Centring Women in Digitalising Post-Covid Economies

Egypt and India as Examples

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Abstract

Across the globe, the Covid-19 pandemic has had multiple grave repercussions on people's lives. Most notable among these has been the intensified need for, and pervasive use of, digital technologies, available only to those who had prior access. This was witnessed globally between and within countries. This widening of the digital divide has typically fed into a persistent development divide and caused further exclusion of the disadvantaged, women included. Indeed, women bore the brunt of the pandemic as they had to juggle their roles as workers, caretakers, and home schoolers. With extra pressures placed on them at work and at home, women were the first to exit the labour market, and in some cases were the subject of domestic abuse. As digital, gender, and other socio-economic inequalities were exacerbated, new forms of work emerged, specifically using digital technologies locally and globally. While these technologies embody the potential of further exclusion of women, conscious awareness of the inherent challenges can lead to mitigating the risks and using the same technologies for inclusion and ensuring a feminist future of work in a highly automated world. This paper will explore the challenges and opportunities that women face in a post-pandemic digitising world, with Egypt and India as examples.

1. Introduction

Across the globe, the Covid-19 pandemic has had multiple repercussions on people's lives. Most notable among these has been the intensified need for, and pervasive use of digital technologies, available only to those who had prior access. This was witnessed globally between and within countries. This widening of the digital divide has typically fed into a persistent development divide and caused further exclusion of the disadvantaged, women included. Indeed, women bore the brunt of the pandemic as they had to juggle their roles as workers, caretakers, and home schoolers. With extra pressures placed on them at work and at home, women were the first to exit the labour market, and in some cases were the subject of domestic abuse.

As digital, gender, and other socio-economic inequalities were exacerbated, new forms of work emerged, specifically using digital technologies locally and globally. While these technologies embody the potential of further exclusion of women, a conscious awareness of the inherent challenges can lead to mitigating the risks and using the same technologies for inclusion and ensuring a feminist future of work in a highly automated world. This paper will explore the challenges and opportunities that women face in a post-pandemic digitalising world, with Egypt and India as examples.

The paper is divided into five sections. Following the introduction, section two points to the expansion in the use of digital technologies post Covid-19, and highlights the digital divide and other exacerbated divides in the Global South. Section three zooms in on women and work in the Global South, highlighting the challenges and opportunities they face in an increasingly automated world, with examples from Egypt and India; section four provides a synthesis of these opportunities and challenges. The last section concludes with thoughts on the way forward for a feminist future of work.

2. Digital Technologies, Covid-19 and Exacerbated Divides

2.1 An expansion in digital connectivity and use

Globally, the use of digital technologies has increased significantly after Covid-19, specifically between 2019 and 2022. Global internet use (Kemp, 2019, 2020, 2021, 2022a) saw an increase following the pandemic, with the number of internet users increasing by 5% between 2019 and 2022, reaching 4.6 billion users. The global usage of mobile phones also saw an increase following the pandemic, with the number of mobile subscriptions increasing by about 4% between 2019 and 2022. Today's current figure of mobile phone users stands at 5.32 billion, which is almost 67% of the world's population (Kemp, 2022b).

Zooming in on India and Egypt, the number of internet users increased between 2019 and 2022 in both countries, by 18% and 53% respectively, reaching 658 million and 75.6 million internet users respectively. While an encouraging figure, these statistics reflect that almost 30 million people in Egypt (almost 30% of the population) were not online in the beginning of 2022. Over half of the Indian population remained offline at the start of 2022 (Kemp, 2022c).

In 2022, the total number of mobile subscriptions represent 92.6% and 81.0% of the populations of Egypt and India, respectively, as the adoption rates increased between 2019 and 2022 by 5% in Egypt, and actually decreased in India.

Global figures for social media users (Kemp, 2019, 2020, 2021, 2022c) also soared between 2019 and 2022 (33%), reflective of over 53% of the world's population. In Egypt, there was an increase of 29%. As of January 2022, there were 51.45 million social media users in Egypt, equivalent to 48.9% of the population (Kemp, 2022a). In India, as of January 2022, there were 467 million social media users, representing 33.4% of the population (Kemp, 2022c), growing by 51% between 2019 and 2022.

2.2 A persisting digital divide

Despite the general increase in digitisation across all indicators such as mobile usage and internet access, there has been a persisting digital divide between and within countries. This has been felt strongly in the Global South, for instance, in countries such as Egypt and India. In 2020, mobile internet coverage in developed countries was around 98%, while in developing countries and less developed countries (LDCs) it stood at 92% and 77%, respectively (UNCTAD, 2021). In LDCs, 23% of their population has no access to mobile broadband network (UNCTAD, 2021). This digital exclusion gets reflected in exacerbated inequalities and exclusion from the developmental benefits of technology.

The ongoing digital divide also has a gendered perspective. Women in the developing world face multi-layered exclusion from the digital economy, where the 'gendered digital adoptive divide' is approximately 6% in high-income countries, while reaching 82.5% in low-income countries (Banga & Faith, 2021).

The gender digital divide is reflected in different statistics such as smartphone ownership and internet use, with figures under both these umbrellas showing a discrepancy between men and women that was additionally aggravated by the pandemic. In 2019, it is estimated that globally, 55% of men were using the internet while the percentage of women was 48% (UNCTAD, 2021). This means that the gender parity score was 0.87, which represents a slight decline since 2013 (UNCTAD, 2021). More specifically, Asia, the Pacific, Europe, and the Americas all saw improvements (increases) in their scores, while Arab States and Africa saw declines (UNCTAD, 2021). Overall, improvements in scores were reflected in developed countries, where marginal decreases were seen in developing countries and LDCs (UNCTAD, 2021).

In the case of many countries in the Global South, socio-cultural factors play a significant role in influencing and explaining the digital gender divide. In both India and Egypt, a fifth of women believed that the internet was not appropriate for them due to cultural reasons (OECD, 2018). In India, these reasons include negative social perception and lack of acceptance or even prohibition by family. Family support could be a "key enabler" (OECD, 2018) as well, with women active online being three times more likely to have "very supportive" (OECD, 2018) families, and non-using women to be six-times more likely to face family opposition (OECD, 2018). Hence, "intra-household discrimination" (Uppandhayay & Nikore, 2021) in some countries will prevent women from accessing digital devices and learning essential skills, in contrast to their male family members. In India, for example, respondents in fieldwork research explained that they cannot afford to own, recharge a mobile phone on a regular basis, or use a prepaid phone. Husbands refuse to buy a mobile phone for housewives since they do not earn anything" (ICTworks, 2016).

Furthermore, women are disadvantaged when it comes to the digital economy, due to their higher inability to afford access to information and communications technology (ICT) – television, computers, smart mobiles – compared to their male counterparts. ICTs are crucial when aiming to participate in the digital economy, and they are becoming the "norm" (Female Entrepreneurship Resource Point - World Bank).

The gender digital divide is intertwined with other divides. In Egypt, while educational gender gaps have

been getting slimmer, a significant number of young girls and women still do not have access to the needed digital skills and services to have equal economic opportunities to those presented to men (Hopkins, 2021). Hence, their access to ICT tends to be limited, which in turn limits their exposure to online knowledge pools, and career and education opportunities (Hopkins, 2021).

