Jurnal The Messenger, Vol. 15, No. 1 (2023), pp. 52-67
P-ISSN: 2086-1559, E-ISSN: 2527-2810
DOI: 10.26623/themessenger.v15i1.4473

Blurring the Relationship Boundaries between Women and Technology

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Abstract
Introduction: Technology penetrates society and has an impact on daily life. Historically, technology was dominated by men. Recently, women have become closer to the internet to share ideas through cyberspace, build sites that allow them to interact with women and women's communities, and use the internet to help their productive activities. This study attempts to explain modern society's connections between women and technology. The data analysis used cyberfeminism theory.
Methods: This study used qualitative methods and illustrated the case study of SiBakul platform usage by MSMEs in the Special Region of Yogyakarta. SiBakul is an ICT-based platform for branding the digital ecosystem of MSMEs in DIY Province. The data collection employed in-depth interviews, observation, and documentation. Data sources include MSME actors and the government responsible for the MSME sector.
Findings: The results showed that SiBakul is the driving force behind digital platforms that support MSMEs' activities. Through the marketplace, the MSME actors, both women and men, use technology. The analysis concludes that there is a possible equality between women and men in accessing and using technology to promote and market their business products. The women develop their insight into cyberspace to increase their knowledge and be more productive economically.
Originality: The study uses the cyberfeminism perspective to highlight the importance of adapting to environmental changes in the Industry 4.0 era with women's equality for broader access to technology. Besides, it is considered for women's equality in public areas and the productive sector, such as in MSME activities.
Keywords: Cyberfeminism, Equality, MSMEs, Women, Technology.

Introduction
One of the seventeen sustainable development goals (SDGs) agendas is gender equality. Recently, during the Industry 4.0 era, information and communication technology has been closely involved in the development process. Businesses engaged in the economic sector are driven by technological innovation (Reyes & Neergaard, 2023), and technology positively affects economic development (Mosey et al., 2016). Technological advancements have changed how individuals think, act, communicate, and work in various fields (Ajja et al., 2019).

On the other hand, the development of ICT presents a challenge for its users. From a gender perspective, disparities in technology users between women and men still occur (Widyastuti, 2016). Women face significant obstacles to obtaining, utilizing, and owning technology (Ajja et al., 2019). Women establish technology-based

Article History: *Received December 15, 2021; Revised May 16, 2023; Accepted December 02, 2024; Published December 17, 2024*

businesses at a much lower rate than men (Cansiz, Mehmet, Teknici, 2018). Women still participate less in technology activities than males (Ascher, 2012). The fact showed that more women and men depend on small business activity for all or part of their livelihoods (Baines & Wheelock, 2000). Globally, women are increasingly joining the ranks of entrepreneurs (Baral et al., 2023). Access to information and communication technology evenly requires further elaboration. Technology has become increasingly influential in driving people's lives, especially when the Covid-19 pandemic hit almost the entire world.

The end of 2019 has its history for the community. The coronavirus disease, also known as Covid-19, requires that most activities be carried out at home. There are many activities that internet network facilities then divert, such as education, social life, mental health (Chaturvedi et al., 2021), and economic activities (Rassanjani et al., 2021). Individuals use the internet to build networks and become part of online communities. Online media, including new and social media, are becoming practical platforms for the 'global village.' Marshall McLuhan defines a global village as a simultaneous space that is not limited by space and time, the 'global village' metaphor as a space of simultaneous and instantaneous happenings where 'time has ceased, and space has vanished. Overgrowing equipment, namely mobile phones connected to the internet network, seems to break the long communication cycle. Within seconds, one another can share text, images, and even audio-visuals. The information and communication technology revolution allows everyone to share and disseminate information anytime (Lestari & Sunarto, 2018). This facility can be presented quickly, accessed anywhere, and is affordable. It seems that life cannot be separated from smartphones or mobile devices (Barkhuus & Polichar, 2011).

This condition triggers the emergence of many obstacles experienced by some women who handle Micro, Small, and Medium Enterprises (MSMEs). They are still giddy and unprepared with the equipment for this activity change. Those with limited abilities must be more familiar with technology and adequate facilities (Gani, 2021). The number of internet users in Indonesia as of January 2020 was 175.4 million out of a total population of 272.1 million. According to data from APJII, in 2017, 48.57 percent of female internet users were female, and the rest were male users (Indonesia, 2017). Likewise, data from the Central Statistics Agency in 2018 for women is still lower than for men (Kusnandar, 2019). However, Instagram tends to be dominated by women, as much as 50.8 percent (Pertiwi, 2019). The reality is that there are several additional jobs assigned to women, such as replacing the duties of teachers at school for their kids, doing their routine tasks, and tending to switch to internet-based media.

The Internet provides convenient services for the public in information and communication. However, the internet is a digital platform that can create gender bias against women, such as developing virtual public spaces for commodity facilities that reflect women's values, priorities, and aspirations. The increase in the internet for online activities raises many concerns for women (Mariscal et al., 2019). For example, the increasing demand for labor at home, the risk of being trapped in violence, and increased online abuse and harassment. Even more extreme, this concern arises because women have limited access to and lack equipment and knowledge of technology (Tu, 2020).

