Mapping Trends for Sustainable Economic Development in the Global South:

E-commerce as an Online Marketplace for Micro-Entrepreneurs in Rural India

ABSTRACT

This paper addresses the struggle of rural micro-entrepreneurs in the Global South in utilizing e-commerce to reach broader markets. This research paper takes up a case study to look at the adoption of e-commerce as a sustainable marketplace by micro-entrepreneur sellers from the lower socio-economic rural communities in India, a booming digital economy in the Global South. 'Sustainability' refers to a sustainable economic development model sustaining e-commerce as the business model for rural micro-entrepreneurs to flourish. This paper explores rural development by dismantling the factors that shape the ways technology and trade impact micro-entrepreneurs. The aim is to offer recommendations and solutions to contribute to building e-commerce as a sustainable marketplace for rural micro-entrepreneurs. Recent information and economic policy changes in India, along with the expansion of mobile infrastructure and a growing user base in rural regions, make this research timely and essential. By scrutinizing the infrastructure and auditing users' information needs and challenges, this research will illuminate the gaps leading to a lack of sustainable economic development and information asymmetries discouraging rural micro-entrepreneurs from selling online. The paper aims to find hurdles in the sustainable development of e-commerce as a business solution. The research output will build guidelines for developing a sustainable marketplace for the rural micro-entrepreneurs to facilitate the financial inclusion of all citizens and poverty alleviation. These guidelines should benefit stakeholders in the Global North and South who want to encourage rural micro-entrepreneurs to sell online and sustain a global outreach sustainably.

Keywords

ICTD (Information Communication Technology for Development), sustaining e-commerce, poverty reduction, financial inclusion, rural microentrepreneurs, information access

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1. INTRODUCTION

1.1 Significance of the Study and Background

Despite the current availability of technology, networks, and infrastructure, microentrepreneurs in rural India have yet to capitalize on e-commerce. According to Kalambe (2019), "rural India accounts for two-thirds of the country's population" (p. 29), and their active participation in e-commerce can contribute to the exponential growth of e-commerce. This growth has to come with sustainability or sustainable development, which means longevity of information technology. Sustainable economic development includes ensuring that the information infrastructure, technological affordability and information policies are in place to sustain the development for the long haul. Factors such as the overall information environment, social justice, ethics, and participation of the locals at the grassroots level are among other factors contributing to sustainability. Being at the juncture of recent policy changes, the recent expansion of infrastructure and the rapid growth of mobile use in India contributes to the immense timeliness for raising awareness of the barriers rural micro-entrepreneurs face for their financial access and inclusion in e-commerce. The primary sustainable development goal being addressed is poverty reduction with the information technology advances in the nation. The United Nation's 17 'Sustainable Development Goals' of the 2030 agenda for sustainable development aim to end poverty, build economic growth strategies, and address social needs (UN, 2021). This paper considers goal # 1 to 'end poverty in all its forms,' however, it also touches bases on goal # 8 to 'Promote inclusive and sustainable economic growth, employment and decent work for all' to further improve the living standard and goal # 9 to 'build resilient infrastructure, promote sustainable industrialization and foster innovation.' Goals 1, 8 and 9 are applicable in the case of rural microentrepreneurs who focus on sustainable economic growth

with the help of infrastructural development and technological advancement with the use of e-commerce also to facilitate international trade. Before delving into sustainable development for micro-entrepreneurs, it is essential to understand the transformation of the information environment in India.

1.1.1 Affordable network services and devices

Mobile phone use has proliferated among lower socioeconomic populations due to the affordability of network services (Wasan & Jain, 2017). Paradoxically, rural communities that never had landlines now have access to mobile phones, skipping the conventional technological development trajectory. These communities lack basic amenities such as clean water and sanitation yet have access to mobile phones. For many rural users, mobile phones are the only way of accessing the internet. In 2017, India's leading cell phone provider, Reliance Jio, launched 4G LTE networks offering practically unlimited data plans for about CAD 6 a month, making it one of the lowest data tariffs in the world (NDTV, 2017). The entry of Jio into the market forced competing firms to reduce their rates, causing India to jump from 150th to 1st in total mobile data usage (Economic Times, 2017). This is the fastest penetration by any mobile network operator anywhere in the world.

Moreover, for over a decade, non-branded handsets have been popular with the lower socio-economic masses. These non-branded phones are reliable yet lower in cost while supporting all the features of other smartphones (Jeffrey & Doron, 2013). They are significantly cheaper than the name brands yet claim to have many of the same multimedia functions. Hence, according to Wasan and Jain (2017), for the rural masses, mobiles have become commonplace through affordable devices and network services.

1.1.2 Digital India Programme

Recent public policies also influence the transformation of the information environment in India. In 2015, the government launched the Digital India programme that contributes to infrastructural development in rural regions (Digital India, 2017). The programme aimed to bridge the digital divide between rural and urban areas by providing access to high-speed broadband, WiFi hotspots, and digital literacy to deliver public services digitally. With the slogan for Digital India being "Faceless, Paperless, Cashless" (Digital India, 2017), the aim is to facilitate e-governance and promote financial inclusion by creating awareness for e-banking and digital payments.

