Nierówności Społeczne a Wzrost Gospodarczy, nr 67 (3/2021)
Social Inequalities and Economic Growth, no. 67 (3/2021)
DOI: 10.15584/nsawg.2021.3.2 ISSN 1898-5084, eISSN 2658-0780

dr Magdalena Tusińska[1]
Department of Economics
University of Economics in Katowice

The digital gender divide. A focus on inclusion through mobile phone use in India

Introduction

In many countries, the benefits of the ongoing digital transformation are not equally balanced between various social groups. The fashionable term for the fault-line running through populations referring to the possession or lack of information and communication technologies (ICTs) is the "digital divide" (Huws, 2001). It may take many forms (e.g. lack of access to infrastructure or lack of skills), which also vary depending on the technology considered (e.g. mobile and landline telephony or computer use). The subject of this paper is the digital gender divide through the lens of unequal access to mobile telephony and the internet. Given the rise of mobile-only internet use around the world and policy commitments to increase internet penetration through smartphones, especially in developing countries, brings the topic of digital inclusion into sharper focus. It becomes even more important in the context of the pandemic and digitalization of many issues. The aim of this paper is twofold: to present the benefits and limitations of digital inclusion through mobile phones from the perspective of women and to examine the barriers that they face in successfully achieving it in India. This country has been chosen as representative of developing countries since it is widely distinguished by its inequalities in social, economic and geographical aspects (Chancel, Piketty, 2017; Panda, http) while being at the forefront of countries in the world in terms of online work (Lehdonvirta, 2017). The theses set out are: 1) mobile access can represent a pragmatic solution to the digital divide, including the digital gender divide, even if mobile-only internet use does not necessarily lead to complete

[1] Correspondence address: 40-287 Katowice, ul. 1 Maja 50; e-mail: magdalena.tusinska@ue.katowice.pl. ORCID: 0000-0001-9646-9628.

e-inclusion, 2) due to the nature of the barriers to access, the digital gender divide remains a persistent problem in India.

First, the paper presents a theoretical background of the digital divide, then the emphasis is placed on the benefits of digital inclusion from the perspective of women and on the limitations related to inclusion through mobile phones. The focus on India allows the provision of a snapshot of the state of the digital gender divide and the barriers to mobile inclusion. Subsequently, the initiatives leading to elimination of the described phenomena are highlighted.

The research methods used are literature review, comparative analysis of statistical data (provided mainly by GSMA[2], 2020), analysis of documents and online sources, and synthesis. A growing amount of the available literature investigates the problem of the digital divide. There is also a greater interest in the topic of the fight against the digital gap supported by inclusion through mobile phones. This paper confronts these issues by means of reviewing the relevant literature. The focus here is on the digital gender divide, hence the literature review addresses not only issues related to the gap itself but also refers in this context to women and the gender perspective. Using comparative analysis, statistics on mobile phone telephony in India (including access to mobile internet) are presented and analysed. The main barriers to network access have also been identified. Both issues are broken down by gender.

The digital divide – a theoretical background

The Fourth Industrial Revolution draws attention to the speed and quality of information transmitted, and the basis of these changes are: data, the universality of ICTs and the skilful use of them. The possession or lack of permanent access to the above creates a digital divide. This term is a metaphor signifying the flip side of e-inclusion (e-participation) in various dimensions (Table 1) and it marks the gap between individuals, households, socio-economic groups, businesses, sectors and geographic areas at different socio-economic levels with regard both to their opportunities to access ICTs and to their effective use of the internet for a wide variety of activities (OECD, 2001). The concept relates not only to the uneven access to and usage of ICTs but also to the socio-economic implications.

Although the topic of a digital divide is multidimensional (Table 1), there are certain levels that have many elements in common (respectively: individuals and households or countries and regions) and most of the indicators are applicable from the micro-micro to the macro level. For example, skills or ownership of a device can be examined with reference to location (country, region), gender or edu-

[2] Data sourced from the annual GSMA Intelligence Consumer Survey, which in 2019 had over 16,000 respondents from 15 low- and middle-income countries (LMICs).

cation level. Depending on the perspective, the digital divide can be the subject of researchers interested in several not-mutually-exclusive topics such as inequality of opportunity, gender equality, social inclusion, and others.