Generally, South Asia has the widest mobile ownership gender gaps globally (Uppandhayay & Nikore, 2021). Mobile ownership in India highlights basic inequalities between men and women in the digital sphere. In India, women are 15% less likely to own a mobile phone, and 33% less likely to use mobile internet than men (Uppandhayay & Nikore, 2021). Furthermore, in 2020, 41% of adult men owned a smartphone, as opposed to only a quarter of their adult female counterparts.

This digital divide presents itself internally as well, within the same country between urban and rural communities. Again, this sort of digital divide is heightened in LDCs, with almost 16% of rural residents being offline with no access to a mobile network and 35% not being connected through a personal mobile device (UNCTAD, 2021). While this represents noteworthy improvement since 2015, when 63% of rural communities in LDC's had no access to the internet through a mobile, the existing exclusion of a significant portion of the population from the move towards digitalisation is worrisome.

Needless to say, women in rural areas in countries of the Global South end up experiencing a multi-layered digital divide and exclusion that translates to multidimensional inequalities.

2.3 The pandemic and exacerbated divides

Within this context, the pandemic exposed many connectivity and access divides. Whilst some people were able to mimic their reality onto their online presence during the nation-wide lockdowns, many people and sometimes, countries and sectors as a whole, lagged behind. Even as the pandemic sped up innovations and transformations when it came to digitisation, it also led to further exclusion of certain minorities, notably women in the Global South. The heightened need for digital access during the lockdowns meant a heavy price paid by those who were excluded, which in turn meant further marginalization.

Covid-19 affected all economies, but developing countries were the hardest hit. This is due to their weak fiscal capacity and inadequate social protection, especially in contexts where informal economies are prevalent (Banga & Faith, 2021). Such exposure of the vulnerabilities in the systems of developing countries meant an expansion in the precariousness of livelihoods of the poor and the marginalized groups, with women at their core, creating cohorts of newly impoverished communities, which I refer to as "the new poor".

Just like it attacked individual physical vulnerabilities, the pandemic fiercely struck at societies' social and economic frailties, exacerbated inequalities as it exposed the weak, hit the fragile, and further side-lined the marginalized. Women fell at the core of this exposure and the target of this hit, which aggravated old challenges and exposed them to new ones. As employees, they felt the brunt of the hit to global value chains, the precarity of informal work, and the new challenges coming from gig work. As entrepreneurs, the pressure was harder on them to access finance and for their small business to thrive. As homemakers, they felt the brunt of unpaid care work and the myth of opportunities offered by the flexibility of working from home – a double edged sword. Last but not least, their invisibility in data and algorithms heightened the threat of absence from national policies not only for social protection but also for sustainable livelihoods. The sections below go into more detail on these issues with examples from Egypt and India.

3. Women and Work in the Global South

In the Global South, women tend to form the weaker links on both formal and informal work. Within formal employment, and even with the labour market's move towards gender equality, gender segmentation and inequalities are still very much present. Gender disparities across industries and within them through the types of job available to women, are obvious and very much present. For example, women, across most industries, are continuously under-represented in work organizations, particularly in high-level positions; they can most often be found in lower structural positions or dead-end roles, for example, secretarial or part-time jobs with no chance of gaining superiority (Ortiz-Ospina & Roser, 2018). In parallel, informal employment tends to be dominated by women workers in the Global South.

3.1 Women in informal work

Employing the majority of the global workforce, and particularly women, (SEWA Cooperative Federation, 2021), the informal economy is crucial when observing gender inequality in the labour market. Women constitute a large share of the informal economy in the Global South, working in low-wage, irregular jobs that offer low or no security. This is the case in both Egypt and India, with both countries having a disproportionately large informal sector.

Recent statistics estimate that over half of Egypt's labour force (63%) operates in the informal sector (Mabrouk, 2020). This indicates that over half of the labour force is not guaranteed protections that are outlined by Egyptian labour law, including minimum wage, and social and medical insurance. Keeping this in mind, women working in the informal economy represent approximately 25% of the Egyptian labour force (Elsaman, 2021), and around half of Egyptian working women are working informally (OECD, 2020). These figures highlight the extent of women's vulnerability within the labour market, with their employment being tied to various forms of precarity, including lack of social protection (not being covered in the case of old age, maternity, sickness, and an overall high susceptibility to poverty) (OECD, 2020).

In addition, a gender bias is still present in the Egyptian informal sector that adds an additional layer of marginalization and invisibility to the working women in that sector. Women are much more likely than men to be allocated lower quality jobs and invisible work (Rizk, 2019). An example of this is the domestic work sector, where work done in the form of paid work is quite precarious, low paying, and invisible to the economy.

In India, issues pertaining to women in the informal economy are much more prominent due to 94% of female workers (SEWA Cooperative Federation, 2021) being employed there. This indicates that with the exception of 6% of working Indian women, all women in the labour market are working under precarious conditions such as minimal work and income insecurity, no social security, and little food security (SEWA Cooperative Federation, 2021). The lack of such basic protections meant that the pandemic hit these vulnerable women much worse than any other segment of the population. They dealt with a "triple crisis: a public health crisis, a livelihood crisis, and a care crisis" (SEWA Cooperative Federation, 2021). With multiplied unpaid care work, women's ability to work and their overall position in the labour market, was negatively affected. While the effects of this "triple crisis" on informal women workers have been harsh and immediate, this does not mean that they are short-term only; and in fact, their effects are expected to be felt for an extended period of time.

3.2 Women in global value chains

Critical to women's informal employment has been their role in global value chains, severely disrupted by the pandemic. As women in developing countries are typically engaged in flexible and low-cost work in export-oriented industries (Bamber & Staritz, 2016), they tend to be at the lower end of value chains and hence most vulnerable to economic shocks. Numerous risks and costs were pushed onto suppliers by lead firms with market power, and in turn suppliers passed some of these pressures onto their female workers (Tejani & Fukuda-Parr, 2021). Examples include certain value chains involved in the business process outsourcing (BPO) involved in garments, agriculture, and food production (Banga & Faith, 2021). In India, for example, 77% of the workforce in handloom textiles is constituted by women, who also fall within the lowest income bracket (Rao, 2022).

With women representing a larger share of the workforce in certain value chains, this meant that they were "disproportionately exposed" (Tejani & Fukuda-Parr, 2021) to the challenges that the pandemic introduced. These come in addition to existing vulnerabilities that women already had to deal with such as gender inequality in the workplace portrayed through low pay and dangerous working conditions (examples include working without even an electric fan in the summer heat in an enclosed space (Rao, 2022)). New challenges included the risk of contracting Covid-19 and then dealing with multiplied care work, gender-based domestic violence, and mental health pressures during the pandemic (Tejani & Fukuda-Parr, 2021).

Women are "over-represented in routine, insecure and low paid occupations", where usually, informal and flexible arrangements increase the risk of dismissal and income loss (Tejani & Fukuda-Parr, 2021). This does not only represent a material loss for women, but entails other risks such as weakening a woman's "bargaining power" at home which could be associated with higher chances of domestic violence and mental strains. This is supported by evidence, with gendered domestic violence rising significantly during the pandemic, up to 50% in certain countries, and women noticeably struggling disproportionally from mental stress.

As the pandemic lingered, women's work conditions continued to deteriorate. Even after the initial shock had passed, and demand slowly started rising again, with supply being stagnant, new work arrangements surfaced, such as living at the workplace and working from home. These arrangements entailed worsening work conditions whether in the workplace (eg., longer hours with lower pay) or at home (eg., increasing care work) (Tejani & Fukuda-Parr, 2021).