1.1.3 Demonetization

With the *Digital India* programme contributing towards digital empowerment for the citizens, the government's next goal was to foster a less-cash society. In November 2016, the government demonetized all ₹500 and ₹1000 banknotes for various reasons, such as to curb the black money in the economy, to promote digital payments and more. Indian banknote demonetization was an unexpected economic policy shock that forced a shift to digital payments (Singh & Singh, 2017). Cashless India's agenda came as a by-product of this policy change, leading to an exponential rise in e-banking, plastic money, mobile wallets, and e-commerce (Shirley, 2017). Many micro-entrepreneurs, even street vendors, now accept digital payments, prompting the public to learn to transact the cashless way faster with the help of the available digital payment modes. According to Sheetal et al. [2018] and Kumar and Puttana [2018], a sharp jump in mobile banking was noticed post-demonetization. When the currency bills came back into circulation, a significant portion of the population moved back to using cash; this transition period lasted for 4-5 months allowing the population to rely on digital payments as a primary means of financial transactions. As per Kumar [2020], the digital payments in the micro-

merchant and micro-enterprise segment create digital footprints such as transaction and credit histories, which helps them be included in the formal mainstream banking sector, get access to credit and eligibility for loans.

1.1.4 *Low-Cost Payment Solutions*

The Reserve Bank of India (RBI), India's central bank, established the National Payment Corporation of India (NPCI), which oversees digital payment and settlement systems. In August 2016, NPCI introduced the Unified Payments Interface (UPI), a public platform, to expedite the adoption of digital payments by transferring money between the bank accounts of any two parties (i.e., inter-bank transfer) (NPCI, n.d.). UPI enables the mobile phone to be the primary payment device for buyers and sellers nationwide (Gochhwal, 2017), with the perks of being a low-cost payment solution. In November 2017, RBI issued a circular instructing all private digital wallet fintech companies to add UPI as a payment solution and wallet and debit/credit card services.

QR code stands for a *Quick Response* code payment acceptance system. A merchant can quickly obtain it, print it, and display it at the cash counter. Consumers can then scan the unique QR code of the merchant and transfer the payment amount. The merchant does not require internet access to receive the amount. While QR code was already a popular in-store payment choice, the UPI helped consolidate it for merchants by not mandating possession of a different QR code for each digital wallet company. Instead, the merchants can obtain a QR code for acceptance and receive the payment in their respective bank accounts. While this low-cost QR code payment solution was already available in 2015, it became popular only after demonetization in 2016.

1.1.5 *Micro, Small, Medium Enterprise (MSME) Development Act, 2006*

MSMEs is a general term utilized in India for Micro, Small, and Medium enterprises. Led by the Ministry of MSME, as per the MSME Development Act, 2006, the micro industries manufacturing capital requirements are under 25 lakh rupees, and service capital requirements are under 10 lakh rupees (Digital MSME, 2019). Amid the COVID-19 pandemic, the government revised the definition of MSMEs. This helped provide the MSME sector with a 'new-investment friendly' definition with the availability of loans and massive funding to push towards formalization (Chakraborty, 2020). Earlier, the MSME criterion was the amount of capital investment, and there was a revision in the definition based on a firm's turnover rather than capital investment. As per Nirmala Sitharaman, the Finance Minister of India, "MSMEs will now be called Micro units if they have investments up to Rs 1 crore and turnover of less than Rs 5 crore" (Economic Times, 2020). The revised definition adds more firms into the category of micro-enterprises. Also, the distinction between manufacturing and service MSMEs was eliminated. As per Nitin Gadkari, the Minister of MSMEs, this sector contributes to 30% of the nation's GDP (Economic Times, 2020). As per Khatri (2019), the MSME sector is identified as a low-investment sector with high operational flexibility and location mobility (p. 5). As per the MSME Development Act 2006, the state governments are primarily accountable for the growth of their respective MSMEs, and hence, are also in charge of policymaking. The Ministry of MSME is accountable for assisting state governments with various initiatives.

1.1.6 Digital MSME Scheme

Adopting technology within micro-entrepreneurship provides access to information, increases market outreach and enables marketing through digital means. In an attempt to digitally empower the micro-entrepreneurs, in 2017, the Ministry of MSME launched a Scheme called Digital MSME to encourage the adoption of ICT applications within their business practices with

available subsidies. The scheme aims to increase cost-effectiveness for MSMEs by adopting cloud computing, which would curb the cost of infrastructural investment and utilize workshop settings for citizens to create awareness of e-platforms, digital literacy, training, and marketing support MSMEs for high efficiency (Atmanirbhar Bharat, 2020).

1.1.7 Atmanirbhar Bharat Abhiyan

Atmanirbhar Bharat Abhiyan translates to a self-sufficient Indian project. The Prime Minister of India, Mr. Narendra Modi, formulated the policy with a primary motive to make India an independent nation. The project adopts slogans such as "vocal for local," "local for global," and "make for the world," which encourages production within India and global outreach of the local markets (Swadeshi movement). 'Make in India' campaign is also a part of this program that encourages companies to manufacture in India with incentives such as investment, tax exemption and skill development. The program also encourages consumers to purchase 'Made in India' products to help boost the national economy. 'Make in India' campaign also complies with the 'Swadeshi Movement,' which translates to the 'one's own country' initiative promoted by Mahatma Gandhi back in 1903 that encouraged people belonging to the Indian sub-continent to produce their goods as a challenge to British colonizers to free India of colonization (Swadeshi movement).