Table 1. The digital divide – levels, reasons and indicators

Level	Micro-micro	Micro		Meso		Macro
Per-spective	Individuals	Households	Enterprises, organizations	Sectors	Regions	Countries
Contributing factors	Gender, age, health state, income, location, ethnicity, religion, language	Income per dweller, location, language, ethnicity, religion, education	Financial condition, number and level of education of employees, location, type of sector	Type of industry, location	Location, language, income per capita, size and population	Location, level of development, income per capita, size and population
Indicators	ICT infrastructure, network coverage Connection speed Enough data and access to an unlimited broadband connection Ownership of an appropriate device, from mobile phone (with a breakdown by type) to computer Skills in using devices and ICTs Regularity/frequency of internet use					

Source: own work on the basis of: (OECD, 2001; OECD, 2018; Bonfadelli, 2002; Friederici, Graham, 2018; Büchi, 2017).

The roots of the concept of the digital divide can be found in the knowledge gap research of the 1970s (Tichenor, Olien, Donohue, 1970). The increasing "knowledge gap" was referred to the phenomenon in which people of a higher socio-economic status (intensive users of media services) acquire information faster than lower-positioned groups so that the gap between these two segments tends to increase. The former continuously increase their advantage by making optimal use of the information available through media compared to those who do not. According to Tichenor *et al*. (1970), the level of gained knowledge was determined by education level or socio-economic status. The topic of the knowledge gap was also raised, for example, by Gaziano (1997), Bonfadelli (2002), Selhofer and Hüsing (2002) and others. As technology advances, access to different media has been considered. Regardless, later concepts of the "gap" or "divide" can be considered as updated versions of the analogue knowledge gap from the 1970s.

Even contemporarily there are different levels of access to ICTs depending on the development level of a country. In some places it may be wire infrastructure and basic skills, but as the trend of mobility of electronic services is gaining significance and as mobile phones are becoming more available, they are perceived as crucial players in supporting digital inclusion. The phenomenon is observed in

developed countries but even more so in developing ones, since mobile phones are more affordable than computers and break down access barriers such as costs of infrastructure, equipment and required skills.

The problem raised by some authors is that mobile phone-only use does not necessarily lead to e-inclusion since it is related to lower levels of skill and less diverse uses of the internet compared to those who also use a computer. Internet use through computers allows more information-seeking, work activities or content creation activities, while phones have poorer affordances in terms of many parameters (Pearce, Rice, 2013; World Wide Web Foundation, 2020b). Thus, mobile-only internet users emerge as kind of second-class citizens online (Correa, Pavez, Contreras, 2018). The argument about incomplete inclusion does not undermine the logic adopted here since web access through mobile phones represents a more readily-available opportunity for those who lag behind. Put simply, it is better to be a mobile-only internet user than not to use the internet at all[3]. What should not be neglected is that if the digital divide exists in the field of mobile telephony, the digital gap (in general) could be even larger, considering socio-economic impact of the concept. Computer users can increase their advantage (compared to mobile-only internet users) by exploiting their devices in more sophisticated ways, developing their skills and levels of knowledge.

E-inclusion through mobile access in developing countries – gender perspective

Although the benefits of using ICTs apply to men and women, their importance should be particularly emphasized in the case of women, who are often at higher risk of exclusion in various dimensions than men, especially in patriarchal societies (Oxfam International, 2010; Sabharwal, Henderson, Smart Joseph, 2020; Tusińska, 2020). Internet access can inspire women to begin to challenge the environments in which they live thanks to (Castells, 2000; McCarrick, Kleine, 2019):

– improved access to online learning, government and financial services,
– possibilities of political and civic engagement,
– communication across physical and social boundaries,
– business opportunities,
– improved access to health information (i.e. telemedicine platforms),
– satisfying recreational needs and strengthening social ties.

[3] While there are mobile-only users, the probability that someone is a computer-only user is negligible. It is much more likely that a computer user is able to operate a smartphone and owns one.

