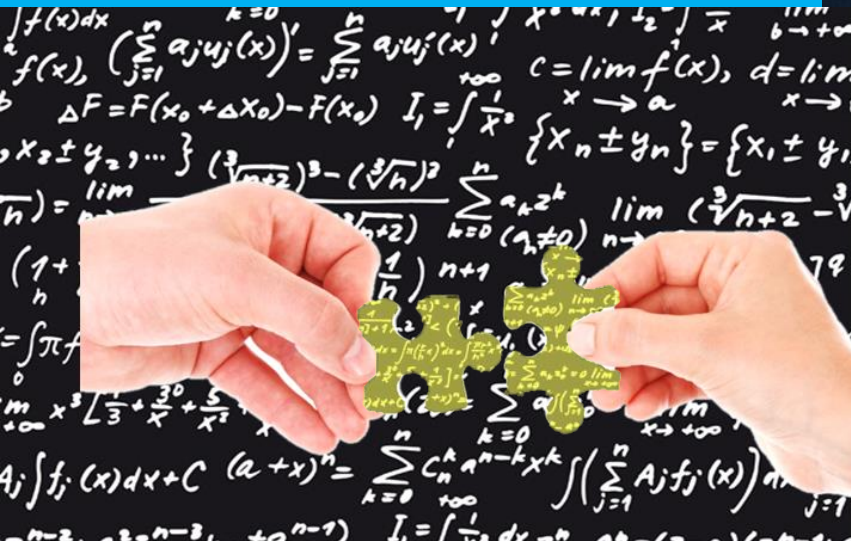




ESCAP
Economic and Social Commission
for Asia and the Pacific

How Does Digital Trade Impact Women Traders?



Renee N Russo

ASIA-PACIFIC RESEARCH AND TRAINING NETWORK ON TRADE

Working Paper

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ASIA-PACIFIC RESEARCH AND TRAINING NETWORK ON TRADE

WORKING PAPER

How does Digital Trade Impact Women Traders?

Renee N Russo¹

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Abstract

This paper explores the potential opportunities and challenges digital trade poses for women traders globally and in Asia-Pacific. This paper highlights policy areas using a gendered approach to digital trade. Given the varied and interrelated issues, a public-private-societal effort is needed to help women traders. A mixed methods research approach to conduct situation analysis is used in this paper. It predominantly reviews existing literature, supported by descriptive statistics. A feminist economics lens and intersectional analysis are primarily used to examine how women's ability to leverage digital technologies for trade varies and how to improve it through policy changes.

At the sociocultural level, education and technology exposure are critical to increase women's digital readiness and community acceptance of digital trade. These programs must target women and the broader community to destigmatise technology. Financial barriers, such as the cost of ICTs can be addressed through decreasing loan requirements and bolstering community safety net funds.

The new complex problems associated with scaling a business to participate in international trade highlight the need for networking and community building. This can help overcome new professional challenges for women traders after engaging in digital trade. These communities, by women, and for women, can provide professional and sociocultural solutions to potentially help create a better digital trade environment for their members.

To ensure equitable and helpful changes the government must create a better digital trade environment for women. Governments should focus on including more women in the process of policymaking and on formalising platform work to better reflect women's economic participation and ensure a more accurate representation of women traders' needs. It should also aid private and community action to support breaking down barriers to women's involvement in digital trade.

Opportunities do exist for women in digital trade, but to ensure gender equity, public-private-societal efforts are needed to overcome barriers to female entrepreneurs. The issues women face in digital trade must be acknowledged and addressed to implement inclusive and holistic social and economic considerations focused on women's unique business obstacles.

Keywords: Women, MSME, Global Value Chains, multinationals, global supply chains, Asia-Pacific

JEL Codes: F10, F23, I18, J16, J18, J24, J70, L26, N75, O10, O17, O30

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1. Introduction

Digital trade enables quick and simplified trade across and within borders, by easing the navigation of multi-step shipping and logistical problems and connecting consumers with suppliers at a larger scale. This growing method of trade poses challenges at the economic and social level, but still offers opportunities for communities, businesses, and governments, especially within the Asia-Pacific region. Digital trade has yet to be fully studied and regulated to ensure inclusive growth, as the Asia-Pacific region leads the rest of the world in digital economic growth, making up 52% of the growth in revenue of technology companies between 2016 and 2018 (Elms and Agnew 2022), it is important to explore the intersection between digital trade and inclusivity in this region.

Digitalisation has grown exponentially over the last two decades. E-commerce² users are predicted to increase by around 32% from 2.38 billion in 2022 to 3.13 billion by 2025. Furthermore, in the next five to ten years, the e-commerce market is projected to increase between 25% and 35% annually (Elms and Agnew 2022). This significant growth in e-commerce and the digital economy,³ has carried over to growth in digital trade. As more packages and goods are exchanged due to increased market exposure and revenue this causes the mechanisms of trade to shift toward digital processes.

Trade digitalisation is the process through which the mechanisms facilitating trade shift to digital formats. Digital trade is the digitally enabled transactions of goods and services delivered physically or digitally (OECD 2023). It entails converting elements of the value chain or business model to digital platforms using emerging technologies (Amankwah-Amoah et al. 2021), such as Information and Communication Technologies (ICT) to ease cross-border trade through paperless transactions (Sun and Larouche-Maltais, 2020). These technologies are ever-evolving and include cellular phones, cloud computing, artificial intelligence, blockchain, robots, the Internet, and 3-D printing (Amankwah-Amoah 2021). This technology is rapidly expanding. Almost all aspects of the supply chain are digitised because digitalisation improves transparency, traceability, and verification of environmental standards of supply chains (Kim et al. 2022).

Although the Covid-19 pandemic expedited the digitalisation of daily life, it also created long-lasting supply chain issues. The interdependence of the global supply chain was questioned when lockdowns and border closures interrupted both the production and flow of goods. The subsequent instability of distribution networks highlighted how fragile global supply chains are, and how crucial supply chain resilience is to the global economy. Digitalisation proposes one way to mitigate the negative impacts of

² E-commerce refers to the buying and selling of goods electronically. This differs from digitalisation which refers to the act or process of moving and translating actions that used to be done manually into a digital form. E-commerce is the result of the digitalisation of commerce, but the two words are not the same.

³ Digital economy and E-commerce will be used interchangeably in this paper unless otherwise specified.

inevitable supply chain disruptions because countries and companies can respond more efficiently when they can share information quickly (Casanova 2022). The digitalisation era is growing rapidly and blurring network boundaries (Lestari 2020). The economy was digitalising before the Covid-19 pandemic, but the global emergency expedited its growth. This partially happened because lockdowns forced executives to adapt and transform their businesses into digital form (Lestari 2020).

The digital economy has grown faster than the traditional non-digital economy, which has caused problems for inclusive growth (Rajahonka and Villman 2019). The digital economy has highlighted social stratification through discrepancies in digital access called the digital divide. Examples of this social stratification include rural versus urban, poor versus rich, and advanced versus developing economies (Amankwah-Amoah et al. 2021).

The digital economy during the Covid-19 pandemic has emphasised the unequal balance of resources and opportunities within communities. Women's job loss rate because of Covid-19 was 1.8 times higher than their male counterparts in the US and India (Madgavkar et al. 2020). Before Covid-19, Indian women made up 20% of the workforce, but during 2020 they made up 23% of overall job loss. This is disproportionately high for their level of participation in the workforce (Madgavkar et al. 2020). Furthermore, during the pandemic, women-owned firms were hit harder in their sales, income, and access to funds in South Asia than male-owned businesses (Asia Development Bank 2021). These gender-based discrepancies are one form of social stratification and it is necessary to unpack them to achieve inclusive economic growth.

Exploring the position of women within the economy and how they participate in digital trade enables a more robust understanding of potential policy and innovations to aid the inclusivity of digital trade. Therefore, this paper explores how digital trade and the process of digitalisation impact women in trade. Continued digitalisation poses many barriers to female entrepreneurs if efforts are not taken to implement inclusive and holistic social and economic considerations focused on women's unique business obstacles. However, if those barriers are addressed by effective and specific gender lens policies that integrate public, private, and societal efforts then digital trade can bring great opportunities to women traders.