1.2 The Statement of Problem

With the required affordability of the mobile handsets and network infrastructure, access to the online marketplace for rural microentrepreneurs for a broader market outreach should be evident. The factors prohibiting outreach to the online marketplace could be a need for more tech-savviness and understanding of e-commerce platforms. However, some factors question the sustainable penetration of e-commerce, such as a lack of access to information knowledge for

microentrepreneurs. By auditing the impact of various government schemes on the ground and rural users' information needs and challenges, this research will illuminate the gaps leading to information asymmetries and hindering sustainability by discouraging rural microentrepreneurs from selling through e-commerce. The paper aims to find hurdles in awareness creation for rural entrepreneurs to adopt e-commerce as a sustainable business solution.

1.3 Research Questions

How can microentrepreneurs in rural communities utilize ICTs, especially mobile phones, to sell their goods through online marketplaces and ensure sustainable economic development? What factors might prohibit users from financial inclusion, such as deficient information infrastructure, financial policies, lack of digital literacy and other socio-economic factors?

2. METHODOLOGY

This research utilizes a systematic literature review to collect qualitative data from peer-reviewed journal publications. The date range is from 2017 until now, giving an account of digital payment penetration post-demonetization (demonetization implemented in November 2016). The search criteria would include the following keywords: India; rural, e-commerce; micro-entrepreneurs; artisans; handicraft merchants. This would help understand the social behaviour of rural users by assessing digital literacy rates, affordances of mobiles, available infrastructure, and information resources. I will review the publications that scrutinize how the information environments have been transformed in the rural communities and e-commerce practices in the rural regions of India. The paper focuses on creating a structured literature review, starting with challenges to e-commerce penetration in rural regions and the status of e-

commerce operations with an in-depth analysis of the e-commerce sites, newspaper reports, and articles.

The systematic literature review will scrutinize the mobile phone practices of micro-entrepreneurs, especially handicraft merchants and artisans from lower-socio-economic rural communities. The works of handicraft merchants and artisans include a wide range of handmade items such as craft and decor items, handbags, jewelry, baskets, handlooms such as traditional cloth-making, embroideries and colour dying on clothing. As per Naik (2019), the handloom and handicrafts market contributes a sizable revenue to the Indian economy and employs more than 130 lakh artisans in rural parts of the country. A sustainable e-commerce development would reduce poverty for marginalized communities and provide a much-needed promotional boost to their intangible cultural heritage.

2.1 Theoretical framework

Information, Communication, and Technology for Development (ICTD) is a central theoretical framework for this research. An ICTD framework would assist me in looking at "human and societal relations with the technological world and specifically consider the potential for positive socioeconomic change" (Burrell, 2009, p. 84). Martin Hilbert (2012) introduced the Cube Framework. This ICTD framework is based on the Schumpeterian (1942) notion of creative destruction, which is a process of obsoletion of old technology to make room for innovation as a part of the capitalist culture regime. The cube framework is a conceptual model depicting three-dimensional interdependencies between technology, policy, and social change. Hence, keeping these in mind, this paper will focus on the ways technology, policy and human components are lacking to bring about a sustainable model for the utilization of e-commerce for rural sellers. All these factors consist of interdependencies between ICTs, information

infrastructure, policies, labour, capital, and their impact on online services. The cube framework would help comprehend the process of sustainable economic development for rural micro-entrepreneurs through mobile phones with various co-determinants at play, helping determine the information dissemination gap. The cube framework would help scrutinize factors contributing to the financial inclusion of people in rural India.

3. LITERATURE REVIEW

3.1 Use of the term 'Global South.'

In this paper, I use the term *Global South* while avoiding terms like *third-world* and *developing countries* as they entail a judgemental connotation for the growing economies. Most newly industrialized, economically growing nations with large populations are in the geographic South, such as India, Brazil, China, and Mexico. As per Gray and Gills (2016), Global South is "a term that refers to the long-term goal of pursuing world economic changes that mutually benefit countries in the Global South and lead to greater solidarity among the disadvantaged in the world system" (¶ 1). The aim is to reflect the local needs through collaboration and exchange of technology, knowledge, and resources rather than following the interest of the Global North.

3.2 Basics of development discourse in the Global South

Before delving into the economic and technological development in the Global South, it is critical to acquaint with the discourse by Edward Said (1979) to understand the representation of the Eastern world. Said (1979) points out the biased and sometimes false cultural representation with which the Western world perceives the East, keeping the West at the centre and a cultural standard. This also helps the Global North maintain control by propagating stereotypes of the East in their discourse. In 'Encountering development: The making and unmaking of the Third World' Arturo Escobar (2011) offer an approach with three points that

define development: firstly, the forms of knowledge associated with it; secondly, the power systems that support it, and thirdly "the forms of subjectivity fostered by this discourse" (p. 10). The essential step towards strategizing solutions for the problems related to development begins with defining the development for a specific context and being aware of these three axes.

Moreover, Escobar (2011) expands the previously discussed argument on the control and power dynamics of the Global North and Global South, further emphasizing development issues that the Global South deals with, such as sustainable development, poverty eradication, and citizen rights. Escobar takes the argument further by considering how locals in the Global South resist developmental interventions and create alternative ways of being and doing locally. Escobar (2011) focuses on how the Global North's mainly American and European vision of economic development has brought economic decline and poverty in the Global South rather than prosperity. Escobar (2011) states that the development he notices constitutes the transfer of development knowledge from the Global North along with them the control and power to govern the Global South. Escobar's (2011) main argument is that the bureaucracy focused more on applying tested models in a situation rather than starting from the bottom up by researching the needs of the locals (p. 111) and continued to increase the dependency of the Global South on the affluent nations in the Global North.