These advantages are interconnected. For example, the internet lowers the hurdle on access to both general and specific knowledge, including education or online courses, which may prove particularly helpful for women with little education. Web users can also find information about vacancies or instructions on how to set up their own business. Access to ICTs also enables participation in professional social networks (i.e. LinkedIn) and creates options to enter labour markets through online platforms (i.e. Uber). In this way women can not only gain financial independence, but also help contribute to the welfare and well-being of their families and communities.

Insofar as the advantages of internet access are self-evident regardless of the device providing it, a deeper analysis shows some nuances. One of these is how online platforms are often advantageous for women in particular – mainly because of the possibility to better combine motherhood while pursuing a career. If women are discriminated against on the local labour market or one of its segments (including the formal one[4]), platforms allow them to access more distant markets or the local market through a veil of anonymity[5] provided by the digital medium (Graham, Hjorth, Lehdonvirta, 2019). Reaching out to distant markets would be particularly valuable for women with constrained mobility, e.g. those in rural areas (also allowing them to avoid the risk of assault). Platforms involve both the "digital gig economy" (online work as a translator or software tester, for example) and the "physical gig economy" (as a taxi driver, tailor or cleaner, for example) (Minter, 2017; Heeks, 2017). Mobile-only platform users seem to work mainly in location-based service delivery, whereas job opportunities in online labour are reserved for computer users. In other words, a mobile phone is enough to reach a client, but a task will probably be performed physically on site or nearby. Therefore, the possibilities to "escape" from the local market seem to be very limited.

Despite such limitations, mobile devices are still a boon for those who have never used computers. They also provide other specific benefits. Smartphones in particular offer women more privacy and confidentiality in accessing the internet. Moreover, for a woman trying to be an entrepreneur in a patriarchal society, this may be an important source of independence, especially with the advent of "mobile money" which enables financial transactions from SIM card to SIM card. For many women with no formal bank account, "mobile money accounts" can be a way to bring them into the economy through digital financial services (OECD, 2018).

[4] A common phenomenon in developing countries, including India (OECD, 2011).

[5] Gender-neutrality can be deceptive. Machine-learning algorithms are curated by coders who might program some inherent bias into them (Kasliwal, 2020).

The digital divide in India – the results from the analyses

In a country where over 80% of the population worships goddesses of different kinds, the standing of women has deteriorated since the medieval period and the formation of the caste system (Keelery, 2020), so that today many issues related to the physical, economic and social conditions still hinder the development and empowerment of women in India (MOSPI, 2016). Organisations which rank gender disparities consider India to be relatively unequal. For example, according to Global Gender Gap Index (World Economic Forum, 2020a), the country was ranked 112 out of 153 countries[6]. The index focuses on the relative gap between men and women in 4 categories – economic participation and opportunities, educational attainment, health and survival, and political empowerment. India scores poorly especially on the first one (ranked 149). Although women constitute a little less than half of the economically active population, their contribution to economic activity is far below their potential. According to the World Bank's Gender Statistics database, the labour force participation rate is 20.5% of the female population aged 15+ and 76% of the male analogous population (World Bank, 2020). Females dominate in employment in agriculture while males dominate significantly in industry and services. The activities of women in the informal sectors are difficult to measure.The potential benefits described in the previous section suggest that the position of women (on labour market and in society) as internet users could improve at least slightly. The data below (Table 2) show to what extent mobile internet access is limited for men and women in India. Additionally, the data presented juxtapose statistics concerning various types of mobile phones for both genders.

Table 2. Mobile phone ownership, mobile internet use (percentage of total adult population in India) and share of population by type of handset owned* – gender perspective

	men	women
Mobile phone owners	79	63
Mobile internet users	42	21
Smartphone	37	14
Feature phone	9	6
Basic phone	29	31

* Respondents are categorised according to the most advanced device they own. Device owners are included only if they have an active SIM or a phone that functions without a SIM. The total percentage of device owners do not match the percentage of phone owners since the latter captures people who have the sole or main use of a SIM card whereas the former is device specific.

Source: own compilation on the basis of GSMA, 2020.

[6] Although there are different dimensions considered, similar conclusions concerning women's status appear on the basis of the Social Institutions Gender Index (OECD, 2019) and Gender Inequality Index (UNDP, 2013).