This paper discusses the impact of digital trade on women. Section 2 defines women's position in trade and the importance of this gender lens. Section 3 highlights the specific challenges and potential opportunities that digitalisation poses to women by exploring the MSME resource gap, flexibility of the export sector, online business, digital readiness, and access to finance. These factors are deconstructed to demonstrate both the systemic nature of these challenges and to emphasise that they are capable of reform if an effort is made to address their unique impact on women. Section 4 provides recommendations to overcome these challenges through a public-

private-societal effort and Section 5 concludes with the importance of gender equity in the future of digital trade.

2. Women in Trade

With new changes in the global economy and the trade industry, it is essential to understand the impact of more than just GDP on global trade efficiency. This change must be humanised to highlight the impact on marginalized economic stakeholders, like women. This gendered lens is crucial to evaluating the full impact of a digital trade-based future.

Stressing the impact of digital trade and trade digitalisation on women helps achieve Sustainable Development Goal #5, Gender Equality. Equality for economic opportunities regardless of gender would increase global GDP by 28 trillion by 2025 (OECD 2021). In 2015, the global average participation rate of women in the workforce was less than 50%, in South Asia it was 57% and Central and East Asia's average participation rate of women was 58% (Seno-Alday 2023). While participation is higher in Asia compared to the global rate, it is still low when compared to men's global average participation rate of 70% (Seno-Alday 2023). This reveals that as an economic resource, women are underutilized. In Asia and the Pacific, closing the gender disparity for economic opportunity would lead to 4.5 trillion dollars in gross domestic product (Asian Development Bank and The Asia Foundation 2018).

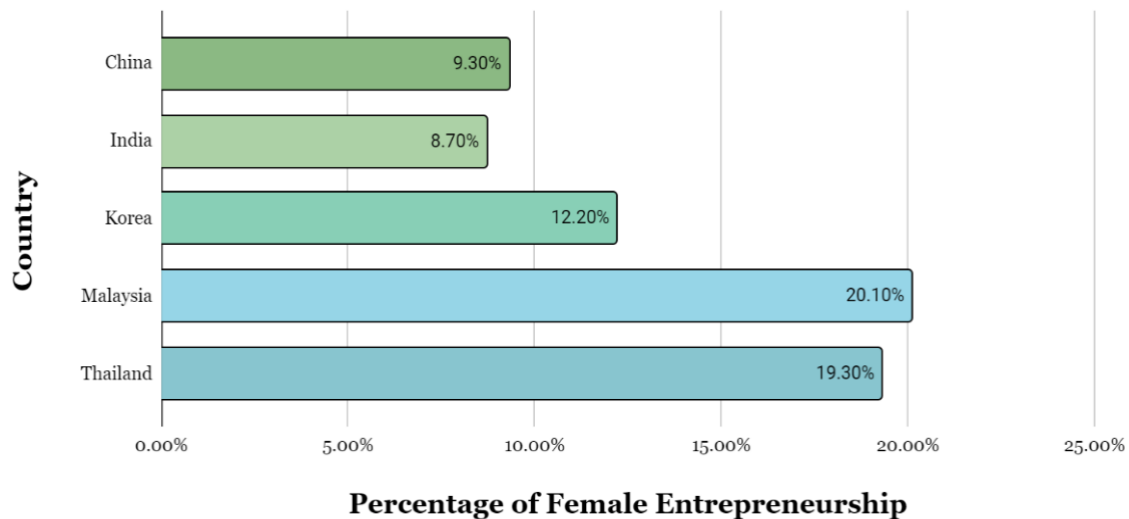
Despite the financial benefits of gender inclusion in digital transformation, National Trade Facilitation Committees have dismissed gender-focused concerns, with 71% stating it was neither a priority nor relevant at this stage (Asian Development Bank and The Asia Foundation 2018). It is crucial to address these shortcomings to achieve gender equity in this sector and to realise digitalisation's full economic potential. This paper aims to bring gender back to the forefront of trade priorities.

Exporting firms in developing countries employ more women than non-exporting firms, with 33% of staff being women compared to 24% of staff being women in non-exporting firms (WBG and WTO 2020). This, however, must be compared to the fact that only 15% of women-led businesses participate in international trade (Jones 2023). Women make up a large part of the labour force, they comprise somewhere between 60% to 80% of the apparel workforce in the global value chain (WBG and WTO 2020).

Women's participation in trade is primarily labour oriented with 80% of women occupying low-to-medium skill roles. Therefore, discussing the role of women at nearly all stages of the supply chain – product creation, production, and management – informs the barriers and struggles of women in trade. Yet, limited research focuses on women-led and/or owned businesses despite being a key component of women's economic empowerment that can influence women's rights and access throughout the supply chain (Asian Development Bank and The Asia Foundation 2018).

More research should be done on how the increased scale of products from the growth of digital trade impacts women at the base of trade supply chains like manufacturing, agriculture, etc., but this is not addressed in this paper given the majority of data surrounds entrepreneurship and women-owned business are powerful economic actors of inclusive growth. The general entrepreneurial activity varies greatly across Asia-Pacific as demonstrated in Figure 1.

Figure 1: Percentage of Female Entrepreneurship in Select Asia-Pacific Countries



Source: Created using data from Franzke et al (2022)

Part of the difficulty in assessing how digital trade impacts women traders entails defining what are the qualifications of a trader and who meets such qualifications. This paper considers this topic, and in efforts to be the most inclusive, will not have a set definition of a woman trader. There is a lack of sex-disaggregated data about the links between trade and gender, and this poses significant research and policy-making challenges (WBG and WTO 2020).

Exploring the particular challenges of women in the trade sector is important to foster inclusive growth of the economy. Despite the lack of disaggregated data and a lack of prioritization by officials, a gendered approach to digital trade is crucial because women are powerful economic actors.

3. Role of Digital Trade

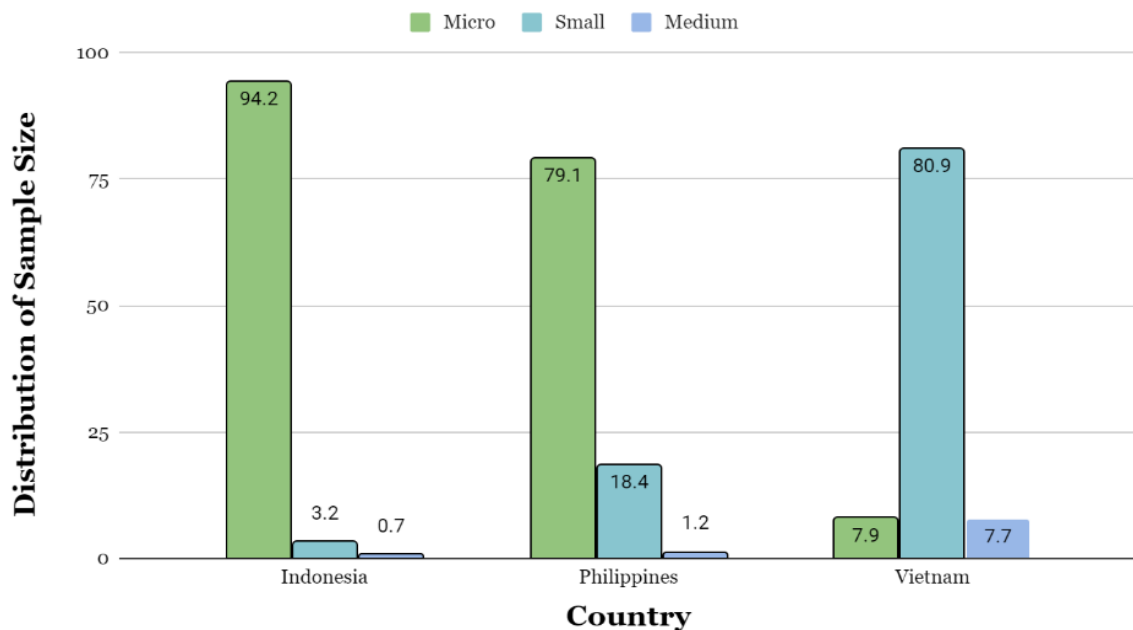
3.1 Digital Trade and the MSME Resource Gap: A Gendered Discussion

One-third of all formal Micro, Small and Medium-sized Enterprises (MSMEs)⁴ are women-owned, which is roughly 9.34 million businesses globally (Sicat et al 2020). In

⁴ The term MSME and SME will both be used in this paper to account for the varied wording of different sources.