Women who remained in their pre-pandemic jobs still faced numerous difficulties. The most obvious risk enhanced by the pandemic was that of the health hazard, where many women who with jobs that could not be done from home had to face a "stark choice" (Tejani & Fukuda-Parr, 2021) between risking infection or losing their livelihoods. For example, female employees in the BPO industry continued to work on-site if they were able to commute, despite a significant health risk during the first lockdown in India. Other reported risks included working longer hours, being locked in with male co-workers which increased sexual harassment in the workplace, fear of asking for leave, and potentially facing dismissal and a general stigmatization, and in some cases home eviction, due to potential exposure to the virus.

All these worsening conditions combined have led to a drop in the percentage of women participating in the labour market altogether, and those who are still working are more likely to be engaged in precarious work.

3.3 Women, care work and bearing the brunt

The pandemic has heavily exacerbated already existing obstacles facing women in the world, and the Global South especially. As it was, women faced the recurring dilemma of performing their jobs or staying at home to care for their children, their elderly relatives, and their houses (Murphy et al., 2020). It is either that or juggling both paid and unpaid labour while suffering consequences such as weaker health and low energy levels. In the end, women carry the burden of care work in addition to all the other challenges they faced at work.

In the presented cases of Egypt and India, in common with many other countries, this is due to anciently structured social norms that stereotype the female gender as the sole domestic caretaker in the household (Dokhan, 2021). In fact, a survey by UN Women and Promundo in 2017 shows that 98% of surveyed men in Egypt believe that caring for their children is the sole responsibility of their spouse. It also showed that more than 75% of these men have never cooked, cleaned, or done any chores in their own houses (UN Women, 2017). And according to the Ministry of Planning and Economic Development, women's unpaid care work in the household amounts to 167 billion Egyptian Pound yearly (Dokhan, 2021).

Similarly in India, the expectation that women should carry out all domestic responsibilities constrains their ability to engage in a paid job. This is in addition to other well-cited constraints such as age, education, and geographical location, all of which hinder women's ability to focus on pursuing a career outside the home (Agarwal, 2021). Naturally, the work of these women at home goes invisible in formal work statistics. Indian feminist economists have been advocating for more visibility for unpaid care. An attempt has been made by the Indian government and the Time Use Survey to study the connection between paid work and unpaid care work and its implications for the working conditions of women in India (Vyas, 2021).

Women are traditionally locked in their role as caretakers, even in formal sector employment. In Egypt, a 2020 survey by the National Council for Women (NCW) showed that Egyptian women working in the formal sector are majorly concentrated in the paid care sector such as teaching, nursing, and social workers, representing 70% of the sector. Statistics from the Central Agency for Public Mobilization and Statistics (CAPMAS) show that 42.2% of medical doctors are women, as are 91.1% of nursing staff. This is also counted for in the fact that women occupy 56.8% of the services sector employment (National Council for Women - Egypt, 2020). A significant portion of women's care work is in the health sector, which adds to their vulnerability given their exposure to the high risk of viral infections, especially given the pandemic.

The lockdown brought additional burdens on women. With school closures and people falling sick at home, women bore the brunt of home schooling, entertaining children, and caring for the sick in addition to housework duties. They did that while trying to do their jobs from home and avoid dismissal due to all pressures on them (Elsaman, 2021). All females and not just mothers had to do more work at home. Girls had to contribute more to household chores than boys, and as a result more of them missed out on school assignments (UN Women, 2020). Embedded cultural norms exacerbate the gender divide and pose more burdens on women at home and at work.

In addition to the above, the increasing rate of domestic violence against women was another burning consequence of the pandemic and lockdown. Being in isolation with abusers for extended periods of time made women more likely to be physically and emotionally abused, and this was further aggravated by frustration over the economic instability and the threat of the breadwinners losing their jobs and sources of income (WHO, 2020).

In Egypt, the hotline receiving complaints from women and girls facing domestic violence, which was created by the NCW in 2017, received approximately 8000 complaints monthly from March to June 2020, representing a 466% increase since its creation. In the same period, 40 domestic murder cases were reported, highly concentrated in Lower and Upper Egypt, with some also reported in Cairo, Canal Governorates, and Border Governorates (Dokhan, 2021).

India's National Commission for Women also reported an increased number of complaints from women and girls suffering domestic violence. Other national organizations concerned with gender-based violence said they received fewer calls and complaints than normal times, which can be explained by higher monitoring and less freedom for women to report. In all cases, reports on this matter in India are scarce, so it is harder to get exact statistics (Krishnakumar & Verma, 2021).

3.4 Women and invisibility in data

Not surprisingly, women tend to fall outside the radar of the national data landscape. This invisibility means that women fail to be the beneficiaries of government relief and other entrepreneurial support, especially in times of crisis. This is ironic given they are the ones who are disproportionately impacted. The dual health and economic crisis caused by the pandemic is a case in point.

In Egypt, for example, under the umbrella of the social protection program of Takaful and Karama, forms were given out to be filled by those in need during the pandemic in order to receive some sort of assistance in the form of safety nets, in efforts from the government to help the most vulnerable categories of people.

But many women had problems accessing this assistance because part of it was targeted at employees in the formal sector and most women are informal workers (Elsaman, 2021). While this reflects the broader problem of the lack of coverage of the unorganized sector, women were deprived of much-needed support. Even so, as some handouts targeted informal workers, they were restricted to those who had an "informal worker" status on their national IDs. Women rarely identify themselves as such on their ID's, mostly because of cultural norms, and hence missed that portion of the government handouts. The Takaful program in particular, was targeting households with children in schools, so women with no children or with children not registered in school, who lived alone or who were divorced, did not qualify. Another exclusion came from the fact that the program targeted male-dominated work fields such as carpentry, and was blind to female-dominated jobs like domestic work, caretaking, cleaning, etc; these female-dominated categories were not even included on the government form.

Another problem resided in the fact that the application forms for the handouts were available online. This makes the application process blind to cohorts of the population who are actually most needy of this support, and who technically are invisible in the process In Egypt, this represents more than 50% of the population who have no access to internet, and 26% of women who are illiterate (14% in the case of men). In response to that, some civil society organizations tried helping by filling the applications for women, one representative stated that from the 120 served by them, only one woman received the handout (Rizk, 2020).

In the same sense, the government tried to encourage the use of smart cards and ATMs for safety net imbursements in order to ensure better hygiene, and also as a part of its digital transformation strategy. The problem was that around 67% of Egyptians still rely solely on cash for their transactions, only 33% have bank accounts, 25% possess debit cards, and only the rich 3.3% of the population have credit cards (Rizk, 2020).

Similarly, the Egyptian government increased its health spending in March 2020, in order to cover more people in the Inclusive Health Insurance scheme going on since 2018. The problem with it is that it mainly targets people working in the formal sector, who are mostly men. According to the Egyptian Labour Market Survey statistics, only 15% of women aged 18-64 report having health insurance, and only 46% of employed women and 66% of wage workers have it (Dokhan, 2021).

Exclusion of women from national income and other market censuses immediately translates to further marginalization and exclusion from policies related to subsidies, social safety nets, housing, and broader policymaking" (Rizk, 2019)

Inaccuracies also end up clouding out realities on the ground, providing a "data blur". One possible source of data blur are aggregates that cloud out granulations only

captured by the disaggregation of the data, eg., by gender or by income group. An example can be found in the failure of Egypt's aggregate official data to capture the nuanced effects of currency floatation in 2016 and subsequent inflation on inequality for different groups, especially women and female-led households (Kabil, 2017; Rizk, 2019).