Except for the basic mobile phone, more men than women use devices (Table 2). It must be noted that the type of mobile phone has a major impact on how people use the internet (it is not possible to access the internet on a basic mobile phone), thus the most significant is the proportion of smartphone owners and mobile internet users. Whereas ownership may include a more basic device, and although it is possible to access the internet on a feature phone, web use is richer on a smartphone. The gender gap is visible as only 14% of women own a smartphone (37% of men own a smartphone) and only 21% of women use mobile internet (respectively, twice as many men use mobile internet).

This gap has consequences in distinct use cases on the mobile phone (including basic services, such as sending messages or making voice calls, and more complex, internet-based use cases, such as watching video content). In India men, on average, engaged in 7 use cases on a weekly basis, compared to 4 for women. Attention should be paid to the gender gap but collaterally to the low percentage of both genders using mobile internet (respectively 42% and 21%) and smartphones (37% and 14%) (GSMA, 2020). In striving for digital inclusion, it is crucial to identify barriers that limit the use of mobile phones and – potentially – also the internet (Table 3).

Table 3. Important barriers to owning a mobile phone in India (percentage of non-mobile phone owners who identified the following as a main barrier to mobile phone ownership)

Type of barrier	Men	Women
Affordability		
Handset/SIM cost	31	42
Credit cost	17	12
Literacy and skills		
Do not know how to use a mobile phone	11	16
Reading/writing difficulties	18	24
Relevance		
A mobile phone is not relevant for me	14	17
Safety and security		
Personal safety	11	5
Strangers contacting me	12	7
Information security	11	6
Accessibility		
Battery charging	7	7
Network coverage	16	8
Family does not approve	3	9
Access to agent support	9	5
ID	1	4

Source: own work on the basis of (GSMA, 2020).

The most serious barriers concern affordability, literacy and skills as well as relevance (Table 3), the last of which being to some extent a result of low awareness of the usefulness of mobile phones (50% of adult women are aware of mobile internet, vs 71% of men in 2019; GSMA, 2020). Except for credit cost, a greater percentage of women than men described these barriers as the most important. There are a number of reasons given first by men (safety and security in general, network coverage or access to agent support); however, they are not as significant as the three mentioned above. Financial constraints, as the most serious barrier, may be largely a result of income inequality and poverty – both for men and women. Based on the device price relative to the average income, in India an individual has to work 63 days to afford a smartphone (World Wide Web Foundation, 2020a), while for women the period is even longer. It is also critical to understand how women acquire mobile phones. A total of 63% of female smartphone owners purchased their own device compared to 90% of men (GSMA, 2020). This disparity is a sign of women's lack of financial autonomy. A kind of vicious circle can be observed – a mobile phone with internet access would be useful to become financially independent, but low (or lack of) income determines the lack of web access.

In the area of literacy and skills it is not only digital deficiencies that play a role but illiteracy in general (Table 3) as a result of poor education. The issue is related to illiteracy but, to some extent, irrelevance is also specific to India in terms of multilingualism. Second only to the US, India has over 125 million English speakers, but, according to KPMG in India and Google (2017), more of its 1.3 billion people could only become "netizens" if online use of its 22 other official languages was encouraged. Nearly 70% of Indians consider local language digital content more reliable than English content.

Socio-cultural restrictions are not as much of a problem as it might seem – only 9% of women not owning a mobile phone report a "lack of family approval" as the main reason (Table 3). However, such barriers may reveal themselves as not merely a lack of approval but an affordability obstacle. If a woman is not allowed to work then not only is she dependent on a man, but also the income of the family is potentially lower. Paradoxically, in light of orthodox Hinduism, this may be intentional as the duties of a Hindu include acting in accordance with one's caste and assigned role. If they humbly endure their low social position, they can expect to be reborn into a higher social status (Karczewski, 2016). This applies to individuals and whole families as well.

The main finding is that the phenomenon of the digital divide exists in India. A significant percentage of men and women still do not own a smartphone and do not use the Internet. However, the number of digitally excluded women exceeds the number of men, which is evidence of the digital gender divide as well. The data presented in this section also seem to confirm the topicality of Tichenor's view about socio-economic-status and level of education as determinants of the level of knowledge attained.