Asia and the Pacific region, women own 50% of microenterprises and 59% of small and medium enterprises (Bloomberg 2023). Figure 2 shows the percentage of microenterprises is significantly greater in Indonesia and the Philippines than in Vietnam where there is a large presence of small enterprises. Therefore, combining micro, small, and medium enterprises as MSMEs is important to encapsulate variation at the country level.

Figure 2: Distribution of Sample by Size of Enterprise, Aggregated by Country



Source: Created using data from Monash University (2022).⁵

In Asia-Pacific, MSMEs make up 98% of business and employ a majority of the population, as demonstrated by 97% of the Indonesian labour force employed by MSMEs and 89.8% of the Republic of Korea's labour force also employed by MSMEs, thus, they are the engine of economic growth (Seno-Alday 2023).

A study conducted in Thailand stressed the benefit of digitalisation on MSMEs (Sicat et al 2020). This Thai study argued that trade digitalisation improved relationships in the supply chain and resulted in better decision-making (Somjai et al 2019). It did not focus on women-owned businesses but is valuable because it connects the impact of digitalisation to MSMEs in the textile industry, and that can be extrapolated to women-owned businesses. MSMEs are important for social and economic development as they support local communities (Elms and Agnew 2022), and as a large portion are women-owned, extrapolating MSMEs to women-owned businesses is a close representation, even if a gendered lens was not applied in the original assessment.

⁵ Note included with data on page 14. "Note: For the Philippines, size categories are defined by the number of employees: micro: 0-9; small: 10-99; medium: 100-199; large: 200 and above. For Vietnam, for this table the size categories are defined the same way as for the Philippines. For Indonesia, these categories are defined in terms of total assets and total revenue, following the Investing in Women criteria."

Thailand is a developing economy and there is a clear demand for more digital trade infrastructure. For emerging and developing economies the infrastructure financing gap is around 1.5 trillion US dollars (Papakonstantiou 2016). This demand demonstrates there is global support for digital trade illustrating that the future of global trade and supply chains will digitalise further.

In Asia and the Pacific, MSMEs make up an average of 42% of total exports (Asian Development Bank and The Asia Foundation 2018), and thus they are also relevant in global trade and not just domestic economic growth. For global and domestic purposes developments are needed to make digital trade economically feasible for businesses.

Information Communication Technologies are expensive. Large companies can invest in these technological developments, but MSMEs do not have the same capital to easily do so, especially after Covid-19. MSMEs were significantly impacted by the pandemic because they did not have the capital to increase their turnover rate (Lestari 2020). Small and medium-sized enterprises (SMEs) are more dependent on a steady cash flow compared to large enterprises. Increased late payments during the pandemic, and the limited ability of the SMEs to adapt to new workplace health requirements, like sanitation or remote work, restrained their ability to invest in long-term stability like buying new technology and software for hybrid work (Collis 2021).

MSMEs had difficulty adapting to Covid-19 largely because of a resource gap caused by cash flow inconsistency. Digitalisation could reduce this resource gap. MSMEs suffer the most, so it is also important to construct digital trade in a way that can help MSMEs reap the most benefits (Casanova et al. 2022). The current paper-based process adds undue stress on MSMEs engaging in cross-border trade (Casanova et al. 2022). This is because the procedures for export and transit tend to overwhelm smaller businesses (Sun and Larouche-Maltais 2020). They do not have the same resources to handle or keep track of paperwork.

This resource gap is especially large for women-owned MSMEs in developing countries, which is evident because women-owned businesses comprise 32% of the MSME finance gap in developing countries (Value for Women 2023). Even though there are high levels of business ownership in Southeast Asia, women-owned businesses have trouble accessing finances. Only 12-15% of small businesses have adequate access to finances and of that, only 5% of women-owned microenterprises have access to finance (Bloomberg 2023).

Furthermore, MSMEs help sustainable development in every economy, because when MSMEs perform well it leads to increased trade (Maiti and Kayal 2017). Digital technologies used in digital trade go beyond the shift from paper-based documentation, but also to how consumers and businesses communicate and facilitate commerce.

Digital technologies give more control over the buying process by supplying information, saving time, and reducing transaction costs (Sicat et al. 2020). Women tend to be the primary shoppers and are more likely to be poor because of the gender wage gap, lower pensions, and difficulty accessing credit. Therefore, while the benefits of digital technologies can help all consumers by decreasing transaction costs that lead to a general reduction in the cost of goods, it particularly helps women given their economic position (OECD 2021).

Two decades ago, only multinational firms or governments were capable of international trade. This has changed with the Internet, which has democratised globalisation because outreach costs to geographically diverse customers have been reduced. Small businesses can reach customer bases through innovations in advertising and scale-up as local constraints are less applicable to their overall success. One of the biggest ways that digital trade narrows the MSME resource gap is through its ability to connect consumers and small women-owned businesses.

3.2 Greater Flexibility for Women Through Digitalisation

The digitalisation of documents is an important part of trade digitalisation and would help increase, not only trade profit but also women's presence globally in cross-border related trade sectors like the shipping industry. A study based in Norway found that when firms entered the exporting industry their gender wage gap rose (Maiti and Kayal 2017). Decreasing the need for in-person work helps increase women's access to the economy because it provides more flexibility in balancing work and familial obligations (Rajahonka and Villman 2019). Reducing in-person work helps women with limited mobility, reduces discrimination, and decreases exposure to violence (Sicat et al. 2020). Women are less likely to work long hours because they often fulfil the role of primary caregivers. Therefore, the flexibility of remote work and the digitalisation of information, previously physical, is specifically appealing to global economic growth, and women, as it allows the balancing of familial obligations.

Trade documentation is expensive, especially in maritime trade, where a single shipment can use 50 sheets of paper and exchange hands dozens of times. The main piece of trade documentation in shipping is the bill of lading, which describes what is being shipped, from and to what locations, and makes up 10-30% of trade documentation costs (Casanova et al. 2022). These types of operational costs (bill of lading, letters of credit, etc.) account for 50-60% of the client's price and require wet signatures that slow down the process (Kim et al. 2022). Even digitising this one aspect of maritime trade could save 6.5 billion US dollars in direct costs (Casanova et al. 2022).

This would unlock around 40 billion US dollars in global trade and 15.5 billion US dollars in direct benefits to the shipping industry (Casanova et al. 2022). In Asia and the Pacific, digital trade facilitation and the implementation of WTO Trade Facilitation Agreement measures would cut international transaction costs by 1.2 trillion US dollars

(Casanova et al. 2022). The larger economic gain is significant and supports efforts to continue to digitise paper-based documents.

This trend toward digitising documents and moving toward remote work is happening across sectors beyond trade transportation sectors. This more flexible work model appeals to women as many women still articulate flexibility as a primary reason for entering the digital economy (Casanova et al. 2022).

While digital trade and e-commerce have aided industries, some fields still have relatively little flexibility due to the logistical nature of the industry like the export sector. Women in cross-border trade-based sectors like the export sector benefit from digitalising the economy. This field disproportionately requires employees to work flexible hours compared to other fields due to the need to communicate with partners in different time zones and occasionally travel. The flexible locational requirements that technology like phones, computers, and email, ICT facilitate allow for more inclusive employment (Sicat et al 2020).