In 'Development as Freedom,' Sen (2001) defined development as freedom in instrumental ways, which means "the removal of various types of unfreedoms that leave people with little choice and little opportunity of exercising their reasoned agency" (p. xii). Essential development focuses on paying heed to the freedom of individuals, which means the capability or allowance to choose a lifestyle along with participation in public policy or a democratic role as a citizen. Hence, 'freedom, choice and control' should be enlisted in the basic needs. In the

article "Peer-to-peer in the Workplace: A View from the Road," Ahmed et al. state that "two key issues that arise when taking the workers' perspective are choice and control" (2016, pp. 5065). Hence, the lack of sustainable economic development and access to financial inclusion and information also reduces the choice and control for the population to pick and utilize the tools to participate in an online marketplace. Escobar (2011) and Sen (2001) stress the significance of seeking assistance from local sources while planning a program or project to suit their needs.

The development discourse by Said (1975), Sen (2001) and Escobar (2011) assist us in understanding the top-down perspective of the Global North; however, for this study, it is essential to consider the factors that might influence the perspective of the users in the Global South, especially micro-entrepreneurs. In the book, 'Re-thinking Capitalist Development' Sanyal (2007), a political economist, asserts that the poor in India live in "the need economy — an economy of informality, subsistence, and scraping by locked out of the organized sector" (Irani, 2019, pp. 11-12). Moreover, in the 'need economy' politics, Sanyal (2007) debunks the practicality of a rigid capitalist-worker divide. It is important to understand that the 'need economy' existent in India is devoid of Unions or a body overseeing the protection of the interests of the labour. The 'need economy' is threatened by the developmental drive of the Global North and the local corporates, which prohibits inclusive growth. This also contributes to financial exclusion for the marginalized. Sanyal (2007) also emphasizes that "the work of the postcolonial development state is not only to produce economic development but also to maintain state legitimacy in the face of such mass marginalization" (Irani, 2019, p. 12). Postcolonial capitalist development is a tug-of-war between the accumulation and the need economy influenced by the Global North and the Global South, respectively.

3.3 Frameworks for understanding sustainable development with ICTs

In the article "The Concept of Sustainable Economic Development," Barbier (1987) discusses sustainable economic development in the context of the Third World. Barbier (1987) emphasizes the significance of assessing the full development of society rather than focusing on economic development in a vacuum. Technological innovations solely do not contribute to economic development, and the other major contributing factors include "government policy, patterns of ownership, human skills and tasks" (Barbier, 1987, p. 101). According to Barbier (1987), "Sustainable economic development is therefore directly concerned with increasing the material standard of living of the poor at the grassroots level" (p. 103) along with "grassroots participation in the development process" (p. 102) that consists of their input and participation in policymaking. With this, Barbier (1987) attempts to propose an analytical approach for sustainable economic development: to view it as an interaction among three systems: the biological, the economic and the social system (p. 104). This means sustainable economic development could be determined by lower strata of the population meeting the basic needs of life on these three levels.

In the article "The Role of Mobile Payment Technology in Sustainable and Human-Centric Development: Evidence from the Post-Demonetization Period in India," Pal, De and Herath (2020) explore the role of mobile payments in sustainable human-centric development by exploring the discourse by both the Schumacher (1942) and Sen (2001). Authors emphasize Schumacher's principles as cost-effective and available to all, apt for small-scale applications with simple production methods and Sen's principles of affordability for all and ensuring human participation and creativity for sustainable development (p. 610-11). Grasping from these principles, the authors propose a conceptual framework with five factors to evaluate sustainable development: 1) Low-cost ICT, 2) Simple installation methods, 3) Operable ICT, 4) Useful to

local stakeholders, and 5) Scope for the creativity of the stakeholders (p. 611-12). These principles for sustainable development in rural India are feasible with the affordability of mobile, data network services and low-cost payment acceptance solutions such as offline with QR codes and integration of UPI into digital payment apps. Operability comes with adopting mobiles and payment apps for those with low-literacy levels. Beneficial stakeholders can be observed with street vendors adopting digital payment such as QR codes.

3.4 Challenges to the sustainable development of e-commerce in rural India

According to a study by The Boston Consulting Group, 25% of rural consumers find e-commerce sites and apps that must be made more accessible. Anooja (2015) and Goswami (2016]) have analyzed the impact of the Digital India programme on the ground and have identified high illiteracy and lack of tech-savviness as gaps that restrict the effective utilization of e-commerce technologies. The discrepancies in the urban and rural literacy rates, digital infrastructure, and accessibility to information lead to a lack of access to knowledge in rural communities. UNESCO defines literacy as "the uses people make of it as a means of communication and expression through various media." In the article "Design Studies for a financial management system for micro-credit groups in rural India," Parikh, Ghosh and Chavan (2003) claim that, as per UNESCO, there is 43% illiteracy in India, and "in some of the grossly underdeveloped states of northern India, illiteracy rates can hover as high as 70 to 80 percent of the population" (p. 16). This is critical in understanding the lack of literacy in some regions that might refrain people from utilizing the available technology to its maximum potential. According to Bakshi (2019), a lack of literacy is also a hurdle for professionally handling customer support.

Moreover, the fear of insecure online transactions inhibits rural microentrepreneurs from using e-commerce applications; these challenges arise due to poor education and a need for more

financial and social support (Goswami & Dutta, 2016). Despite the availability of mobile phones, digital knowledge management lags due to inefficient information use in rural communities. Access to information knowledge still exists.