Initiatives for digital inclusion of Indian women

There are some initiatives which attempt to overcome the problems related to the digital divide, such as expansion of broadband internet into rural areas or the Pradhan Mantri Jan Dhan Yojana financial inclusion program (PMJDY, 2020). It is also worth mentioning the standard on Indian Language Support for Mobile Phones, which requires manufacturers to ensure that mobile phones have the capability to input text in English, Hindi and at least one other Indian official language, and must have the capability to read messages in all 22 official languages (Bureau of Indian Standards, 2016). Although they are not specifically directed at women, PMJDY and the new language standard seem to be important in particular for female e-inclusion. Business initiatives should be also mentioned here. While the primary goal of private sector actors is their own profit, they can also somewhat benefit digitally excluded women. As an example, within the Internet Saathi ("Internet Friend") project, representatives of Google and the Tata Trust trained young female digital instructors to give women in rural villages basic digital skills on Google-provided smartphones, including various applications (Trans World Features, 2017). Such actions can decrease illiteracy and improve technical literacy. The nature of the barriers described in the previous section shows that digital education in itself does not necessarily lead to a smartphone or even a feature phone purchase. What helps to address the financial constraint that disproportionately affects women's access to the internet is substantial cost reduction. This criterion (next to a concentration on core functionalities and optimised performance level) circumscribes "frugal innovations" (Weyrauch, Herstatt, 2017). Some such solutions are developed by international corporations from scratch for local consumers from emerging markets (Tiwari, Herstatt, 2012), and India is known as a "country of *Jugaad*" (affordability-driven innovations) for a reason (Prabhu, Jain, 2015). Some Indian companies, such as Micromax or Jio Platforms, offer cheap "smart feature phones" (available for under $10). The devices maintain the basic form factor of a feature phone but allow for the installation of popular apps and some even connect to LTE networks.

The actions or innovations presented above have intensified in recent years, therefore it is difficult to unequivocally assess whether or not they are insufficient until enough time has passed. However, the scale of the digital gender gap and digital exclusion in general (Table 2) creates an expectancy that the solutions undertaken were not enough to overcome the barriers of e-inclusion in India. Thus, similar action must be continued both by government and companies.

The digital gender gap is influenced by such factors as general education access, income inequality, and cultural biases discouraging women and girls from using technology. From the point of view of economic policy, it coincides with measures leading to economic development and levelling out inequalities in various cross-sections.

Even as smartphone prices decline, low-cost devices are still not affordable for many people in India, especially women whose lower income levels and lack of financial autonomy limit their ability to purchase a smartphone independently. To ease the financial barriers, the government should support projects that help people, especially women, lower the cost of devices, and give them access to credit or other financial tools so they do not need to pay the full cost of a device upfront (World Wide Web Foundation, 2020a).

The imperatives are digital education and skills training. The government must invest in ICT education to encourage women to use the internet, perhaps partnering with schools to offer safe spaces for women of all ages to participate in some educational programs. Moreover, in a very real sense, females are at risk of online abuse, harassment and threats of violence. Governments and companies have a role to play in keeping them safe by protecting their right to privacy. The authors of the Women's Rights Online Report emphasize the necessity of collecting and publishing gender disaggregated data in the ICT sector, since they are needed to address specific needs and tackle the digital divide (World Wide Web Foundation, 2020b). A problem with the availability of data on the issues discussed was also revealed when collecting materials for the article (i.e. in the World Bank and International Telecommunications Union). Gaps in gender data and a lack of trend data make it difficult to monitor progress for women and girls (Azcona, Valero, 2018). Unless gender is mainstreamed into Indian strategies and prioritized in data collection, gender data scarcity will persist.

Conclusions

The study shows that the problem of the digital gender gap cannot be resolved by mere provision of access to technical infrastructure, because a more complete digital inclusion process entails addressing digital skills and differentiated uses of the internet. Mobile access, as a speedy and relatively inexpensive alternative, should play a greater role in providing internet access and supporting the digital inclusion of women in India. Today, nearly 80% of the women still do not use the Internet and 80% do not have a telephone that would enable it (a smartphone or at least a feature phone, Table 2). The main barriers are: illiteracy, costs and irrelevance. Since these reasons make it impossible to purchase a smartphone, it is even more difficult to imagine the acquisition and use of a computer. If women in India are not connected at least through mobile devices, the digital gender divide will continue to widen. Not only are the statistics concerning access important but also what can be gained from advancing the use of digital tools. In short, access to the internet creates new avenues for the empowerment of women, offering "leapfrog" opportunities. Not only does it enable access to general information, but such solutions as digital platforms or digital financial services can help bridge the divide by giving women the possibility