This all leads us to conclude that "data blindness" (Rizk, 2019) and "data blur" are actual obstacles to efficient social and other types of policies. When inaccuracies are present in the data collected, they make decision-makers blind to the realities on the ground, hence taking questionable measures in the form of policies. This also happens because of the marginalization of some categories in the population such as people outside the radar of formal work, or those living in slums, etc.

In India, women make up 91% of workers in the informal sector (Shah, 2020). This in turn translates into gender-data gaps that prevent women from being captured in the data landscape. In times of crises, seen from a policymaking angle, these gender-data gaps are magnified. "This actually underlies a deep-rooted sexism which sees the rights of the 50% of the population (women) as *minority interest*, convenient to be excluded" (Shah, 2020).

Women in India also perform 10 to 12 times more unpaid care work than men (Pandey & Mannathukkaren, 2017). With Covid-19, women bore the brunt of "invisible work" (Pandey & Mannathukkaren, 2017) as the pandemic increased the time women spent on domestic unpaid care work by 30%. These women are also absent from the data-landscape because, "As governments take measures to estimate unpaid care work in economic terms, in reality we only have an estimate, and the data on actual contribution of care work to the nation's GDP goes unaccounted for" (Shah, 2020).

One example is the relief effort that had a serious data gap that left women excluded. The state of Gujarat on India's western coast, initiated a rebuilding project to address damage from an earthquake that destroyed 400,000 homes (Shah, 2020). Due to women's invisibility in the data landscape, the houses were built without kitchens (Shah, 2020). This is quite odd as it reflects blatant gender norms, illustrating that a woman's presence is a necessary prerequisite for building a kitchen.

3.5 The threat of exclusion from the workforce

In addition to data invisibility, women also stand the threat of exclusion from the workforce altogether. The threat of jobs lost to new technologies, typically artificial intelligence (AI), hits work at lower ends of the scale spectrum. The lower the skill level of the job, the more likely is the threat of job loss to automation. With women more likely to be trapped in low-skill work and the lower end of the supply chain, especially in the Global South, this means a clear threat to their livelihood.

The explosive use of digitisation after the pandemic has shed light on challenges in this regard. For example, in Uganda, the "platformisation" of agricultural value chains exposed the gender divide. Female farmers on digital platforms are unable to leverage productivity gains due to their limited digital skills, and lower internet access, agriculture training, and credit compared to male farmers. An example of this would be the potential of women in the agricultural value chain being replaced by new technologies like AI, as certain aspects of women's work are lost to technology (Banga & Faith, 2021).

Furthermore, those working in the agriculture and informal sectors have had to deal with the accelerated "platformisation" (Gurumurthy & Chami, 2020) of the economy, especially in the food industry. Digital platforms completely restructured the global value chain, negatively impacting women in traditional livelihoods such as home-based catering, small businesses (replaced by online food delivery platforms), and women-led agroecosystems (competing with platformised supply chains in agriculture) (Gurumurthy & Chami, 2020). Production processes and global value chains are being restructured everyday due to increased digitisation, this is bound to have certain implications for the "economic and social futures of women in the Global South" (Banga & Faith, 2021).

The acceleration of digitisation, propelled by the pandemic, has also led to innovations in AI automation in the traditional manufacturing and administration jobs that are usually taken up by women in the labour market (Gurumurthy, 2020). On a national level this entails the automation of tasks, primarily low-end routine-based tasks that are usually done by women (Banga & Faith, 2021). On a global scale this could mean automation taking over certain levels of the value-chain, supported by large-scale digitisation of dominating firms in the global value chain (Banga & Faith, 2021). For many women this has meant facing dismissal in the formal sector, losing "hard-won gains in pay and status" (Gurumurthy, 2020), and in some cases, moving to the informal sector which is characterised with higher precarity.

3.6 Women as entrepreneurs

Women entrepreneurs who work in e-commerce in Africa and Asia often face additional obstacles which widen the economic gender gap. A study on digital global value chains and the future of work for women in the Global South puts the spotlight on the challenges facing women in e-commerce, from which one can highlight the following: access to e-commerce platforms requires a certain level of internet literacy that not all women possess, only around half of marketplaces allow domestic sellers on their platform, and even less offer integrated online payment solutions as only a minority owns credit and debit cards and can pay online. In fact, only 27% of adult women in Egypt have bank accounts. In India, even with World Bank claims that more than 76% of women have, at least, one account from a formal financial institution, reality shows a stark gender gap; women are two times more likely to have their loans rejected for their businesses than men (Banga & Faith, 2021), for reasons such as lack of collateral.

Furthermore, international third-party platforms impose very high commissions making them less attractive

to both sellers and buyers from middle- and low-income countries. There also persist gaps in the skills of maintaining said platforms, logistics, managing payments, etc. (Banga & Faith, 2021). This is why women in Africa who own different types of commerce tend to sell through their own website, or they use 'f-commerce' where they sell on social media platforms (i.e., Facebook, WhatsApp, Instagram, etc.) and other informal channels, making it less secure and safe, but more accessible and affordable (Banga & Faith, 2021).

And while more women are getting access to education and training, entrepreneurial skills require more than these two. Prior work experience, for example, is a big factor in the success of an enterprise, which is why male entrepreneurs, in most cases, can easily establish their own business, as opposed to women entrepreneurs (Female Entrepreneurship Resource Point - World Bank).

This is also linked to the fact that businesses owned by men tend to have a higher rate of loan approval than those led by women, as banks put more trust in men, which leads to women relying more on micro loans or personal savings, which aren't long-term investments in order to succeed, as highlighted by the Gallup World Poll (Female Entrepreneurship Resource Point - World Bank). This is also enforced by the algorithm present in Egypt and India's patriarchal norms alike that put land ownership as a prerequisite to avail loans, which makes women in both countries even less likely to succeed in getting loans because of the gendered ownership of assets (Banga & Faith, 2021).

Despite that, women still strive to establish some sort of digital entrepreneurship. In Egypt, according to the Mastercard MEA SME Confidence Index, more than 80% of women entrepreneurs established their businesses on some sort of digital presence, compared to 68% of male entrepreneurs. This digital presence is made up of social media channels (71% of women), and a website (57% of women) (ArabianBusiness, 2017). In part, female digital entrepreneurship in Egypt offers the flexibility women need to juggle home care responsibilities while running a business online, albeit informally in some cases.

In India, the internet empowered women entrepreneurs, not only in terms of making a better income, but to also work for the good of the society. Female business ideas in India included cruelty-free sustainable footwear, eco-friendly menstrual products, and wellness solutions for urban women (News18, 2021). More creative solutions came out of female business owners during the pandemic, for example providing low-income families access to online education (News18, 2021).

Although women-led entrepreneurial ideas in India are innovative, financial institutions remain sceptical about women-owned enterprises, which is proven by the flagrant bias in enhancing access to micro, small and medium enterprises, as women-owned micro-businesses are perceived as high-risk. In some cases, banks may inadequately communicate processes to raise awareness for women entrepreneurs of the procedural requirements of accessing loans or other services (Singh & Pareek, n.d.). Some studies trace this back to the skewed gender balance in the staff structure of financial institutions in India, where only 17% are women. In consequence, only some public sector banks offer specific products customized to the needs of women-owned enterprises, and even then, we can rarely find any importance given to targeted marketing and communication strategies to improve their businesses (Singh & Pareek, n.d.).