Yet there is debate as to the legitimacy of this flexibility claim. It is also used to justify double shifts and assigning additional labour to women, which places women in more vulnerable positions as they work long and strange hours (Rani et al. 2022).

As a crucial industry for transporting goods and facilitating trade, shipping is an important aspect of the supply chain that needs to follow the digitalising trends. Other sectors important for trade, like the banking and airline industry, have already made great strides in digitising documentation to facilitate trade and financial efficiency (Duval 2018). The maritime shipping industry should also be able to make this shift.

Women's limited flexibility and mobility are issues that industries can accommodate with digitalisation. Not only would such a shift lead to more profit but would help retain and encourage more women talent.

3.3 Digital Trade Benefits for Women's Online Business Presence

The shift to digital trade concerns women entrepreneurs because many women are online business owners, as demonstrated by 86% of sellers on Etsy being women and more than half on Alibaba (Sicat et al 2020). This is drastic compared to the 18.6 % of small enterprises that are led by women globally (Sicat et al. 2020). Increased digital trade in the form of e-commerce is especially important for the Asia-Pacific region and is partially responsible for the large increase in consumption as demonstrated by the sheer number of people who shopped online for *Singles Day*, with 583,000 transactions happening every second, resulting in revenue worth billions of US dollars (Elms and Agnew 2022). The e-commerce businesses carried out on websites like Alibaba are important to consider, because Alibaba has led the expansion of ICT and e-commerce participation in rural China, with 10 billion yuan invested in training, infrastructure, technology, and financial support for developing a rural e-commerce ecosystem (Yu and Cui 2019).

Even though the general level of cross-border e-commerce activity is estimated to rise women-owned businesses still have unique cross-border trade challenges. Engaging women-owned MSMEs in e-commerce that is cross-border could double their participation, but these challenges are difficult to tackle including trade finance issues and understanding digital trade regulation and logistics (Mohiuddin et al).

Digital trade involves more than removing excess paper usage. Digital trade has changed how goods move because online platforms drive growth in small package delivery. This has led to policy issues concerning risk management, collection of taxes/tariffs, and management of the operational and logistical processes of the parcel trade as a whole capital (OECD 2023).

These online platforms are part of a system called the platform economy. The platform economy is not the only facet of the digital economy, but it is an important one. It refers to the trend of adopting platform business models that create online networks and digital interaction between people (Chan et al. 2019).

Examples of this model include Uber, Amazon, PayPal, and Apple which have different functions, such as providing services, products, payments, and software development. However, each platform facilitates digital interaction between people. A triangular relationship, between the customer, worker, and platform is formed. This relationship differs from the traditional linear business model, where value is placed on the creation of a product, and then sold to customers (Chan et al. 2019). In the platform economy, the platform's value stems from creating a means of connection, not its production capabilities. The platform business model can eliminate trade barriers by sharing information and easing the flow of data (Chan et al. 2019). This is important because trade in cross-border data moves differently than traditional trading routes.

When sent, a file is broken down and travels to different countries before being reassembled in the destination country. The flow of data is variable because it reflects the choices of individual organisations and firms based on server location. The cloud allows for these geographies to be further complicated because data can exist in numerous locations (UNCTAD 2021 and OECD 2019).

Nearly all sector business transitions rely on data transactions to coordinate research and implement SMEs in the Global Value Chain. This includes the data transfers that occur at the delivery, reception, and feedback stages (OECD 2019). This presents new challenges for governments such as how to tax the digital economy to avoid double taxation when transactions cross borders electronically, but still ensure competition.

Digital trade makes it easier to overcome barriers to growth because it facilitates payments by expediting the accounting process and promoting funding mechanisms like crowdfunding, which simultaneously promotes collaboration and access to capital (OECD 2023). However, the scalability of these platforms quickly changes market structures. This speed is difficult for the policy to contend with as well, especially in the

Asia-Pacific region (Elms and Agnew 2022). The platform economy poses legislative difficulties, but China, India, Japan, Indonesia, Singapore, Thailand, and South Korea have all taken strides in recent legislation discussions to consider digital trade and e-commerce (Elms and Agnew 2022).

There has also been significant progress in using ICT solutions in international agreements, as demonstrated by The World Customs Organization Revised Kyoto Convention, and The World Trade Organization Trade Facilitation Agreement. Both examples promote the use of ICT tools to make cross-border trade more efficient, transparent, and cost-effective (Sun and Larouche-Maltais 2020).

These technologies are the key to digital trade opportunities because they create new employment, remove trade barriers, increase access to finance, and increase efficiency (Sicat et al. 2020). These tools can help the trade sector properly adopt measures that are more inclusive and environmentally sustainable (Kim et al. 2022).

In China, these benefits extended beyond economic growth and translated to social capital. Rural Chinese women in a qualitative study conducted in 2016, articulated a better relationship with their in-laws and other neighbouring families after starting their e-commerce business. This change occurred because they had more financial stability and independence (Yu and Cui 2019). This demonstrates that digital trade innovations like e-commerce can lead to more social benefits than just national economic growth and can also increase women's social position.

Moreover, many men who previously laboured in the city as migrant workers returned to join their wives and help their e-commerce businesses in their villages. However, the man's aid in the e-commerce business was seen as more valuable than his wife's labour (Yu and Cui 2019). This reiterates a similar trend in India of relinquishing control of technology. Women do not have the same access to education or socio-cultural standing compared to men in Asia-Pacific and are less encouraged and praised for using technology. (Antonio and Tuffley 2014). This demonstrates some of the social struggle that is tied to women's ability to expand their business due to gender bias.

E-commerce is likely to continue in the region at a rate of 25% to 35% per year (Elms and Agnew 2022). Despite the growth potential, these platforms pose challenges for women. Responsive algorithmic systems can reinforce negative gender dynamics and penalise women workers. Platforms tend to reward in ways that can hurt women, like surge pricing outside of normal working hours. This conflicts with care responsibilities and can cause women to decline work leading to lower ratings and less reliable work (OECD 2018).

Even when these platforms allow for a degree of flexibility, women still miss out on work. Rating-based algorithm systems discriminate against women workers because the rating reflects discrimination from customers. Gender stereotyping was seen to have significant implications on women's access to work and stable income in China

(Rani et al. 2022). If there is no conflict of time and difference in skill, women still get less favourable reviews, and this could hurt a woman’s future job prospects.

The success of many women with online businesses in this system demonstrates, that while there is work to be done, women are just as capable of participating in the digital economy. Access is not the only problem. Social factors contribute to these challenges and must be addressed to empower women’s digital and economic future. Given their prominence in the e-commerce space, women are uniquely positioned to continue to innovate and adapt to the digital economy. Platforms that are also uniquely positioned as focal points of a connection share a responsibility to push for digital gender equality.

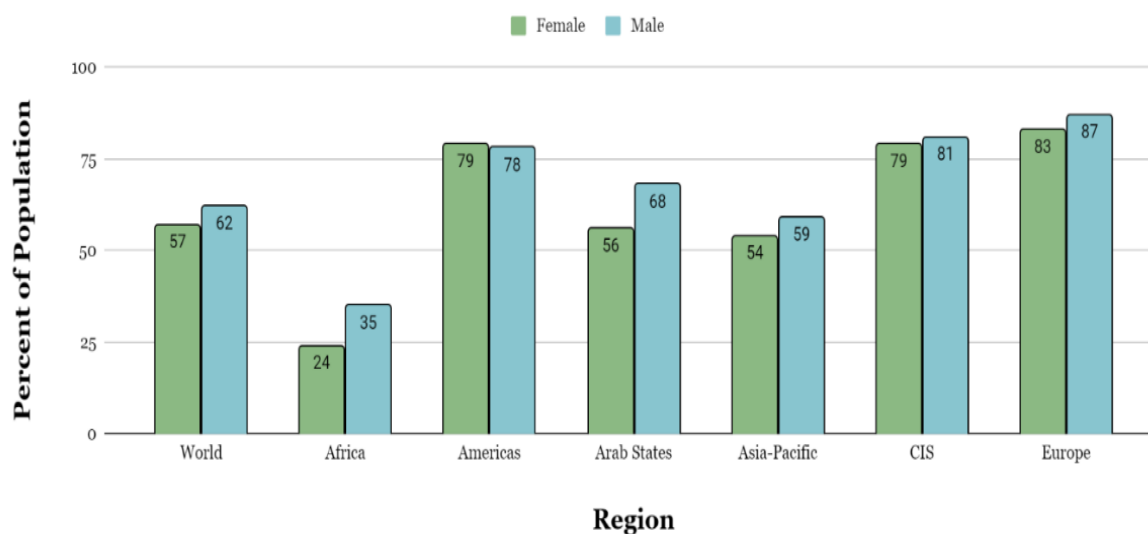
3.4 Digital Readiness Inequality Barrier to Female Participation

Women have not used Information Communication Technology to the same degree as men because digital readiness inequality has not been properly addressed (Sun and Larouche-Maltais 2020). This gendered difference is represented in Figure 3 where women are behind men in Internet usage in most regions. These qualifiers of digital readiness include literacy, confidence, safety, and cultural encouragement.