of earning additional income and increasing their employment opportunities. The conclusions drawn confirm the hypotheses. However, there is a need for greater research in the field of the digital gender divide and in shaping the policy responses needed to close it. So far, actions by governments and companies have been too slow and too limited. Digital equality is important not only for individual rights, but inclusive digital development is critical in confronting the coronavirus outbreak. The limits of the study are that it covers the country as a whole. Further studies could focus also on regional inequalities.

BIBLIOGRAPHY

Azcona, G., Valero, S. D. (2018). *Making women and girls visible: Gender data gaps and why they matter*. Retrieved from: https://www.unwomen.org/en/digital-library/publications/2018/12/issue-brief-making-women-and-girls-visible (2020.09.05).

Bonfadelli, H. (2002). The Internet and Knowledge Gaps: A Theoretical and Empirical Investigation. *European Journal of Communication, 17*(1), 65–84. DOI: 10.1177/0267323102017001607.

Bureau of Indian Standards (2016). Press Note No. G/9/2016-17. Retrieved from: https://www.bis.org.in/other/Mobile_Phone_Handsets_14062016.pdf (2020.09.25).

Büchi, M. (2017). *Digital inequalities: differentiated internet use and social implications*. Zurich: University of Zurich, Faculty of Arts. DOI: 10.5167/uzh-148989.

Castells, M. (2000). Toward a Sociology of the Network Society. *Contemporary Sociology*, *29*(5), 693–699.

Chancel, L., Piketty, T. (2017). Indian income inequality, 1922–2015 From British Raj to Billionaire Raj? WID. *World Working Paper Series*, *11*, 1–70. DOI: 10.1111/roiw.12439.

Correa, T., Pavez, I., Contreras, J. (2018). Digital inclusion through mobile phones? A comparison between mobile-only and computer users in internet access, skills and use. *Information, Communication & Society, 23*, 1074–1091. DOI: 10.1080/1369118X.2018.1555270.

Friederici, N., Graham, M. (2018). *The Bounded Opportunities of Digital Enterprises in Global Economic Peripheries*, 14 April, 1–37. DOI: 10.2139/ssrn.3249499.

Gaziano, C. (1997). Forecast 2000: Widening Knowledge Gaps. *Journalism & Mass Communication Quarterly, 74*(2), 237–264. DOI: 10.1177/107769909707400202.

GSMA. (2020). *Connected Women*. The Mobile Gender Gap Report 2020.

Graham, M., Hjorth, I., Lehdonvirta, V. (2019). Digital Labor and Development: Impacts of Global Digital Labor Platforms and the Gig Economy on Worker Livelihoods. In: M. Graham (Ed.), *Digital Economies at global margins* (pp. 269–294). Cambridge MA: The MIT Press.

Heeks, R. (2017). A Developing Country Perspective on Employment Impacts and Standards in Online Out Crowdwork. Manchester Centre for Development Informatics. *Working Paper, 71*, 1–61.

Huws, U. (2001). *The Making of a Cybertariat? Virtual Work in a Real World*. Retrieved from: https://socialistregister.com/index.php/srv/article/view/5753 (2020.09.01).

Karczewski, L. (2016). Kultura i etyka biznesu oraz społeczna odpowiedzialność firm (CSR) w Indiach. Wprowadzenie do problematyki. *Prakseologia, 158*(1), 41–64.

Kasliwal, R. (2020). Gender and the Gig Economy: A Qualitative Study of Gig Platforms for Women Workers. *ORF Issue Brief, 359,* 1–14.

Keelery, J. (2020). *Women in India – statistics & facts*. Retrieved from: https://www.statista.com/topics/5220/women-in-india/#dossierSummary_chapter3 (2020.10.01).

KPMG in India and Google. (2017). Online education in India: 2021.