In India, while the pandemic induced a significant move to online shopping (reaching 95% of the districts), an increase in digital payments leading up to a 100 million transaction per day status and a 500% increase in tele-health consultations, it still heightened the gender digital divide (Uppandhayay & Nikore, 2021). Additionally, many of the small businesses, a significant proportion of which are led by women, struggled to keep up or adjust to going digital, and had to shut down (UNCTAD, 2021).

3.7 Women in gig work – Opportunities and challenges

The digital economy has offered opportunities and challenges to women in gig work. Typical of the digital economy, there are benefits and harms, both actual and potential. On the one hand, platform work provides women with opportunities for independent, additional, and flexible means of livelihood, and hence empowerment and a potential for a shift in female labour force participation. On the other hand, women gig workers face the precarity of gig work, added on to the plethora of social and cultural challenges to women and work, described to in the above sections. Women gig workers face the gig work challenges of putting in long hours, with little pay and no employee status, described as "precarisation and disposability" (Gurumurthy & Chami, 2020) typical in Global South countries. As women, they face added challenges, such as threats to their personal safety. Especially for women in the Global South, the challenges of gig work typically outweigh the opportunities, needing policy attention and proactive legislation.

3.7.1 The case of India

Opportunities

With one of the biggest gig economies globally, absorbing over three million workers, India's gig economy presents opportunities for those looking beyond the formal sector for employment. Flipkart, Zomato, Urban Company, and Housejoy are few of the many start-ups that have shaped India's gig economy over the past decade (Patwal, 2022), providing alternative opportunities for Indian women to join the labour market and have access to their own income. Many Indian women have lower education levels, yet also have a family they need to support, and hence the gig economy has proven to be a good outlet to absorb these women (Patwal, 2022) and integrate them informally into the job market. Research has cited advantages to gig work that would be beneficial to women and integrate better into their lifestyles than formal employment, including flexible working hours, independence, and being their own bosses. All these primarily help them to work while also being able to manage their unpaid work tasks, without compromising either.

One example illustrating how in some cases the nature of platform work caters to women's needs, is an online food delivery platform called Swiggy, which used to have certain options that were exclusive to their female workers; "they are free to log in at any hour, they are encouraged to end their shift before 6 pm and there is a policy where they can choose to operate in only those areas that are identified as safe zones," (this was relayed by a Swiggy spokesperson) (Patwal, 2022). However, later on the platform realized that these measures restricted female workers from delivering during dinner peak hours, which in turn, limited inclusivity, so the policy was abolished (PTI, 2021). However, Swiggy later introduced a two-day paid monthly period time-off policy for female workers.

In other cases, the increased digitisation and work-from-home models as a result of the pandemic encouraged home-run businesses to open up and succeed. An example from India being 'Boju's Kitchen' a business run by an 83-year-old grandma, her children and grandchildren, fully from their home (Chabba, 2020). These examples of "flexi-work" arrangements are a step forward for Indian women, primarily by removing the need for a physical workspace and being able to better manage their work-home life commitments, and overall enhancing their inclusion in the labour market.

Challenges

Despite some opportunities offered by India's gig economy, challenges remain, especially for women. Referencing another Fairwork report, India's 2021 Fairwork report marks India's third annual study of work conditions of platform workers on digital platforms. The report evaluates 11 platforms and highlights the unprecedented social and economic consequences of the Covid-19 pandemic on gig workers in India.

Low Pay

Due to the nature of gig work, the "unpredictability of income" remains a challenge. The unprecedented Covid-19 virus outbreak shook many gig workers in different ways; fluctuating demand for work, unclarity of allocated tasks, and payment changes without prior notice have left many gig workers feeling insecure about earning a sufficient income. In India, gig workers experienced a decline in their take-home earnings due to the decline in demand for services as a result of Covid-19 and the increase in work-related costs (such as fuel costs and platform commissions) (Fairwork, 2021).

Although "gig" or "flexible" translates to part-time work or additional work, some gig workers make a full-time living out of platform work and hence are vulnerable. This has especially been the case for women in India who have attributed the appeal of work in the platform economy to factors such as flexible working hours (and therefore, freedom to tend to child and other care work at home as needed) (Torgalkar, 2021). Furthermore, these women are often concentrated in traditionally less-paid platform work such as domestic work and beauty services, as opposed to ride-hailing and delivery jobs that offer a higher earning capacity. Indeed, women earn much less than men in the platform economy (Srivastava & Patwal, 2022) and due to structural issues like access to vehicles, women's presence in ride-hailing and delivery platforms is not more than 1% (Torgalkar, 2021). Furthermore, women in the platform economy suffer from the sexual harassment that comes with the customer-facing jobs (Torgalkar, 2021). There is also the threat of algorithm bias, which is not specific to India, where on-demand services platforms place women at the bottom of the hierarchy with low-end tasks and profile them for similar jobs every time.

Invisibility from protections

Platform or gig work remains invisible in the context of labour laws in India (Fairwork, 2020). Gig workers being labelled as independent contractors can often restrict them from social security protections, legal collective bargaining rights, minimum wages, set working hours, and gratuity pay. This is problematic because with the lack of formal documentation, gig workers are trapped in a precarious existence that can prevent them from having basic workers' rights and limit them from social security protections.

This adds to other invisibilities of women in the gig economy, as they witnessed an increased burden of unpaid care work in addition to a decline in employment opportunities due to the Covid-19 pandemic (Srivastava & Patwal, 2022). With lockdown measures, the beauty and on-demand care services that women typically offer were considered as 'non-essential', which resulted in a major impediment to women's platform work earnings in the absence of social protection and the lack of safety nets offered by platforms (Srivastava & Patwal, 2022).

3.7.2 The case of Egypt

Opportunities

Egypt like India, has a large gig economy that is digitally growing everyday with new start-ups and platforms joining the market. In light of the pandemic, work-from-home and online work arrangements have grown significantly in popularity and are continuing in the post-Covid world. These present flexible and skill-based online opportunities for women, enabling them to join the labour force without sacrificing their care responsibilities (Wes, 2021). New opportunities spurred by this include women launching their own small businesses from home, women joining the digital gig economy and women finding the time and financial means to re-invest themselves in their existing businesses (Rizk et al., 2018).

Hence, there are some positive implications of the platformisation of the economy, creating space for women's economic empowerment, reducing gender gaps in the digital and entrepreneurial world, and lowering the usual market entry barriers (Banga & Faith, 2021). These are usually characterized as freelance work mode, where women sell products online through social media outlets such as Instagram or WhatsApp to family and friends. This is an example of women finding new avenues for selling and marketing their products via digital technologies. This can be seen as a new form of work as it entails innovative utilization of technologies via informal digital entrepreneurship. This emerged online and accelerated in light of the pandemic. It is arguable that this version of online work contrasts with its counterparts that are usually less organized and secure.

An example of this is what started as a Facebook group, but is currently a website as well, an online page called 'I Make This'. 'I Make This' is a start-up created by women for women which allows women entrepreneurs to introduce and market their business/products for free. Founded in December 2019, today the start-up has over 250,000 followers on different social media outlets, an e-commerce platform with more than 400 women opening their online stores, and 20,000 monthly visitors, in addition to organizing three large events for showcasing/selling products of women with small businesses.

Another line of work that women have joined is digital platform gig work, again as an alternative to formal employment. In a study looking at women Uber drivers in Egypt, the majority of women highlighted how the worsening economic situation in Egypt after the 2011 revolution created a shift from seeking formal employment to looking at alternatives such as the ridesharing industry (Rizk et al., 2018). Whilst driving jobs have always been stereotyped as male and have been dominated by men, this did not stop these women from looking for a livelihood there.