A geographical challenge in the rural area is shipping goods to and from remote areas with poor access and transportation. Furthermore, there is poor geographical access to facilitate sustainable e-commerce, which demands smooth access between the urban and the rural and remote rural regions are victims of poor transport infrastructure. According to Khatri, regarding transportation and accessibility, "infrastructural problems negatively affect the productivity and profitability of the MSME sector" (p. 11) because it impacts supply chain efficiencies. As per Karnik (2016), the government's India Post Department of Post, which is a fading away service, gained a boost in the past couple of years by collaborating with around 400 e-commerce websites, including Amazon and Flipkart.

3.5 E-commerce platforms to encourage sustainable participation by micro-entrepreneurs

3.5.1 Bottom-up approach to the empowerment of the rural micro-entrepreneurs

Heimerl et al. (2013) investigate financial sustainability by scrutinizing expenses, revenues, and profitability. In the article "Local, Sustainable, Small-Scale Cellular Networks," Heimerl, Hassan, Ali, Brewer, and Parikh (2013) propose a model to build bottom-up where the local entrepreneurs own and operate their services for the local population. This was proposed in the context of small-scale cellular networks in Papua, Indonesia; however, this can be re-modelled for e-commerce in the Global South. Also called 'inverse infrastructure,' the idea was initially coined by Egyedi and Mehos (2012) and propagated the benefits of decentralization, such as lower operational costs. This also creates opportunities for the locals and brings in certain freedoms (Sen, 2001).

3.5.2 E-commerce platforms in India promoting rural artisans

The government has been ensuring the participation of rural micro-entrepreneurs on digital channels to reach the broader market. This can be through the existing e-commerce platforms that leverage digital distribution infrastructure, facilitated through government portals or done autonomously by the micro-entrepreneurs through social media.

Uttar Pradesh, one of the most populous states in India, launched a program called 'One District One Product' (ODOP) programme, under the Ministry of MSME to encourage indigenous craft products from 75 districts across the state to promote one product that a particular district specializes in producing. ODOP initiative complies with the 'Atmanirbhar Bharat' project promoting the production and distribution of indigenous products. As a part of ODOP, Amazon India has signed a Memorandum of Understanding (MoU) with the U.P. government to support MSMEs [Ismat, 2020]. As a part of the MoU, "Amazon will provide these entrepreneurs training, account management guidance, marketing tools and world-class infrastructure of storage and delivery network to aid their progress through online selling" (Naik, 2019). Two Amazon programmes promoting rural artisans nationwide are 'Kala Haat,' translating to 'Art Shoppe,' and 'Amazon Karigar,' translating to 'Amazon Artisans', constituting a niche that sells authentic crafts by Indian artisans.

Flipkart is another giant e-tailer, an affiliate of Walmart. Like the Amazon model in Uttar Pradesh, Flipkart has signed an MoU with Karnataka to promote local art, craft and handloom (Economic Times, 2020). Flipkart called this niche 'Samarth,' which translates to 'Capable.' According to Flipkart, the Samarth programme seeks to break entry barriers for artisans by extending time-bound incubation support, which includes benefits in the form of onboarding, free cataloguing, marketing, account management, business insights and warehousing support

(Economic Times, 2020). Another major e-tailer is JioMart, with Reliance as a parent company and affiliated with Facebook, also WhatsApp's parent brand. Facebook has also collaborated with Reliance, which owns multiple businesses, including Reliance Mall. Reliance is also the parent brand for Jio mobile, providing the lowest recorded mobile data prices. According to Anand and Phariyal (2020), "Reliance-Facebook combination represents a Goliath-like opponent, especially given Reliance's track record in decimating rivals when it entered the telecoms market with Jio Infocomm and cut-throat pricing." It is interesting to observe the market dominance of Reliance and Jio, with JioMart as e-commerce, with WhatsApp and Facebook as parent social media channels.

The government plans to set up an e-commerce portal called 'Bharat Craft' for MSMEs with the State Bank of India (SBI), announced by the Chairman of SBI, Rajnish Kumar (Economic Times, 2020). Bharat Craft's initiative gears toward eliminating the involvement of intermediaries and would follow a model like that of China's giant, Alibaba. Moreover, amid COVID-19, the Khadi and Village Industries Commission (KVIC), under the Ministry of MSME, urged e-commerce giants to support khadi mask makers. However, due to onboarding hurdles, the link-up did not materialize. In this situation, the KVIC inaugurated an e-commerce portal on their official site, which gained tremendous popularity. Upon its success, various giant e-commerce wanted to sell Khadi under their name brand. However, the government has trademarked Khadi under KVIC and denied the rights to other e-commerce portals to advertise or sell khadi (KVIC, 2020). KVIC primarily sells khadi, which stands for hand-woven cloth, including khadi masks, fabrics, food items, soaps, footwear and more.

Surpassing the formal e-commerce infrastructures, various rural sellers opt to reach the market autonomously through social media. In the article, "Infrastructure as creative action: Online

buying, selling, and delivery in Phnom Penh," Jack, Chen and Jackson (2017) state that "the online buying ecosystem takes the rules of the local context as self-evident (i.e., the normal way of working) and "central" to the workings of the ecosystem (p. 6513). This is crucial in understanding the informal ways sellers attempt to sustain themselves in online marketplaces. To support selling on social media platforms such as 'Dukaan,' local shops can create an account, add items to the catalogue, set product pricing and delivery fee and sell on social media such as WhatsApp, Facebook, and Instagram. This platform would assist those micro-enterprises in reaching the market directly through various social media channels.