Lehdonvirta, V. (2017). *Where are online workers located? The international division of digital gig work*. Retrieved from: https://ilabour.oii.ox.ac.uk/where-are-online-workers-located-the-international-division-of-digital-gig-work/ (2020.09.08).

McCarrick, H., Kleine, D. (2019). Digital Inclusion, Female Entrepreneurship, and the Production of Neoliberal Subjects – Views from Chile and Tanzania. In: M. Graham (Ed.), *Digital Economies at global margins* (pp. 103–128). Cambridge MA: The MIT Press.

Minter, K. (2017). Negotiating labour standards in the gig economy: Airtasker and Unions New South Wales. *The Economic and Labor Relations Review, 28*(3), 438–454. DOI: 10.1177/1035304617724305.

MOSPI (2016). *Women and Men in India – 2016*. Retrieved from: http://mospi.nic.in/publication/women-and-men-india-2016 (2020.09.30).

OECD. (2011). *Divided We Stand: Why Inequality Keeps Rising*. OECD Publishing. DOI: 10.1787/9789264119536-en.

OECD. (2001). Understanding the Digital Divide. *OECD Digital Economy Papers, 49*. OECD Publishing. Paris. DOI: 10.1787/20716826.

OECD. (2018). *Bridging the digital gender divide. Include, upskill, innovate*. Retrieved from: https://www.oecd.org/digital/bridging-the-digital-gender-divide.pdf (2020.09.30).

OECD. (2019). Retrieved from: https://www.genderindex.org/country-profiles/?region=asia (2020.09.30).

Oxfam International/ European Women's Lobby (2010). An Invisible Crisis? Women's poverty and social exclusion in the European Union at a time of recession. *A Gender Works paper.* Retrieved from: https://policy-practice.oxfam.org/resources/an-invisible-crisis-womens-poverty-and-social-exclusion-in-the-european-union-a-111957/ (2020.09.01).

Panda, R. K. *Socially Exclusion and Inequality: Opportunities in Agenda 2030 Sustainable Development Goals (SDGs): Their role in ending inequalities in India.* A Position Paper on State of Socially Excluded Groups (SEGs) and Framework of Action. Retrieved from: https://sustainabledevelopment.un.org/content/documents/11145Social%20exclusion%20and%20Inequality-Study%20by%20GCAP%20India%20.pdf (2020.09.30).

PMJDY. (2020). Retrieved from: https://pmjdy.gov.in/ (2020.09.30).

Prabhu, J., Jain, S. (2015). Innovation and entrepreneurship in India: Understanding jugaad. *Asia Pacific Journal of Management, 32*, 843–868. DOI: 10.1007/s10490-015-9445-9.

Sabharwal, N. S., Henderson, E. F., Smart Joseph, R. (2020). Hidden social exclusion in Indian academia: gender, caste and conference participation. *Gender and Education, 32*(1), 27–42. DOI: 10.1080/09540253.2019.1685657.

Selhofer, H., Hüsing, T. (2002). *The digital divide index – a measure of social inequalities in the adoption of ICT*. Conference: Proceedings of the 10th European Conference on Information Systems, Information Systems and the Future of the Digital Economy, ECIS 2002, Gdansk, Poland, June 6–8.

Tichenor, P. J., Olien, C. N., Donohue, G. A. (1970). Mass media flow and differential growth in knowledge. *Public Opinion Quarterly, 34*(2), 159–170. DOI: 10.1086/267786.

Tiwari, R., Herstatt, C. (2012). Open Global Innovation Networks as Enablers of Frugal Innovation: Propositions Based on Evidence from India. *Hamburg University of Technology, Technology and Innovation Management, Working Paper, 72*. DOI: 10.2139/ssrn.2196080.

Trans World Features (2017). *Internet Saathi: A friend in need.* Retrieved from: https://www.indiablooms.com/life-details/F/2815/internet-saathi-a-friend-in-need.html (2020.10.01).

Tusińska, M. (2020). Inequality of opportunity – gender bias in education in Pakistan. *Nierówności Społeczne a Wzrost Gospodarczy* (*Social Inequalities and Economic Growth*), *63*(3), 233–245. DOI: 10.15584/nsawg.2020.3.11.

UNDP. (2013). Retrieved from: http://hdr.undp.org/en/content/gender-inequality-index (2020.09.01).