The problems associated with digital illiteracy can be traced back to problems with illiteracy in general because reading and writing are essential skills when using a computer or smartphone. Only 83% of women worldwide are literate, which is 7% less than the number of literate men (Sun and Larouche-Maltais 2020).

Furthermore, there is less support for women using the Internet and smartphone technology which can lead to women being less confident accessing such tools (Sun and Larouche-Maltais, 2020). These negative socio-cultural norms around female use of technology are thus another barrier in certain societies that see smartphones as a risk to women’s reputation and purity (Barboni et al. 2018).

Figure 3: Percentage of Population Using the Internet, Aggregated by region and gender



Source: Chart data from the International Telecommunication Union (2020)

In parts of India, the Internet is seen as a morally corrupt place and an extension of Western values that challenge local Indian culture (Borborah and Das 2022). Consequently, women are then seen as provocative for using smartphones, which can impact a woman's family's social status or honour. This leads to not just slow adoption of technology, but also deliberate intervention by male relatives to restrict a woman's access to mobile phones. This intervention is done to maintain familial reputation and social status (Borborah and Das 2022). It can go as far as instituting a fine for unmarried girls owning a phone. One village in Madhya Pradesh fines families 5,000 Indian rupees for the first offence, and by the third offence, the entire household is shunned and outcasted (Barboni et al. 2018).

The male justification for these prevention techniques is to protect women from the risks of the Internet. This idea persists because the Internet can expose women to cyberstalking, online harassment, and sex trafficking (Sun and Larouche-Maltais 2020). This is significant because 1 in 10 women have experienced some form of cyber violence by 15 years of age (European Institute for Gender Equality 2019). Beyond just gender-based problems, there are also risks associated with a lack of sufficient data protection for those who do decide to use ICT tools. These barriers primarily impact women in developing countries, because they have less experience navigating potentially harmful online scenarios and so this too must be addressed through education and increasing access to fully benefit from digitalisation.

These sociocultural norms, misperceptions, and misinformation regarding ICTs exist as well at institutional levels as some policymakers do not see the relevance of ICTs, so do not implement or distribute those resources. Even if the value of having a smartphone is clear to women traders in these societies, they will not buy one regardless of whether they can afford it. If the work women do is not considered essential to the family, or not valued in comparison to male counterparts a mobile phone is also considered nonessential and is not to be given (Borborah and Das 2022). Technology is a tool and as such does not have value unless it fits into the social context. Technologies are not gender-neutral and as such are not always appropriate for the needs of women (Rajahonka and Villman 2019). That, however, does not mean access should be deterred by men.

Just as any individual should have the freedom to decide which tools and technology to use in any given situation, women in all regions should be given the chance and skills to access technology, regardless of whether it suits their individual needs. Only with the option available can inclusive growth in digital trade be possible. Women traders should be allowed to decide for themselves and their businesses if digital trade is the best path, but ensuring digital readiness will be essential to properly make that decision.

3.5 Financial Access: A Balancing Act for Inclusion

The ease of information exchange that results from trade digitalisation is beneficial to women traders because it increases their funding opportunities and access to markets.

Women face more barriers to finance and conducting business than their male counterparts so this increase is a huge benefit digital trade can provide women traders (WBG and WTO 2020). This is the case in both developed and developing countries, but the disparity is greater in developing countries. Financial access refers to having bank accounts and access to microcredit institutions where women can deposit money, make payments, and apply for loans (WBG and WTO 2020). Accessing institutionalised forms of funding is more difficult for women, therefore the shift to digital trade must also focus on access to finance.

From an institutional funding perspective, the lack of information transparency is the primary reason that a bank would deny a small or medium-sized company a loan in India (Maiti and Kayal 2017). So, by increasing information transparency, more credit can be loaned. This lack of information also raises costs in the banking sector because banks charge more for unknown risks. Additionally, banks can be incentivised to reject fewer applications because they have access to more information to make those decisions (Kim et al. 2022).

However, these innovations are not unanimously supported in the region, because there is conflict over KYC requirements and the international jurisdiction of e-payment systems. Not all countries within the Association of Southeast Asian Nations (ASEAN) have payment innovations that comply with the International Organisation for Standardization which poses a challenge for the global financial system to operate together (Elms and Agnew 2022).

Compliance procedures like Know-Your-Customer (KYC) and Anti-Money-Laundering (AML) need to be completed by banks to provide loans but those procedures are costly. Technology like Artificial Intelligence (AI) and big data lowers the costs of this compliance by verifying the financial capacity of the business and its identity and reducing human error. Banks are specifically looking to help more SMEs by mapping the market, facilitating KYC processing, and mitigating rejection rates in applications (Kim et al. 2022). Therefore, there are more opportunities for women-owned businesses to scale up and participate in trade.

The claim that centralising financial decisions will help female entrepreneurs because algorithms can solve the problems caused by human error is an inherently flawed approach because stereotyping and biases will still exist and negatively impact women (Malmström and Wincent 2018).

This bias applies to financial digitalisation as well as trade digitalisation. Even though most sellers on e-commerce sites like Etsy are women, there is still significant gender bias. On average, women sellers make 80 cents for every dollar a man makes, and when it's the same product they still only make 97 cents for a man's dollar (Sicat et al. 2020). This demonstrates a systemic flaw.

One proposed solution to addressing gender bias is AI, but it is not neutral, and a coder's individual bias can be reflected in the code they write. The programmers and

those involved in ICT are primarily men. This impacts how women navigate these tools and can lead to gender disparity in AI decision-making systems (Nadeem et al. 2022). In Europe, women make up 30% of jobs in Information Communications Technology and only create 9% of ICT tools and applications (Rajahonka and Villman 2019). In Southeast Asia, 39% of those in the technology industry are women. There has been an increase in women's participation in the technology sector in places like Singapore and Vietnam, but they are still not equal to men's participation (Rastogi 2020).

Fairness regarding gender, race, or other marginalising factors is an issue for further research in AI but there is a lack of research on how those decision-making systems should be managed (Nadeem et al. 2022). This lack of research is an egregious barrier because it can make designing good policies difficult. Furthermore, gender inequities can be exacerbated by AI and other forms of automation because they replace low and medium-skilled jobs that are often held by women (Sicat et al. 2020).

Financial inclusion increases access to funds for individual and household development, leading to growth in quality of life (Vasile et al. 2021). This financial inclusion is not possible without considering changes to trade, because trade and finance are inextricably linked.

Businesses owned by women tend to have few or no employees and run on a part-time basis from home to accommodate familial responsibility. They tend to also be in labour-intensive sectors like food preparation, tailoring, hairdressing, retailing, or other service industries. These fields have low barriers to entry but also have limited room for development according to private international economic and analytics consulting firm Nathan Associates Inc. (2015).