3.5.3 China's e-commerce giant, Alibaba's rural expansion program as a role model

China's e-commerce giant, Alibaba, provides a model for how other e-commerce platforms can strategize using digital channels to extend e-commerce to rural markets in a large and diverse developing country. Alibaba's rural expansion program provides rural service centers in the countryside that help entrepreneurs learn to sell online. These connected villages are called 'Taobao villages' and have rural retailers who manage online orders (Jain & Sanghi, 2016). The sellers from the villages receive tech support from these service centers. 'Taobao villages' act as a hub where e-commerce orders are delivered, instead of home deliveries where rural users can pick up their orders (Jain & Sanghi, 2016). These rural service centers are run by the youth of the village, who also spread awareness about online shopping among those villagers who are unaware of or reluctant towards it. Alibaba's service centers in the countryside exemplify business to customer (B2C) support model.

4. FINDINGS

Keeping the Cube framework in mind, in this research, 'technology' refers to financial access and inclusion with the help of ICTs and infrastructure. The technology entails hardware

that is infrastructure with network towers and mobile devices and software such as app platforms on the devices. A survey of the Digital India programme and demonetization demonstrate that these current public policies contribute to the expansion of infrastructure, the rapid growth of mobile usage in rural India and awareness of cashless payments contribute to the basic technology layer of the cube required for e-commerce to function. To address the poor transportation infrastructure for product deliveries in remote regions, India Post is a rescue with widespread nationwide networks to even the remotest locations.

The other layer of the cube focuses on human components, capabilities, and skills. However, lack of information knowledge hinders MSMEs despite available technological resources. Despite e-commerce giants signing MoUs and government reform programs in a few states, rural artisan sellers are financially excluded due to the widespread lack of awareness about e-commerce. That means a lack of freedom of choice to choose markets and a lack of support in being introduced to and sustaining an e-commerce environment. Human capabilities are essential to utilize technology for development to bring about social change. Social change here refers to the socio-economic sectors that are subject to change with digitization. To bring about a social change in the current scenario, human skill for the operability of e-commerce platforms is required. It is vital to note that semi-literacy and illiteracy restrict users from utilizing available technology. Lack of literacy and technical support dovetails various issues, such as restricting sellers from providing professional customer support and increasing fear of digital payment transactions. Another layer of the cube delves into the necessary policy instruments that fulfill the purpose of social change.

Here the purpose of the social change is a sustainable development of e-commerce for rural artisan sellers. To get rural users on board, there should be policies on providing the interface

content and support in their vernacular and regional languages. While the national languages are English and Hindi in India, each state has its regional language with a distinct written and spoken format. Amazon seller support services currently provide tutorials in English, Hindi and Tamil only (Varshney, 2020). Hence, there should be policies on extending the range of regional languages to give rural artisans control and command over the interface and foster the e-commerce sector. The intervening guiding policies are prescribed for the government and the e-commerce giants to facilitate e-commerce in various ways, such as raising awareness and providing onboarding and technical support to rural users. These policies are supposed to address the needs of the human components such as lack of tech-savviness, literacy and more.

Based on the survey of the existing e-commerce in India, I recognized 3-tiers for sustainable e-commerce development for the rural user base: The first tier is rural sellers collaborating with e-commerce giants such as Amazon, Flipkart, Jio Reliance-Mart and others. Collaboration with these giants means the rural users would receive onboarding training and technical support with an associated commission fee. The second tier is government initiatives and artisan cooperatives such as KVIC and 'Bharat Craft' selling directly through their platforms, which might have less or negligible commission fees due to associated government funding and subsidies. Moreover, it is interesting to investigate informal ways sellers adapt to the online ecosystem, which would save them intermediaries and other costs to place the products in the appropriate markets. Hence, the third tier is rural sellers arranging sales autonomously through social media, including marketing and selling products on Facebook, Facebook, and Instagram lives, sending product pictures to individual clients through WhatsApp or creating WhatsApp groups for all the clients. The third tier is a perfect example of sellers utilizing

localized resources, adapting to utilize social media affordances, and exercising their freedom to expand outreach to broader markets.

5. DISCUSSION, STRATEGIES AND SOLUTIONS

For the discussion on sustainable development of e-commerce in rural areas, the cube framework by Hilbert (2012) points towards areas that require special attention, such as specific user interface design for supporting semi-literate or illiterate users and policy intervention to bring the MSMEs on board with policies to enhance human capabilities and skills. The purpose of these policies is to structure digital development and bring about sustainable development with the e-commerce connectedness of rural India to provide the opportunity for microentrepreneurs to capitalize on e-commerce.