Many of the women interviewed in the study had jobs in the formal sector such as in sales, tourism, and the service industry (Rizk et al., 2018). Other women were previously non-participants in the labour market but needed to start earning money to support their husbands after the downturn in the economy (Rizk et al., 2018). While cited as a secondary job or a parallel to education side job by most participants in the study, the International Finance Corporation (IFC) cited in a study that Egyptian women driving for Uber make 38% in profits from driving (however, their male counterparts made 49%, highlighting a gender bias in the driving industry in general) (Rizk et al., 2018). This is explained by the fact that men work more hours, and are available to work in peak times such as night shifts and weekends, a luxury not available to women.

Challenges

According to the Fairwork Egypt Ratings (2021) report, overall, workers in Egypt's gig economy suffer from a number of challenges, most importantly because gig workers are "classified as independent contractors" and not employees. This means that they are excluded from the rights granted by Egyptian labour law to employees such as minimum wage, social security, insurance, and protections from arbitrary suspension.

Given the precarious and insecure nature of the gig economy, a major challenge is low and unguaranteed pay, below the minimum wage (Fairwork, 2021). Workers also suffer from lack of protections with the absence of a clear contract, terms and conditions (T&Cs), or any form of documentation offering workers basic rights. Women interviewed for the Fairwork Egypt study cited similar challenges, with an extra layer of vulnerability due to the natural gender bias within the sectors. For example, most women interviewed who work in the ride-hailing sector mentioned their frustration with lack of management involvement, which heightens their sense of a lack of security.

Even when women praised ridesharing for offering them a source of livelihood, they still felt the need for safety in doing their job, clearly stating they preferred working when there is the GPS system tracking them and knowing their location (Rizk et al., 2018). One interviewee told the story of how she was stopped at knifepoint by two passengers who stole her bag. Unfortunately, and while tempted to quit her platform work, she continues "because she desperately needs the additional income from gig work to support her family" (Fairwork, 2021).

An important point to note is that women in Egypt and the MENA region working in the digital or non-digital gig economy are clustered significantly in the domestic work sector. While facing the same challenges that women face in the gig economy in other sectors such as low pay, no contracts, and no protections, they face an additional layer of precarity when it comes to security due to the nature of their job, involving going to a stranger's home and staying there for a prolonged period of time with no protections or emergency protocol.[1]

4.Conclusion: A Synthesis of the Challenges

While the digital economy offers some economic opportunities to women, digital technologies also present significant hurdles that typically lead to exclusion. The challenges facing women in the digital economy are old (analogue) challenges, that are compounded by and feeding into new (digital) challenges. Both have been exacerbated by the pandemic.

4.1. The socio-economic gender bias

The current state of women in the digital economy reflects the gender bias that is deeply rooted in most structures today. First and foremost, persistent gender gaps in digital access and usage (Banga & Faith, 2021) make the digital economy intrinsically biased. These gaps tend to be wider in countries of the Global South where women have lower access to digital platforms, and most of the time they extract less benefits in comparison to their male counterparts both in the South and North.

This is the result of lower education levels, less exposure to digital devices due to lack of digital connectivity and/or ownership, and limited access to finance and general business knowledge when looking to start their own business. All this feeds into lower digital access for women.

1 . Yet to be published: A2K4D's Regional Fairwork Report

On the other side of the equation, internet costs and weak infrastructure in developing countries mean that employers tend to hire new recruits who are better equipped to work remotely than make the effort to improve the conditions of their older employees. And with the number of women having less stable access to internet and technology, and less means to improve them, they are more likely to get laid off from their jobs.

More prominently in the Global South, the socio-cultural constructs place women at the lower end of the work chain – both in formal and informal work. In the end, women are disfavoured in work arrangements and end up being placed at the forefront of exposure to the threats of the digital economy.

4.2. The elephant in the room and the myth of flexible work arrangements

The increasing digitisation and the pandemic have together heightened the importance of flexible work arrangements for women. With boundaries between work time and leisure time getting thinner and blurred, some feel obliged to work more hours than necessary (contracted), and for women, this means more load with the addition of household chores, home schooling and caring for the sick, especially when these tasks are not shared with a partner because of gender-biased convictions (Tejani & Fukuda-Parr, 2021).

Whether women move to platform work or have family members going 'online' for their work arrangements, the overall digitisation of the labour market has gradually led to a significant increase in women's unpaid domestic work, which leads some to opt-out of the labour market to attend to these responsibilities. This furthers the isolation of women from the labour market and re-enforces gender stereotypes that aim to oppress and keep women within the domestic sphere (Gurumurthy & Chami, 2020).

This combination of paid and unpaid work at home makes us question the efficiency of working-from-home strategies, and whether it is an unintentional trap from the start. The absence of affordable childcare provided by the state, stereotyped gender roles at home and employers' tendency to use women as cheap labour, combine to place female workers at a disadvantage. Some studies have even showed that women juggling both types of work are more likely to drop out of the labour force because of the increased care workload during the pandemic (Tejani & Fukuda-Parr, 2021).

Juggling two types of work isn't only a concern for women working from home, even those who work in ridesharing on platforms have stated for them the most important advantage is being able to choose their own working hours and the flexibility that comes with this. It means they can be at home in times of need to take care of children, partners, and any other dependents. They consider care work as their biggest priority, and they need to avoid neglecting it (Rizk et al., 2018).

Even for women entrepreneurs, an important reason for resorting to digital is that it allows them to balance paid and unpaid work. "In a study conducted in the Fall of 2020, Egyptian women online entrepreneurs were asked what their reasons were for choosing this sort of work and popular answers included, "saw the market opportunity for a profitable business", "motivated by passion in pursuing their business", and "need for more flexibility to earn an income while taking care of family and household duties", the last one particularly highlighting the same sentiment of a paid and unpaid work balance mentioned above" (Aboutaleb, 2020).

The above identifies a clear danger lying in the adjustment of work environments and opportunities to fit women's conventional role as caretakers. Whether encouraging working from home, or providing flexible hours to suit women's domestic chores, this process actually serves to perpetuate already engrained gender roles and exacerbate divides.

This, in fact, becomes a trap, where women's role as caretakers are solidified, and gender gaps are exacerbated. Rather than deepen the divide, what is needed is a reformulation of the norms whereby care work is fairly shared in a way that enables women to have a fair opportunity for decent work.

In the end, care work is the elephant in the room. If not boldly addressed, women will continue to fall in the trap of settling for less-than-optimal choices of work under the myth of home and or/flexible work is always the best choice. Addressing the root of the domestic care work issue will have tremendous repercussions on fair opportunities for women.

5. Insights and Way Forward – Towards a Feminist Future of Work in the Global South

The invasion of the digital economy and its structures has reproduced the already-present gender gap in the labour market in national and global economies. Despite offering some limited opportunities to a few, the overall impact of the digital economy has been perpetuating inequalities and marginalizing vulnerable communities, especially women. These inequalities were made clear in the aftermath of the pandemic and lockdown, making women more vulnerable to lose their jobs, and disproportionately affected by the withdrawal of public investment in social care infrastructure (Khamis & Campbell, 2021).