Weyrauch, T., Herstatt, C. (2017). What is frugal innovation? Three defining criteria. *Journal of Frugal Innovation, 2*(1), 1–17. DOI: 10.1186/s40669-016-0005-y.

World Bank. (2020). Retrieved from: https://databank.worldbank.org/source/gender-statistics/preview/on# (2020.09.01).

World Economic Forum. (2020). *Global Gender Gap Report 2020*. Retrieved from: http://reports.weforum.org/global-gender-gap-report-2020/dataexplorer/#economy=IND (2020.10.15).

World Wide Web Foundation. (2020a). Retrieved from: https://webfoundation.org/research/from-luxury-to-lifeline-reducing-the-cost-of-mobile-devices-to-reach-universal-internet-access/ (2020.10.15).

World Wide Web Foundation. (2020b). *Women's rights online. Closing the digital gender gap for a more equal*. Retrieved from: https://webfoundation.org/research/womens-rights-online-2020/ (2020.10.15).

Summary

Due to the growing use of ICTs in all areas of life, the means to access these technologies and skills to operate them are regarded as important prerequisites for social inclusion or, more specifically, e-inclusion. In developing states, mobile connectivity has become an important way for people to access the internet since smartphones are more affordable than computers and break down such access barriers as costs of infrastructure, equipment and required skills. The aim of the article is to present the benefits and limitations of digital inclusion through mobile access from a gender perspective and to investigate the barriers to this process. The research is undertaken from

an Indian perspective. The theses verified are: 1) mobile access can represent a pragmatic solution to the digital divide, including the digital gender divide, even if mobile-only internet use does not necessarily lead to complete e-inclusion, 2) due to the nature of barriers to access, the digital gender divide remains a persistent problem in India. The research methods used were literature review, analysis of statistical data, online sources and elements of a case study. Access to mobile devices and the internet are not gender-neutral in India. There are a number of root causes of the digital gender divide, including financial constraints, technological illiteracy, as well as socio-cultural norms. Therefore, government and business activities should focus on these areas.

Keywords: digital gender divide, e-inclusion, gender equality, mobile phones, internet.

Luka cyfrowa między kobietami a mężczyznami. Bariery włączenia cyfrowego kobiet w Indiach

Streszczenie

Ze względu na rosnące wykorzystanie ICTs we wszystkich dziedzinach życia, posiadanie urządzeń umożliwiających dostęp do tych technologii i umiejętności ich obsługi są uważane za warunki wstępne włączenia społecznego, a dokładniej e-inkluzji. W krajach rozwijających się ważnym sposobem uzyskiwania dostępu do Internetu stała się telefonia komórkowa, ponieważ smartfony są tańsze niż komputery i wydają się znosić bariery dostępu, takie jak koszty infrastruktury, sprzętu i wymaganych umiejętności. W tym kontekście celem artykułu jest przedstawienie korzyści i ograniczeń integracji cyfrowej poprzez dostęp mobilny z perspektywy płci oraz zbadanie barier tego procesu z perspektywy Indii. Podjęto się weryfikacji dwóch hipotez: 1) dostęp mobilny może stanowić pragmatyczne rozwiązanie problemu luki cyfrowej (w tym ze względu na płeć), nawet jeśli korzystanie wyłącznie z urządzeń mobilnych niekoniecznie prowadzi do pełnej e-integracji, 2) ze względu na specyfikę barier w dostępie, cyfrowa luka między płciami pozostaje aktualnym problemem w Indiach. Zastosowane metody badawcze to krytyka literatury, analiza danych statystycznych, analiza źródeł internetowych oraz elementy studium przypadku. Stwierdzono, że w Indiach dostęp zarówno do urządzeń mobilnych, jak i do Internetu, nie jest neutralny pod względem płci. Wśród ważnych przyczyn tej sytuacji można wskazać ograniczenia finansowe, brak umiejętności, a także normy społeczno-kulturowe. Działania rządu i biznesu powinny zatem koncentrować się na tych obszarach.

Słowa kluczowe: luka cyfrowa, e-inkluzja, równość płci, telefony komórkowe, Internet.

JEL: O0, 030, 039, 053.