5.1 Ensuring accessible e-commerce designs for illiterate users

Semi-literacy, illiteracy and lack of information knowledge prevent rural microentrepreneurs from sustaining themselves in the online marketplace. Goetze and Strothotte (2001), Huenerfauth (2002), and Parikh, Ghosh, and Chavan (2003) have proposed the usage of graphics within the design to facilitate usage among illiterate users. It is essential to understand that e-commerce initially originated in the Global North, and Global South adopted the e-commerce platforms as it has minor changes to its basic structure and user interface. An example is Amazon, whose interface is the same as amazon.com and amazon.in (India). While the users from Global North and urban India would have comparable literacy to comprehend the e-commerce design principles for those platforms, the users from rural India are socially excluded because those platforms do not match their level of comprehension. Hence, for the financial inclusion of rural users, e-commerce platforms should be designed to be more accessible. In the article "Text-Free User Interfaces for Illiterate and Semi-Literate Users," Medhi, Sagar, and

Toyama (2006) state that useful platforms for illiterate users should have a user interface that novice illiterate users can operate with no guidance or training from anyone. Medhi et al. strongly believe that "if the UI were designed well, users would not require formal literacy, computer skills, or any external assistance to operate the application" (p. 72). An on-ground paper prototype experiment seeking to develop an accessible user interface for rural semi-literate and illiterate users by Parikh, Ghosh and Chavan (2003) revealed that most users could recognize the numeric keypad, its purpose, and various icons (p. 17). The users demonstrated strength in associating ideas and actions with highly representational icons relating to the idea they meant to represent (p. 19). This is critical in recognizing the ease of the users with numbers and graphic elements despite low literacy levels. The users need to be able to operate the e-commerce platforms without formal training because access to a training programme might not always be feasible considering the vast population of rural India. The graphics-oriented user interfaces could be combined with less text with a choice of vernacular and regional languages to assist users in easily comprehending the content.

5.2 Opportunities for microentrepreneurs to sell online

The rural artisans generally sell their products within the markets in their villages, travel outside their districts, and sometimes even travel to cities to sell their products for broader outreach. Market outreach is a tedious process for the sellers due to travel and accommodation costs, among other hurdles. The COVID-19 situation was an environmental intervention encouraging MSMEs to sell online. According to Gopal Pillai, VP of Seller Amazon, COVID-19 has increased customers' demand and seller registration to join online journeys (Naik, 2019). Flipkart adds that the spread of COVID-19 has urged sellers to re-think their usual mode of operating and realize the value of e-commerce, which extends their outreach to the market amid

guidelines to stay away from crowded markets (Abrar, 2020). E-commerce allows rural artisans to start a new business or promote an existing one with low investment cost since stocking products in a brick-and-mortar shop is not required, saving them rent or the cost of owning a shop. It provides merchant autonomy to sell the products based on their production speed. Mainstreaming of e-commerce among rural micro-entrepreneurs can bring social change by reducing the inefficiencies arising due to shortcomings of the traditional channel intermediaries, such as having intermediaries buy in bulk for a much lower price and sell at high rates in cities. Switching to an online marketplace can eliminate the intermediaries, which can help artisans set higher pricing for the same item being sold for a lower price earlier. It provides easy access to markets nationwide and also an opportunity to export internationally in some cases. According to a recent news report in India's leading newspaper, The Time of India (2020), the sellers registered for Amazon India's 'Global Selling' program noticed a 76% hike in sales for Black Friday. Hence, adopting e-commerce contributes to the financial inclusion of rural micro-entrepreneurs into the mainstream practice and supports poverty alleviation providing more autonomy to the sellers to pick their markets.

As per the 3-tier e-commerce resources explored earlier, it is essential to note that amid high commission fees and other onboarding restrictions for rural artisans by giants such as Amazon and Flipkart, the state governments are seeking their support in promoting MSME government initiatives. The government is also promoting their independent initiatives to support rural artisans when it becomes too difficult to get assistance from the e-commerce joints, such as the KVIC Khadi sales portal. To combat the problem of poor transportation infrastructure, KVIC has tied up with India Post for item delivery and provides authority for e-tailers to set their pricing. This eliminates or reduces the commission to the e-commerce giants. This case

exemplifies the power of the government in demonstrating solidarity and regulating fair trade for rural sellers.

Furthermore, various studies have observed the handloom and handicraft merchants autonomously selling their products by utilizing live streaming affordances of Facebook and Instagram and sharing product catalogues through WhatsApp to adapt to the available resources without training. However, relying on social media primarily for those who are not tech-savvy and from a lower socioeconomic background might bring their own hurdles, such as transporting the product primarily to and from geographically remote areas and digital payments. Jack, Chen and Jackson (2017) share a case of a remote region Phnom Penh in Cambodia, that explains how a small firm posts the product on Facebook; the price negotiation takes place in the direct messaging service once the purchaser agrees on the price, the delivery is coordinated with the purchaser. This tedious process involves coordination between various people, which would be difficult for rural sellers. The availability of technical, infrastructural and policy interventions would assist the rural handicraft merchants with capacity building and generating livelihood opportunities independently. It can be scaled to rural regions across the nation.

5.3 State Policies to provide a sustainable environment for micro-entrepreneurs.

Policy intervention is required from the central and state governments to facilitate further the prevalence of e-commerce among artisan sellers in rural India. Firstly, the individual states in India signing MoUs with giant e-commerce such as Amazon or Flipkart model has been working well. Hence, the government can incentivize giant e-commerce firms to promote local artisans and help them onboard. Gopal Pillai, VP at Seller Services, Amazon India, explains that these initiatives help MSMEs with required technical and operational skills, along with considering adding helpful features for those who sell through mobile phones (Naik, 2019). Secondly, the