Analogue challenges persist. Social and cultural norms mean that women continue to have caregiving roles, less access to computers and smart phones, less training using them and are seen as bigger risks by banks due to these factors. More so, analogue challenges migrate to the digital world as women engage in the digital economy, where the challenges end up outweighing the opportunities and women are less visible in data and in technology. This inequality eventually gets embedded as gender bias in the design of new technologies.

Solutions should come within adopting a feminist agenda on both the analogue and digital levels. On the analogue front, there is a strong need for proactive awareness campaigns that target a paradigm shift in social and cultural perception of gender norms at home and at work. Specifically, there is a dire need for feminist labour laws that address the needs of working female family members, and a fair distribution of home care between men and women. Working towards fair work in the gig economy should pay special attention to women-specific issues (e.g., safety), which would be included in fair contracts and collective bargaining, as well as laws to protect digital workers' rights of both men and women. Specific programs directed at female entrepreneurs should be encouraged, with terms and graceful financing facilities.

On the digital front, starting from the basic level, there is a need to improve women's access to digital tools, possibly through subsidised loans. There is also a need for training targeted at women, for both their digital (and soft) skill development. Women's visibility in data should be improved via the adoption of innovative data collection methodologies (crowd sourcing), ensuring the disaggregation of data and the inclusion of informal communities into the formal data landscape, which in turn leads to inclusion in policymaking.

Furthermore, with AI infrastructure and technology design embodying gender bias into the system, a feminist digital agenda is needed within an accountability call for women's human rights in the digital sphere (Gurumurthy & Chami, 2020), with a strong need for feminist digital infrastructure policies (Rizk et al., 2018). Fortunately, 'The Deal We Always Wanted' was presented as a feminist action framework on the digital economy, proposing in its wake some strong new visions from sustainable gender-just societies. 'The Deal

We Always Wanted' calls for a new multilateralism for development in the digital age; advocating for global digital democracy, an equitable and fair global trade order, tax justice, a global digital fund for women's empowerment, and Big Tech accountability for women's human rights.

And while a global framework is a good start to set the standards on what digital inclusion should look like, some obstacles will only be solved by locally-thought solutions that leave behind colonial developmentalist models to equality, preferring then to use grassroots approach for maximum efficiency.

While these technologies embody the potential of further exclusion of women, a conscious awareness of the inherent challenges can lead to mitigating the risks and using the same technologies for inclusion and ensuring a feminist future of work in a highly automated world.

Policymaking is needed to intervene here and navigate such challenges to ensure that women in the Global South can access digital technologies, can reach their full potential when involved in the digital economy, and can reap equal benefits to their male colleagues from digital platforms.

To proceed, there needs to be a feminist agenda that tackles both the analogue digital and the analogue challenges to women's work, and most importantly, address the roots of the conventional gender norms when it comes to domestic care work.

References

Aboutaleb, G. A. (2020). *Social Media Potentials in Supporting Women Entrepreneurship: The Case of Egypt.* AUC Knowledge Fountain. https://fount.aucegypt.edu/cgi/viewcontent.cgi?article=2532&context=etds

ArabianBusiness. (2021). *How female entrepreneurs are leading the Middle East digital revolution.* ArabianBusiness. https://www.arabianbusiness.com/industries/technology/467063-how-female-enterpreneurs-are-leading-the-middle-east-digital-revolution

Bamber, P., & Staritz, C. (2016). *The gender dimensions of global value chains.* Geneva: International Center for Trade and Sustainable Development. https://www.tralac.org/images/docs/10585/the-gender-dimensions-of-global-value-chains-ictsd-september-2016.pdf

Banga, K., & Faith, B. (2021). *For Better or Worse? How Digitally Restructured Value Chains Are Reshaping Labor Futures for Women in the Global South*. IT for Change. https://itforchange.net/sites/default/files/add/ThinkPiece-Digitally-Restructured-Value-Chains-Reshaping-Labor-Futures-Women-Global-South.pdf

Chabba, S. (2020, October 30). *COVID-19: How women entrepreneurs are beating the odds.* Deutsche Welle. https://www.dw.com/en/coronavirus-how-indias-women-entrepreneurs-are-beating-the-odds/a-55448719

Dokhan, N. A. (2021). *The Impact of Global Crises on Women: The Case of Covid-19 in Egypt.* AUC Knowledge Fountain. https://fount.aucegypt.edu/cgi/viewcontent.cgi?article=2700&context=etds

Elsaman, R. (2021, October 21). *Women, Work and Covid in Egypt. Wilson Center: A blog of the Middle East Women's Initiative.* Wilson Center. https://www.wilsoncenter.org/blog-post/women-work-and-covid-egypt

Fairwork. (2020). *Fairwork India Ratings 2020: Labour Standards in the Gig Economy.* Fairwork. https://fair.work/wp-content/uploads/sites/131/2020/12/Fairwork_India_2020_report.pdf

Fariwork. (2021). *Fairwork India Ratings 2021: Labour Standards in the Platform Economy.* Fairwork. https://fair.work/en/fw/publications/fairwork-india-ratings-2021-labour-standards-in-the-platform-economy/

Gurumurthy, A. (2020). *Feminist Pathways to Digital Transformation Post-Pandemic – Some Considerations for BRICS*. IT for Change. https://itforchange.net/sites/default/files/add/IT%20for%20Change%20-%20Anita%20Gurumurthy%20BRICS.pdf

Gurumurthy A., & Chami, N. (2020). *The Deal We Always Wanted: A Feminist Action Framework for the Digital Economy.* FES Working Group on Feminist Visions of the Future of Work. https://library.fes.de/pdf-files/iez/17008-20210902.pdf

Hopkins, J. (2021, October 10). *Digital generation, our generation: Girls need access to digital devices and services.* The Daily News Egypt. https://dailynewsegypt.com/2021/10/10/opinion-digital-generation-our-generation-girls-need-access-to-digital-devices-and-services/

ICTworks. (2016). *8 Economic Barriers Responsible for India's Gender Digital Divide.* https://www.ictworks.org/8-economic-barriers-responsible-for-indias-gender-digital-divide/#.Y6qqJdJBw3E

IFC, Accenture, & Uber. (2018). *Driving Toward Equality: Women, Ride-Hailing and the Sharing Economy*. IFC. www.ifc.org/drivingequality

Insight Minds Map. (2017). *Impact of Digital Economy on Women in India.* Insight Minds Map. https://www.insightsonindia.com/wp-content/uploads/2017/09/Impact-of-Digital-Economy-on-Women-in-India.pdf

Kable, M. (2017, December 29). *How to cover a post-shock economy?* Mada Masr. https://www.madamasr.com/en/2017/12/29/feature/economy/how-to-cover-a-post-shock-economy/

Kemp, S. (2019, January 31). *DIGITAL 2019: INDIA*. [PowerPoint slides]. Slideshare. https://datareportal.com/reports/digital-2019-india

Kemp, S. (2020, February 18). *DIGITAL 2020: INDIA*. [PowerPoint slides]. Slideshare. https://datareportal.com/reports/digital-2020-india

Kemp, S. (2021, February 11). *DIGITAL 2021: INDIA*. [PowerPoint slides]. Slideshare. https://datareportal.com/reports/digital-2021-india

Kemp, S. (2022a, February 15). *DIGITAL 2022: Egypt*. DataReportal. https://datareportal.com/reports/digital-2022-egypt

Kemp, S. (2022b, January 26). *Digital 2022: Global Overview Report*. DataReportal. https://datareportal.com/reports/digital-2022-global-overview-report.