Considering these growth barriers, it is important to consider one of the major problems for women entrepreneurs which is access to capital and credit. Around 70% of women-owned MSMEs are unserved in developing nations which leads to a credit gap of 287 billion US dollars (Sicat et al. 2020). This is because start-up costs are exorbitant. The most significant consideration for affordability is the price of a smartphone, followed by Internet cost (Sun and Larouche-Maltais 2020).

Women generally have lower access to capital which pushes them toward extreme types of financing more often than their male counterparts. This not only puts women at higher risk of defaulting and other negative repercussions of financial insecurity but also decreases their ability to invest in professional and business development (WBG and WTO 2020).

When women are approved, they have more demanding credit terms, like higher interest rates, more collateral, and shorter repayment periods. In East and Southeast Asia, 60% of MSMEs owned by women have a credit gap. In these communities' families and friends are the primary sources of capital because the risk for investors is perceived as too high (Nathan Associates Inc. 2015). This limited scalability and profitability make it difficult for women-owned businesses to invest in business

development, and access tools like the information communications technology that are needed to participate in trade digitalisation.

This problem goes beyond not having the money to buy new technology, to the slow adoption rate of emerging technologies for the trade finance sector in developing countries (Kim et al. 2022). This poses a problem because digital inclusion does not equate to instant gender equity or empowerment. This is because only addressing the gender gap through neoliberal rationality that promotes the free market system through deregulation ignores the intersectionality of gender with other identities and power dynamics. If not careful, this can replicate colonial frameworks around modernity that do not acknowledge barriers to access due to race, caste, religion, class, or other identities (Rani et al. 2022). These ideas of modernity can establish an inferiority of the present and a power dynamic that ignores those with less opportunity to be heard by governments and market actors.

There is a difference in how technology usage and digital employment are perceived as evident by the fact that in the global North, platform work is seen as precarious employment, but in the global South, it is advertised as a source of entrepreneurship (Rani et al. 2022). The trade finance sector should continue to expand as there exists a direct link between how financially inclusive a country is and its development level (Vasile et al. 2021). However, public policy aimed at decreasing the digital divide must consider integrating these policies without being detached from the local dynamics, perceptions, and intersectional challenges of inclusion.

In addition, the trade sector plays a major role in developing a country's economy, because it is essential to sustain and meet the country's consumption needs (Lestari 2020). So, while there have been advancements in banking and digital finance, like SWIFT, a global network for exchanging financial information and payments (Scott and Zachariadis 2012), finance also needs to innovate to help trade. Without the financial sector digitalising in tandem with the trade sector, women entrepreneurs will find it difficult to scale up beyond local markets and participate in global trade.

Furthermore, even when women are included and participate in e-commerce, they are incorporated in a way that devalues their contributions and still subjugates them to cultural pressure and norms. Even the rural Chinese women who experience positive social and cultural interactions after starting their businesses could not escape gender inequality as demonstrated by the husbands of these rural Chinese e-commerce business owners gaining political standing and dismissing the work that their wives did because their wives did not do the networking and outside work, like ordering materials or negotiating (Yu and Cui 2019).

The barriers that prevent the full actualisation of the gendered-based opportunities of trade digitalisation are rooted in systemic sociocultural barriers and application difficulties. These include but are not limited to a difficulty in growing women-owned businesses due to an issue of perceived profitability, web and AI bias that acts against

women, and inequality of digital readiness that means that even if women's access to ICTs was improved and the bias and financing barriers were overcome there still would be socio-cultural problems that limit how prepared women are to utilise ICT and engage with digital trade.

4. Recommendations

The benefits of digital trade hinge on having well-designed targeted policies to address gender-specific challenges (Sicat et al. 2020). Trade technology is developing but it has not been adopted as quickly in trade as in other sectors. This is because technical and legal standards have not been established. What is established has created a fragmented ecosystem (Kim et al. 2022). This fragmented ecosystem is further complicated because recommendations vary by scale, cultural context, and the intersection of problems from other identities along with gender.

4.1 Recommendations to Address Sociocultural Barriers

Many potential solutions might seem hard to implement because they are social in character. Recommendations need to involve robust domestic public policies that address inequality at a social holistic level. Despite challenges, social structures are shaped by individuals and therefore can change and evolve (Yu and Cui 2019).

To help minimise the sociocultural barriers to women's technological growth in developing countries, education is a major focal point. Improving educational opportunities for women is an important place to start to address Internet readiness. These programs can be successful as demonstrated by a consumer survey that showed that while women tend to be less confident navigating mobile phones, once they have successfully carried out a task on the phone, their confidence is significantly closer to their male counterparts (Carboni et al 2021). This survey showcases that education and training initiatives improve women's relationships with ICTs (Haware 2023). Efforts can be made at the policy level that involves investing and expanding programs to ensure women can read, write, and use ICTs.

Addressing the sociocultural barriers against technology in certain regions of Asia-Pacific involves exposing all members of the community to technology, not just women, to destigmatise its presence. This could entail bolstering awareness around the benefits of technology and the Internet. It is also important that other community members do not dissuade women from accessing technology by claiming it is morally corrupt or dangerous. Destigmatising the Internet in the community is important to ensure women who run businesses are supported as they expand their businesses and do not face social backlash for their growth.

Destigmatising in the greater community must be done with special care to avoid a narrative that perpetuates blaming women or the Internet for crimes men might

commit. This dangerous sentiment was suggested by a member of the Uttar Pradesh Women Commission in 2021 that advised families to avoid giving their daughters phones to avoid an increase in rapes and crimes.

These narratives perpetuate not only sociocultural barriers to technology, but also commit a correlation-causation fallacy, a hasty generalisation, and the more egregious act of victim blaming (Borborah and Das 2022). Crimes against women and an increase in mobile phone usage are independent of each other and any association must be brought back to sociocultural perceptions that impeded women's advancement through negative views of sexual liberation, women's freedom, and larger problems of equity in society. Technology cannot be blamed for these larger sociocultural problems.

A combination of educational projects through informal community engagement and formal classroom settings tailored around literacy and technology use has the potential to help open more women traders to digital trade. As women business owners have an opportunity to learn how to use technology it is reasonable to assume more will take advantage of the chance for greater prosperity and economic growth. This assumption is also premedicated on if the stigma around technology is lessened. This combination is why dual educational projects addressing the whole community can help women traders.

4.2 Recommendations to Address Financial Barriers

Increasing literacy and destigmatising education would still need to be followed by increasing the affordability of education and technology to ensure poverty is not an access barrier (Pepper and Jackman 2019). Women tend to be poorer than men. Thus, money will be slightly more of a barrier for women traders than male traders.

Financial solutions to address this wealth inequality and facilitate women's access to potentially expensive technology and education can involve changing loan requirements and aiding the construction of community safety net funds to help MSMEs expand.

As women can face discrimination for loan requirements, decreasing the requirements for women can be more equitable. Of the women-owned MSMEs in East and Southeast Asia, 60 % experience a credit gap and leave a large unmet need in the region (Nathan Associates Inc. 2015).

While microloans have shown to be effective at uplifting women (Nathan Associates Inc. 2015), commercial banks are still the most trusted source of capital for women business owners in places like Vietnam and only a few will seek out other financial methods (Bialus et al. 2022). However, most banks in Vietnam do not cater to the specific needs of women's SMEs and the traditional requirements for loan security like hard collateral, which is more challenging for women-owned businesses (Bialus et al. 2022). Therefore, to help women become engaged in digital trade, loan requirements will have to adjust to accommodate gender lens strategies.

Many women still look for alternative financial solutions to meet their credit needs. Community safety net funds and self-help groups between women vendors in Assam have provided women credit without the traditional amount of paperwork of banks (Borborah and Das 2022). These self-help groups, also called Mahila Sangha, involve women vendors saving a fraction of their income every month that can be allocated for women in their community with little to no interest. They are appealing because rural women face issues with interest and this system is accessible (Borborah and Das 2022). Increasing awareness and support for this small-scale financial support could help given it is already a system that is familiar and effective for women traders, who are hesitant about traditional banking methods.