bottom-up model by Heimerl et al. (2013) can involve the local people more in running e-commerce by leveraging local information, transportation infrastructure, and labour. Thirdly, Alibaba's rural expansion model with rural service centers helping entrepreneurs learn to sell online is exemplary. This can be scaled with the help of the government policies for the e-commerce giants to have a rural service center in villages, which would help rural sellers onboard and support dealing with customers post-selling. The hurdles for the sellers, such as return on merchandise, can increase the business operation cost; At the same time, these cannot be eliminated; having support can make it easy for the sellers to understand and operate within an online marketplace environment. They can receive support on appropriately fulfilling the orders, providing professional customer support, and exercising control over the selling procedure. For the rural sellers, "lack of on-ground presence, including poor after-sales services, is a quick way to lose customers" (Bahree, 2018). Also, this model can help overcome the transportation infrastructure difficulty by shipping the goods to a district or village at the center, where the rural population can arrange a pick-up. This complies with the 'creative infrastructural action' defined by Jack, Chen and Jackson (2017) as the resourceful and imaginative development of a homegrown infrastructure to support the ecosystem for the remote population to enjoy the conveniences of online selling (p. 6512, 6519). This also means working through the drawbacks of poor transportation infrastructure in rural areas and coming up with makeshift arrangements to utilize e-commerce best. According to Kalambe (2019), the area that requires improvement includes mentorship programs and the development of a skilled digital workforce. The government has already announced the inception of 'Bharat Craft' as a platform for artisans across the nation to sell the products online, which would follow a model similar to China's Alibaba. The concept of rural service centers can be added to the structure of 'Bharat Craft.'

6. CONCLUSION

India's technology and information infrastructure have been upgraded to provide widespread access to smartphone devices and affordable data plans; demonetization significantly moved the population towards a cashless economy. Moreover, government programmes such as Digital MSME and Atmanirbhar Bharat projects encourage the digitization of businesses at any level and initiate a wave of self-sufficiency among the people. With these existing resources, this project focuses on how artisans, handloom, and handicraft merchants from India's rural regions with lower socio-economic backgrounds can utilize e-commerce to reach broader markets.

The penetration of e-commerce for the MSME ecosystem can ensure the financial inclusion of semi-literate or illiterate lower socio-economic communities of rural micro-entrepreneurs. With the application of the Cube framework, this project explores possible policy interventions to be heeded by the government and the e-commerce giants to enable micro-entrepreneurs in rural communities to utilize mobile phones to sell their goods online. Cube framework dissects interdependencies between technology, policy, and society to foster e-commerce for this population for social change. The scrutiny of all these factors helps shed light on the lacking areas such as human capabilities and skills to adapt to the new technologies, lack of adequate policies and dedicated e-commerce user interface to these communities. This research suggests altering the affordances of the e-commerce platforms to support the inclusion of semi-literate and illiterate users by providing graphics-oriented interfaces with regional vernacular languages.

Moreover, the government can collaborate with e-commerce giants to design e-commerce platforms offering graphics-oriented user interfaces and regional vernacular languages for seller operations and support. This would help rural sellers from lower socioeconomic backgrounds

gain control over their mobile user interfaces. From traditional selling to joining the digital bandwagon would contribute towards their poverty alleviation. Both are required to close the information knowledge gap: user interface adapted to the needs of these communities and technical on-ground support. Further policy intervention by the government can provide funding and subsidies to artisan cooperatives for providing technical knowledge and support to the growing rural micro-entrepreneurs. The government has to increase e-commerce awareness across artisan cooperatives. Also, collaborate with e-commerce giants to introduce rural service centers in rural areas following Alibaba's rural expansion model; rural service centers can be introduced in villages. This can be a policy intervention by the government mandating the e-commerce giants with a certain amount of turnover to provide rural service centers within a certain radius of the area.

Moreover, facilitate India Post, Department of Post by the government, to escalate e-commerce in remote regions. The India Post can be leveraged as an ally to overcome the drawback of poor transportation infrastructure. The e-commerce industries can further leverage the postal infrastructure to increase urban and rural India's connectedness. The government can facilitate this relationship between the India Post and e-commerce companies to build logistics capabilities to serve rural consumers and drive future growth.

A few states in India have already signed MoUs with e-commerce giants such as Amazon and Flipkart to expand initiatives for artisan support such as 'Kala Haat' and 'Samarth,' respectively. Amazon's 'Kala Haat' success with the U.P. government and Flipkart's 'Samarth' success with the Karnataka government depicts a scalable model that can be extended within every state. Per the MoU, the e-commerce giants provide various resources on-ground to rural sellers. This model has succeeded as Uttar Pradesh ties up with Amazon and Karnataka with

Flipkart. These are exemplary initiatives in collaboration with artisan cooperative bodies that present a model that can be applied to other states nationwide. The next steps for the e-commerce giants could be easing the onboarding procedures for rural artisans for initiatives such as "Amazon Global Selling" to extend their outreach to international markets that connect the sellers with around 200+ countries across the globe (Amazon Services, 2020). The government can regulate various policies to facilitate the growth of MSMEs by bringing together various industry stakeholders, experts, and policymakers to help start-ups and micro-entrepreneurs sell online. Khatri (2019) advises that the government should enhance awareness about the existing support system and facilities available for the betterment of the MSMEs. This includes popularizing initiatives such as the Khadi and Village Industries Commission, KVIC, under the Ministry of MSME, which collaborates with local artisans and brings them the maximum profit and minimum or nominal commission fee (KVIC, 2020).

Policy interventions to increase the awareness of e-commerce market models. This research provides strategies for stakeholders to encourage rural micro-entrepreneurs to sell online and contribute to the financial inclusion of rural sellers in other nations in both the Global North and South. The critical solutions for sustainable economic development are an accessible user interface for semi-literate and illiterate sellers and support to onboard and sustain e-commerce with rural service centers.

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