Kemp, S. (2022c, February 15). *Digital 2022: India*. DataReportal. https://datareportal.com/reports/digital-2022-india

Khamis, S., & Campbell, E. (2021, March 19). *Info-Deficiency in an Infodemic: The Gender Digital Gap, Arab Women and the COVID-19 Pandemic*. Arab Media & Society. https://www.arabmediasociety.com/info-deficiency-in-an-infodemic-the-gender-digital-gap-arab-women-and-the-covid-19-pandemic/

Krishnakumar, A., & Verma, S. (2021). Understanding domestic violence in India during COVID-19: a routine activity approach. *Asian journal of criminology*, *16*(1), 19-35. https://doi.org/10.1007/s11417-020-09340-1

Mabrouk, F. M. (2020, June 22). *Egypt's sizeable informal economy complicates its pandemic response*. Middle East Institute. https://www.mei.edu/blog/egypts-sizeable-informal-economy-complicates-its-pandemic-response

Murphy, S., Arora, D., Kruijssen, F., McDougall, C., & Kantor, P. (2020). Gender-based market constraints to informal fish retailing: Evidence from analysis of variance and linear regression. *PloS one*, *15*(3). https://doi.org/10.1371/journal.pone.0229286

National Council for Women, Egypt. (2020). *Egypt's Rapid Response to Women's Situation During Covid-19 Outbreak.* National Council for Women, Egypt. http://ncw.gov.eg/wp-content/uploads/2020/04/policypapereng.pdf

News18. (2021). *Women entrepreneurs hold key to India's economic growth story.* News 18. https://www.news18.com/news/business/women-entrepreneurs-hold-key-to-indias-economic-growth-story-4444607.html

Nikore, M., & Uppadhyay, I. (2021, August 22). *India's gendered digital divide: How the absence of digital access is leaving women behind.* Observer Research Foundation. https://www.orfonline.org/expert-speak/indias-gendered-digital-divide/

Nisha, A. (2021). *Her Right to Equality, from Promise to Power.* Penguin Random House India.

OECD. (2018). *Bridging the Digital Gender Divide: Include, upskill, innovate*. The Organization for Economic Co-operation and Development. https://www.oecd.org/digital/bridging-the-digital-gender-divide.pdf

OECD. (2020). *The COVID-19 Crisis in Egypt. The Organization for Economic Co-operation and Development.* https://www.oecd.org/mena/competitiveness/The-Covid-19-Crisis-in-Egypt.pdf

Ortiz-Ospina, E., & Roser, M. (2018). *Economic Inequality by gender.* Our World in Data. https://ourworldindata.org/economic-inequality-by-gender#representation-of-women-in-senior-managerial-positions

Pandey, A., & Mannathukkaren, N. (2017, January 26). *Women and Invisible work.* The Hindu. https://www.thehindu.com/opinion/columns//article56840263.ece

Patwal, D. (2022, March 10). *Making India's gig economy gender inclusive.* The Governance Post. https://www.thegovernancepost.org/2022/03/making-indias-gig-economy-gender-inclusive/#:~:text=At%2023.3%20percent%2C%20India%20has,in%20decent%20and%20meaningful%20employment

PTI. (2021, October 20). *Swiggy introduces two-day paid monthly period time-off policy for female delivery partners.* The Economic Times. https://economictimes.indiatimes.com/tech/startups/swiggy-introduces-two-day-paid-monthly-period-time-off-policy-for-female-delivery-partners/articleshow/87166155.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

Rao, B. (2022). Sustainability and Gender Inequality within Handloom Value Chains. *ECS Transactions*, *107*(1). DOI: 10.1149/10701.15053ecst

Rizk, N. (2020). Artificial intelligence and inequality in the Middle East: The political economy of inclusion. In M. D. Dubber, F. Pasquale, & S. Das (Eds.), *The Oxford Handbook of Ethics of AI.* Oxford Academic. DOI: 10.1093/oxfordhb/9780190067397.013.40

Rizk, N. (2020). *Vulnerabilities Exposed: COVID-19 and Informal Livelihoods in Egypt.* knowledgemaze. https://knowledgemaze.wordpress.com/2020/06/29/vulnerabilities-exposed-covid-19-and-informal-livelihoods-in-egypt/

Rizk, N., Salem, N., & Weheba, N. (2018). A gendered analysis of ridesharing: Perspectives from Cairo, Egypt. *Urban Transport in the Sharing Economy Era*, 32-60. https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/57686/IDL%20-%2057686.pdf?sequence=2#page=33

SEWA Cooperative Federation. (2021). *Rebuilding an Inclusive World in the Wake of the Pandemic: Women's Cooperatives Lead the Way*. SEWA Cooperative Federation. https://www.sewafederation.org/wp-content/uploads/2021/12/Rebuilding-an-Inclusive-World-in-the-Wake-of-the-Pandemic_Womens-Cooperatives-Lead-the-Way.pdf

Shah, S. (2020, June 23). *The Invisible Women In India And The Sorcery Of Gender-Data Gaps.* Feminism in India. https://feminisminindia.com/2020/06/23/invisible-women-india-gender-data-gaps/

Singh, A., & Pareek, A. (n.d.). *Poor Access to Finance for Women-owned Businesses in India: The Role of Financial Institutions.* SME Finance Forum. https://www.smefinanceforum.org/post/poor-access-to-finance-for-women-owned-businesses-in-india-the-role-of-financial-institutions

Srivsatava, D., & Geeti, Pl. (2022, March 10). *Making India's Gig Economy Gender Inclusive.* The Governance Post. https://www.thegovernancepost.org/2022/03/making-indias-gig-economy-gender-inclusive/

Tejani, S., & Fukuda-Parr, S. (2021). Gender and COVID-19: Workers in global value chains. *International labour review*, *160*(4), 649-667. https://onlinelibrary.wiley.com/doi/epdf/10.1111/ilr.12225

Torgalkar, V. (2021, April 19). *India's gig economy is failing women workers*. Equal times. https://www.equaltimes.org/india-s-gig-economy-is-failing#.Y5b0fi2B3GI

UNCTAD. (2021). *Digital Economy Report 2021 - Cross-border data flows and development: For whom the data flow.* United Nations. https://unctad.org/system/files/official-document/der2021_en.pdf

UN Women. (2020). *The role of the Care Economy in Promoting Gender Equality: Progress of Women in the Arab States.* UN Women. https://egypt.unwomen.org/sites/default/files/Field%20Office%20Egypt/Attachments/Publications/2020/12/the%20role%20of%20the%20care%20economy%20in%20promoting%20gender%20equality_full%20report%20%281%29.pdf

Vyas, N. (2021). Undermining the Role of Women in the Economy: The Interplay Between Paid Work and Unpaid Care Work in India. *Industrial Law Journal*. https://doi.org/10.1093/indlaw/dwab035

Wes, M. (2021). *Empowering Egyptian women: Benefits of gender balanced employment policy.* World Bank Blogs. https://blogs.worldbank.org/arabvoices/empowering-egyptian-women-benefits-gender-balanced-employment-policy

WHO. (2020). *COVID-19 and Violence Against Women: What the Health Sector/ System can do.* World Health Organisation. https://apps.who.int/iris/bitstream/handle/10665/331699/WHO-SRH-20.04-eng.pdf?ua=1

World Bank. (n.d.). *Female Entrepreneurship Resource Point - Introduction and Module 1: Why Gender Matters*. https://www.worldbank.org/en/topic/gender/publication/female-entrepreneurship-resource-point-introduction-and-module-1-why-gender-matters