4.3 Recommendations to Address Professional Barriers

As a woman-owned company scales up, new struggles emerge. The challenges for these women can be addressed through investing and creating networking opportunities for women to address their concerns together. This can provide women with a community of like-minded individuals who provide resources, mentorship, and guidance on how to operate the export sector and handle logistical and legal problems of trade.

These formal and informal communities should be encouraged because both can be valuable. Networks can help form more official trade unions which are beneficial for increasing security and giving women traders more agency. The shared identity of women is effective for collective organising (Rani et al. 2022).

Social media communities also have helped women in Sri Lanka network, grow, source, and connect their businesses with other SMEs (Rani et al. 2022). Networking can help women entrepreneurs find investors and get exposure, acting as an avenue to solve other barriers. Therefore, the public and private entities must encourage their creation.

4.4 Government Involvement

There already have been efforts at establishing trade digitalisation policies as demonstrated by the United Kingdom's announcement that part of their legislative agenda will include digital trade documentation (Casanova et al. 2022). But government especially in Asia-Pacific should address the unique challenges of women traders because the benefit of ICT is dependent on well-designed and specific policies (Sicat 2020)

Governments should also play a role in formalising platform workers and informal markets (Rani et al. 2022). It is important to highlight informal markets and indirect participation when discussing how to address gender equity in trade because when indirect participation is considered, the percentage of women more than doubles (OECD 2021).

More women employed and involved in every process of the trade supply chain as well as the digitalisation process will help address inequalities of the gender digital divide (Rani et al. 2022). The problems for women traders in the digital world and data barriers can be addressed by supporting the creation of women-owned platforms and increasing the number of women involved in app development, digitalising systems, and data collection to reduce bias and grow economic empowerment (Rani et al. 2022).

Women must also participate in policymaking. At the moment, only one-third of Trade Ministers in OECD countries are women (OECD 2021). Efforts to increase women's participation in trade have been made by the United Nations Centre for Trade and Development by creating an eTrade For Women initiative which engages women traders in developing countries to make active policy contributions (OECD 2021). The 2017 Buenos Aires Declaration on Trade and Women's Economic Empowerment also made monumental strides in collecting gender data, removing barriers to economic empowerment, and making gender-responsive policies to increase women's participation in trade with 127 WTO members endorsing the declaration (WTO 2017).

This policy action is crucial because digital technology and the trade industry do not automatically adjust for women.

5. Conclusion

Ultimately, digital trade and continued trade digitalisation are the way forward. But to ensure gender equity in the field, and specifically in Asia and the Pacific, a gendered lens is crucial. The major opportunities of digital trade include an increase in efficiency and a decrease in cost as flexible working hours make participating in trade more accessible. Yet the barriers for women call the level of accessibility into question because women still have limited access to capital, literacy education, social and cultural freedom, and security to choose to engage and interact with digitising business and technology.

While these conclusions are important, the lack of sufficient data about women traders and technology is a problem that needs to be studied. Possible solutions for these barriers can be used to create more informed and effective legislative practices. A shift in focus is possible as demonstrated by four banks in Vietnam starting to collect gender-disaggregated data consistently to create better gendered financial strategies (Bialus et al. 2022)

Exploring the role of women in the economy both through established e-commerce businesses and brick-and-mortar SMEs is important to gain an understanding of the economic landscape. Whether formal or informal, women have acted as economic agents and participate in digital trade.

This gendered approach to digital trade aims to create greater inclusivity. Digital trade has many benefits to the economy and potential opportunities for women, but it also poses many barriers to women traders that require public, private, and societal action to overcome. These barriers need to be overcome through inclusive and holistic measures given the systemic nature of these challenges. Reform is possible with specific and targeted strategies.

Trade will continue to digitise, so it is important to make sure women's access to trade and the economy is not halted because of sociocultural, financial, or professional barriers. Digital trade should continue to be changed, reformed, and adjusted to be more accessible, lucrative, and equitable.

List of references

Amankwah-Amoah, Joseph, Zaheer Khan, Geoffrey Wood, and Gary Knight. "COVID-19 and Digitalization: The Great Acceleration." *Journal of Business Research* 136 (2021): 602–611. doi:10.1016/j.jbusres.2021.08.011.

Antonio, Amy, and David Tuffley. "The gender digital divide in developing countries." *Future Internet* 6, no. 4 (2014): 673–687.

Asian Development Bank. *Asia Small and Medium-sized Enterprise Monitor 2021*. Asian Development Bank. volume 1. (2021).

Asian Development Bank and The Asia Foundation. *Emerging Lessons On Women's Entrepreneurship In Asia And The Pacific Case Studies*. Manila and San Francisco: Asian Development Bank and The Asia Foundation (2018): 1–40. <https://doi.org/http://dxdoi.org/10.22617/TCS189585-2>.

Barboni, Giorgia, Erica Field, Rohini Pande, Natalia Rigol, Simone Schaner, and Charity Troyer Moore. "A Tough Call: Understanding barriers to and impacts of women's mobile phone adoption in India." *Harvard Kennedy School Evidence for Policy Design* (2018): 1-50.

Bialus, Diana, Le Thanh Tam, Nguyen Thi Thu Hien, and Chu Hong Minh. "Financial Access of Women-Owned Small and medium-sized enterprises in Viet Nam." No. 22. *ADB Southeast Asia Working Paper Series* (2022): i-55. <https://www.adb.org/sites/default/files/publication/850891/financial-access-women-owned-smes-viet-nam.pdf>

Bloomberg. "Balancing Act – How ASEAN is Primed to Thrive from Gender Equality" Bloomberg, Accessed July 17, 2023. https://sponsored.bloomberg.com/article/hsbc/balancing-act-how-asean-is-primed-to-thrive-from-gender-equality#_ftn8

Borborah, Pratisha, and Krishna Surjya Das. "Building agency: women vendors and gendered technology in informal markets in Assam." *Gender & Development* 30, no. 3 (2022): 517-530.

Carboni, Isabelle, Nadia Jeffrie, Dominica Lindsey, Matthew Shanahan, and Claire Sibthorpe. *Connected Women The Mobile Gender Gap Report 2021*. GSMA (2021): 1-63.

Casanova, Didier, David Dierker, Bjørnar Jensen, Ludwig Hausmann, and Jaron Stoffels. "The Multi-Billion-Dollar Paper Jam: Unlocking Trade by Digitalizing Documentation." *Business Credit* (2022): 28–33. <https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,sso&db=bsx&AN=160514052&site=eds-live&scope=site>.

Chan, Daisy, Freek Voortman, Sarah Rogers. "The Rise of the Platform Economy." *Deloitte* (2019): 1-6.

Collis, Hannah. "SME COVID-19 Challenges and Opportunities for the Workplace." Leeds University Business School (2021). <https://business.leeds.ac.uk/research-stc/dir-record/research-blog/1894/sme-covid-19-challenges-and-opportunities-for-the-workplace>.

Duval, Yann, Chorthip Utoktham, Alexey Kravchenko. Impact of Implementation of Digital Trade Facilitation on Trade Costs. No. 174. ARTNeT Working Paper Series (2018): i-48. <https://www.unescap.org/sites/default/files/AWP174.pdf>.

Elms, Deborah, and Nick Agnew. "Digital Trade in Asia." Robert Schuman Centre for Advanced Studies Research Paper 2022_51 (2022): 1-35.

European Institute for Gender Equality. Cyber violence against women and girls. European Institute for Gender Equality (2019) <https://eige.europa.eu/publications/cyber-violence-against-women-and-girls>

Franzke, Sonja, Jie Wu, Fabian Jintae Froese, and Zi Xuan Chan. "Female entrepreneurship in Asia: a critical review and future directions." *Asian Business & Management* 21, no. 3 (2022): 343-372.

Haware, Dnyaneshwari "The Gap Between Technology Access and Efficient Use in Rural Communities of Less Developed Nations" Undergraduate Thesis, Mount Holyoke College. (2023).

