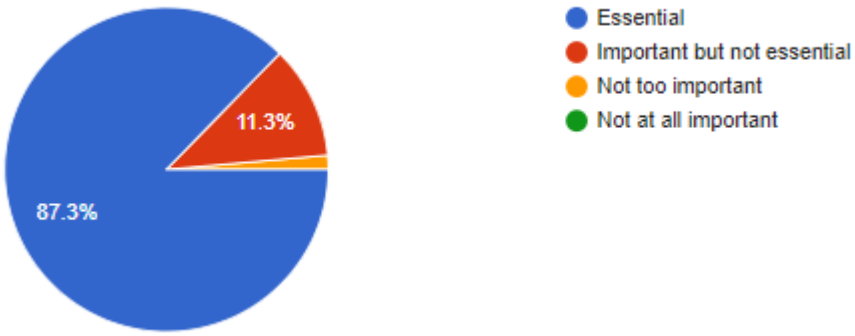


Fig. 5. Respondents’ thought about the internet being essential during COVID outbreak

The internet has become a fundamental source of information for the public, as it offers access to general information, the most recent national and international developments, and procedures on behavioral norms during the crisis. In this context, the internet plays an important role in the great obstacles facing governments regarding the transmission of

knowledge and guidelines to the population at large [62, 63]. When respondents were asked about the method they use to have access to COVID news, 73% of female respondents opted for using digital devices (e.g. tablet, smartphone, computer) to have access to COVID news, while only 8% preferred watching or listening to COVID news (e.g. radio, television). As for the male respondents, 64% stated that they use digital devices (e.g. tablet, smartphone, computer) to have access to COVID news and 19% affirmed watching or listening to COVID news (e.g. radio, television).

In conclusion, more Lebanese females than males have access to the internet at least once a day. In addition, more females than males believe that the internet is essential during the COVID outbreak. Lastly, more females than males use digital services such as smartphones and tablets to receive news about COVID.

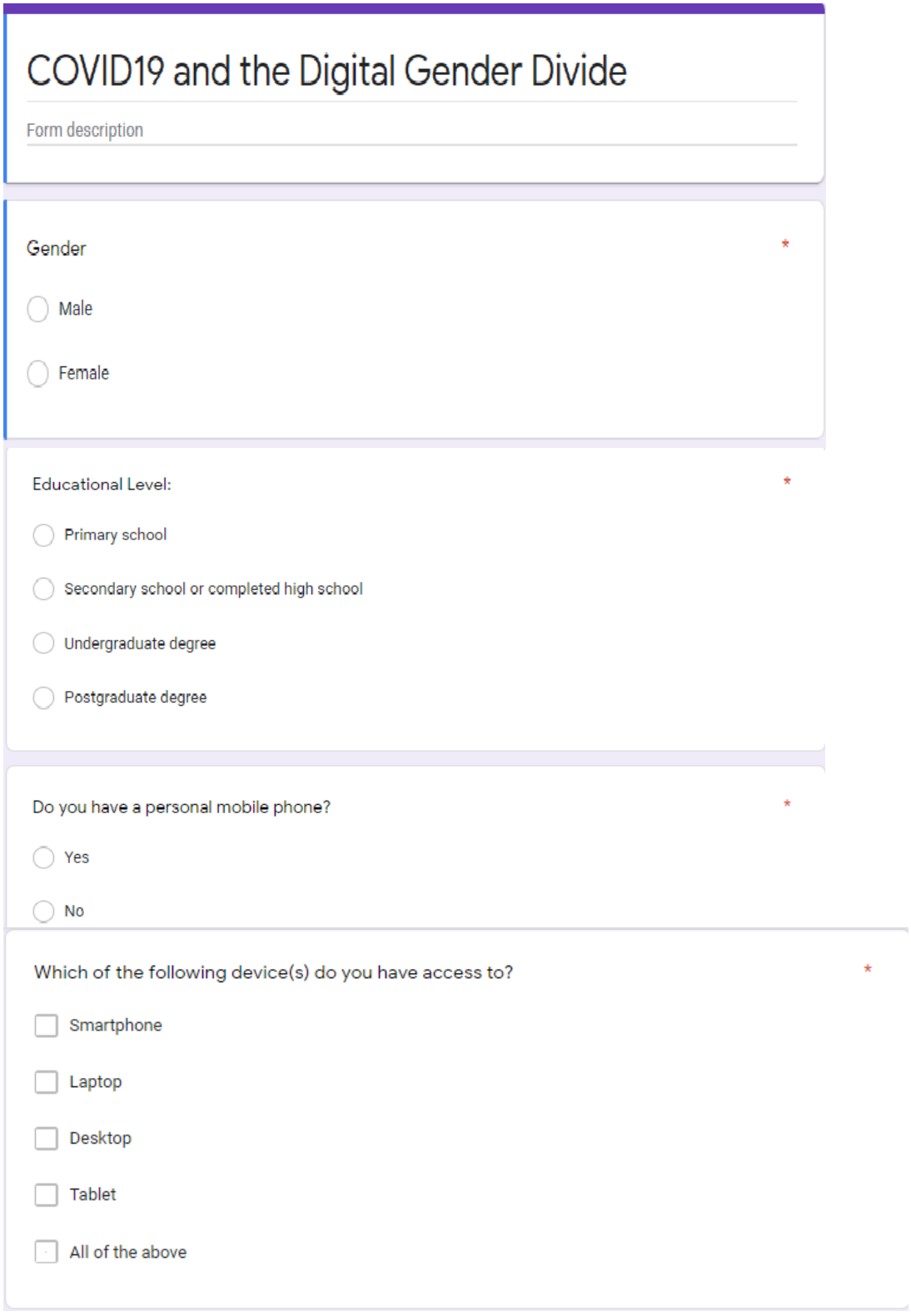
Conclusion and recommendations

Digital inequality research has proven that internet access is not evenly disseminated among the general population [52, 64]. The simple idea of digital inequality is derived from a comparative perspective of social and information inequality, as there are benefits linked to internet access and negative outcomes of lack of access. Internet use and differences in outcome among groups of people are likely to have reflective outcomes on how people handle a crisis. As COVID-19 increases people's dependence on digital services, men will profit in a disproportionate way to women since they will have more access to lifesaving information. Women and girls who do not have access to strength-building information will be left behind, worsening existing gender inequalities. Women are, on average, 14 percent less likely to possess mobile phones than their males, and 43 percent less likely to participate online [64]. Therefore, the aim of this research paper was to provide a comprehensive examination of digital inequality in the case of an unprecedented health pandemic and to find out if the coronavirus crisis is reinforcing the worst impacts of the digital gender in Lebanon.

As the need for mobile devices grows, it is becoming a very effective tool for providing life-enhancing information, services, and opportunities. Mobile phone ownership and mobile internet use have increased significantly among Lebanese women. The study shows that more Lebanese females use the internet at least once a day than their male counterparts. Consequently, more Lebanese females have access to COVID news using digital services (e.g. tablet, smartphone, and computer) than Lebanese males do. Moreover, more females than males think that the internet has been essential to them during the coronavirus outbreak as it helps them have better access to health information.

Although research shows that women and girls are relatively disadvantaged and are less likely to use the information and communication opportunities offered by the internet to their advantage in a health pandemic. However, access to the internet by both Lebanese men and women is almost identical as they are utilizing the same digital technology. And while low levels of education and skills constrain women's ability to access and use digital technologies, Lebanese females seem to be equipped with the right skills which they used to their benefit in the pandemic. Thus, the COVID-19 crisis is not an enforcer of existing digital inequalities in Lebanon.

Appendix 1



COVID19 and the Digital Gender Divide

Form description

Gender *

- Male
- Female

Educational Level: *

- Primary school
- Secondary school or completed high school
- Undergraduate degree
- Postgraduate degree

Do you have a personal mobile phone? *

- Yes
- No

Which of the following device(s) do you have access to? *

- Smartphone
- Laptop
- Desktop
- Tablet
- All of the above

How often do you have access to those ICT (information and communications technology) devices mentioned in the previous question? *

- ( ) At least once a day
- ( ) Few days a week
- ( ) Once a week
- ( ) Once every few months
- ( ) Never

Which of the following statements best describes how you have access to COVID news? *

- ( ) I only watch or listen to COVID news (e.g. radio, television)
- ( ) I read the COVID news more often on digital devices (e.g. tablet ,smartphone, computer)
- ( ) I read the COVID news more often on paper (e.g. newspapers, magazines)
- ( ) I read the COVID news equally often in paper format and on digital devices

Does the handset you use most often have the following? *

- [ ] Touch screen
- [ ] Ability to access the internet
- [ ] Ability to download apps
- [ ] Ability to send and receive SMS

How has 'using a mobile phone' affected your life? *

- [ ] I feel safer
- [ ] I have better access to health information and services
- [ ] I have better access to education services and learning opportunities
- [ ] I am able to do small/routine jobs more conveniently during COVID

How often do you use the Internet on your mobile device? *

- ( ) At least once a day
- ( ) A few days a week
- ( ) Once a week
- ( ) Once every two weeks
- ( ) Once a month
- ( ) Once every few months
- ( ) Never

If you don't have internet access on your mobile device, what has been preventing you from doing so? (please skip question if it does not apply to you)

- [ ] I don't have access to an Internet-enabled device
- [ ] There is no network connection, or there is poor network connection where I live
- [ ] Credit/monthly bill is expensive
- [ ] All of the above

What is the main purpose for using the Internet? *

- [ ] Entertainmnet
- [ ] Education
- [ ] Work
- [ ] E-services such as online banking
- [ ] Social networking

Do you think the internet has been essential to you during the coronavirus outbreak?

- ( ) Essential
- ( ) Important but not essential
- ( ) Not too important
- ( ) Not at all important

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