International Telecommunication Union. Percentage of female and male population using the Internet, 2020. Facts and figures 2021: The gender digital divide. (2020). <https://www.itu.int/itu-d/reports/statistics/2021/11/15/the-gender-digital-divide/>

Jones, Sally. "Why the gender gap in international trade needs to close faster," EY 16 May 2023. [https://www.ey.com/en_gl/global-trade/why-the-gender-gap-in-international-trade-needs-to-close-faster#:~:text=Only%2015%25%20of%20businesses%20engaged,World%20Trade%20Organization%20\(WTO\).](https://www.ey.com/en_gl/global-trade/why-the-gender-gap-in-international-trade-needs-to-close-faster#:~:text=Only%2015%25%20of%20businesses%20engaged,World%20Trade%20Organization%20(WTO).)

Kim, Kijin, Benjamin A. Endriga, and Zemma Ardaniel. "Driving Inclusive Digitalization in Trade and Trade Finance." *Asia Development Bank Briefs*. (2022): 1-12. <http://dx.doi.org/10.22617/BRF220572-2>

Lestari, Diana. "International trade in the Covid-19 outbreak: is the digital economy working?" *International Journal of Business & Management* (2020): 85-92.

Madgavkar, Anu, Olivia White, Mekala Krishnan, Deepa Mahajan, and Xavier Azcue "Covid-19 and Gender Equality: Countering the Regressive Effects." McKinsey & Company, July 15, 2020.

Maiti, Moinak, and Parthajit Kayal. "Digitization: Its impact on economic development & trade." *Asian Economic and Financial Review* 7, no. 6 (2017): 541-549.

Malmström, Malin and Joakim Wincent. "The Digitization of Banks Disproportionately Hurts Women Entrepreneurs." *Harvard Business Review* sep (2018): 1-4.

<https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,sso&db=edsswe&AN=edsswe.oai.DiVA.org.ltu.71209&site=eds-live&scope=site>.

Mohiuddin, Shamarukh, Dr. Ruta Aidis, and Leslie Griffin. "Women-Owned Businesses in Cross- Border E-Commerce: A Diagnostic ToolKit" US-Support for Economic Growth in Asia and Nathan Associates (N.A): i-31. https://www.apec.org/docs/default-source/Publications/2020/10/Women-Owned-Business-in-Cross-Border-E-Commerce/220_SME_Women-owned-Businesses-in-Cross-Border-E-Commerce-Toolkit-final.pdf

Monash University "Gendered Impacts of MSME Policy Responses to Covid-19 in South East Asia Examples from Indonesia, the Philippines, and Vietnam" Investing in Women, an initiative of the Australian Government: Investing in Women. (2022):1-50.

Nadeem, Ayesha, Olivera Marjanovic, and Babak Abedin. "Gender bias in AI-based decision-making systems: a systematic literature review." *Australasian Journal of Information Systems* 26 (2022). 1-34.

Nathan Associates Inc.. Women's Entrepreneurship and Economic Mainstreaming Post-2015 Policy in ASEAN: Part 1. United States Agency for International Development (2015) 1-7. https://pdf.usaid.gov/pdf_docs/PA00TTB3.pdf

OECD. "Bridging the digital gender divide: Include, upskill, innovate." OECD (2018). 28. <https://www.oecd.org/digital/bridging-the-digital-gender-divide.pdf>

OECD. "The Impact of Digitalisation on Trade." *Digital Trade*. Accessed May 15, 2023. <https://www.oecd.org/trade/topics/digital-trade/>.

OECD. "Trade and Cross Border Data Flows" *Trade Policy Brief* (2019): 1- 4. https://issuu.com/oecd.publishing/docs/trade_and_cross-border_data_flows

OECD "Trade and Gender" *Trade Policy Brief* (2021): 1- 4. https://issuu.com/oecd.publishing/docs/trade_and_gender

Papakonstantinou, Vangelis. Risk Mitigation Instruments in Infrastructure Gap Assessment. *World Economic Forum* (2016):1-47

Pepper, Robert, and Molly Jackman. "A Data-Driven Approach to Closing the Internet Inclusion Gap." *Digital Economies at Global Margins*. International Development Research Centre (2019): 29-32.

Rajahonka, Mervi, and Kaija Villman. "Women managers and entrepreneurs and digitalization: on the verge of a new era or a nervous breakdown?" *Technology Innovation Management Review* 9, no. 6 (2019). 14-24.

Rani, Uma, Ruth Castel-Branco, Shivani Satija, and Mahima Nayar. "Women, Work, and the Digital Economy." *Gender & Development* 30, no. 3 (November 2022): 421–35. doi:10.1080/13552074.2022.2151729.

Rastogi, Vaishali, Michael Meyer, Michael Tan, and Justine Tasiaux “Boosting Women in Technology in Southeast Asia” Boston Consulting Group (2020)

Scott, Susan V., and Markos Zachariadis. “Origins and Development of SWIFT, 1973–2009.” *Business History* 54, no. 3 (2012): 462–82. <https://doi.org/10.1080/00076791.2011.638502>.

Seno-Alday, Sandra. "Quiet Achievers: How Women Are Changing Regional Business." *Disruptive Asia*. Asia Society, Accessed July 17, 2023. <https://disruptiveasia.asiasociety.org/quiet-achievers-how-women-are-changing-regional-business>.

Sicat, Marie Ankai Xu, Ermira Mehetaj, Michael Ferrantino, Vicky Chemutai. *Leveraging ICT Technologies in Closing the Gender Gap*. Other Papers. World Bank (2020):1-45. [doi:10.1596/33165.https://documents1.worldbank.org/curated/en/891391578289050252/pdf/Leveraging-ICT-Technologies-in-Closing-the-Gender-Gap.pdf](https://documents1.worldbank.org/curated/en/891391578289050252/pdf/Leveraging-ICT-Technologies-in-Closing-the-Gender-Gap.pdf)

Somjai, Sudawan, Saroge Vasuvanich, Khomsan Laosillapacharoen, and Boonsri Suteerachai. "Governing role of trade digitalization in global supply chain finance, negotiation and SMEs performance." *International Journal of Supply Chain Management* 8, no. 5 (2019): 660- 672.

Sun, Sijia, and Alexandre Larouche-Maltais. “Digital Trade Facilitation for Women Cross-Border Traders.” UNCTAD, November 10, 2020. <https://unctad.org/news/digital-trade-facilitation-women-cross-border-traders>.

United Nations Conference on Trade and Development. “Digital Economy Report 2021: Cross-Border Data Flows and Development: For Whom the Data Flow,” (2021): i–213.

Value for Women. Executive Summary, Multi-Country Study on Women-led MSMEs, with a focus on Microenterprises in China, Indonesia, Thailand, Rwanda and Uganda. UN Women China (2023). <https://asiapacific.unwomen.org/sites/default/files/2023-04/cn-MCS-Executive-Summary-April19.pdf>

Vasile, Valentina, Mirela Panait, and Simona-Andreea Apostu. "Financial inclusion paradigm shift in the post pandemic period. digital-divide and gender gap." *International journal of environmental research and public health* 18, no. 20 (2021):1-28.

World Bank Group and World Trade Organization. *The Role of Trade in Promoting Gender Equality*. The World Bank (2020). <https://www.worldbank.org/en/topic/trade/publication/women-and-trade-the-role-of-trade-in-promoting-womens-equality>

World Trade Organization. “WTO | 2017 News Items - Buenos Aires Declaration on Women and Trade Outlines Actions to Empower Women.” Eleventh WTO Ministerial Conference, December 12, 2017. https://www.wto.org/english/news_e/news17_e/mc11_12dec17_e.htm.

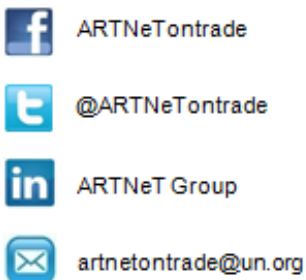
Yu, Haiqing, and Lili Cui. "China's E-Commerce: Empowering Rural Women?" *The China Quarterly* 238 (2019): 418–37. doi:10.1017/S0305741018001819.



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