Especially now that the use of the internet for social media is growing, it has many impacts on its users. WHO (2020) explains the many problems women experienced during the Covid-19 pandemic. Violence against women is widespread.

Globally, one in three women worldwide experiences physical or sexual violence by an intimate partner. Violence against women tends to increase during emergencies, including epidemics. Data in several countries, such as China, the UK, and the United States, shows increased domestic violence cases since Covid-19, including Indonesia (World Health Organization, 2020).

The impact of internet use is also mass and global. The world is witnessing the effect of using new media and social media in various aspects of people's lives, as we know that social media has changed communication, interaction, connectivity, and creativity (Deepak et al., 2020). Several types of social media are also dedicated to input, interaction, and content sharing, including forums, microblogging, social networking, social bookmarking, social curation, and others. All types of media with this internet network are interactive, as they raise and discuss global issues.

For the capitalist industry, the internet trend is a commodity aimed at men's fantasies over women. As for feminism, there is a change that the internet is directed to build a free space for women. According to Sadie Plant (1994 in Consalvo, 2002), the internet is vital for women to claim their territory and use technology to explore societal power and authority. As a learning space and an engagement with technology, individuals and groups have created websites, discussion groups, and online learning resources for women about internet technology.

Specifically, the study uses the case of the Micro, Small, and Medium Enterprises (MSMEs) phenomenon in the Special Region in Yogyakarta (DIY). The DIY is a province that is proactive towards ICT changes. It is inseparable from the enthusiasm to realize the vision of increasing the dignity of the people of Jogja.

In the MSME sector, DIY is one of the provinces the central government has pushed through the Indonesia Together Movement ('Gerakan Indonesia Bersama'/GEBER UMKM). This movement encourages MSMEs for economic recovery through the introduction of local products. In addition, DIY is one of the targets of the Indonesian government's strategic program to transform micro-enterprises from informal to formal through Garda Transfumi. The MSME sector is the central economic pillar, accounting for 98.36% of the total economic enterprises in DIY (Regional Development Planning Agency, 2020). On the one hand, identified by gender, the MSME sector in DIY is dominated by women, reaching 60% of the total business actors. Building women's power and authority through ICT becomes simple throughout this sector.

The digital transformation of MSMEs in DIY continues to campaign in line with the Industrial Revolution 4.0. Some digital media developed include SiBakul, Jogjaplaza, Dodolan, and Nglarisi (Prasetyo, 2020). This study describes the use of the SiBakul platform by MSMEs in DIY. SiBakul is a pioneering MSME development managed by the Provincial Office of Cooperatives and SME of DIY. The DIY Industry and Trade Office manages Jogjaplaza, while the Yogyakarta City Government develops Dodolan and Nglarisi. SiBakul was chosen in this study because it is relevant to developing the MSME sector in DIY to become the initiator of creating a marketing platform for lower government.

This study describes the relationship between women and technology in modern society. (a) Describe the technology platform for MSMEs in the form of SiBakul Market-Hub; (b) Identify women's adaptability in cyberspace through the use of the SiBakul platform. (b) Analyse opportunities for women and men to access technology (SiBakul platform) using the concept of cyberfeminism theory.

The cyberfeminist concept is relevant to the analysis of this research. Cyberfeminism is one of feminism and socialist, ecofeminism, liberal, and other feminist schools. In 1994, Sadie Plant, the Cybernetic Culture Research Unit director at the University of Warwick, UK, coined cyberfeminism. This genre emerged to accommodate the work of feminists interested in theorizing, critiquing, and exploring the internet, cyberspace, technology, and new media in general (Verma et al., 2018). VNS Matrix is an Australian-based group of media artists, including those first to use 'cyberfeminism' in the early 1990s (Hawthorne and Klein, 1999). The philosophy built into cyberfeminism is that first, there is a power difference between women and men, especially in digital, and second, cyber feminists want to change an unequal situation.

Cyberfeminism tends to highlight the capacity of cyberspace to produce a more egalitarian and accessible society (Smitley, 2004a). Based on the thoughts of Sadie Plant, cyberfeminism emphasizes the central role of gender in social relations and the consequences of women's oppression. Plant (1997) further defines cyberfeminism as a rebellion against a patriarchal domination culture and demands a change in relations between women and women. Cyberfeminism is an insurrection on the part of the goods and materials of the patriarchal world, a dispersed, distributed emergence composed of links between women, women and computers, and communication and connectionist links (Royal, 2008). Meanwhile, Verma et al. (2018) define cyberfeminism as an online feminist who uses social media to connect with other feminist organizations. Social media helps feminists to be more visible and heard than in conventional media because the viral nature of social media provides more connectivity in less time, and its interactivity and network reach is also global.

This theory emphasizes cyberspace's transformative power, enabling women to transcend gender, class, ethnicity, sexuality, and other identities to produce a more egalitarian reality in virtual public spaces (Consalvo, 2002; Smitley, 2004b). Cyberfeminism emphasizes the potential of digital culture to act as the foundation for an egalitarian global democracy. Feminists recognize that the internet is vital and a means for capital gains regarding the oppression of women worldwide. This school provides a new approach to gender and technology and contributes to challenging masculinity with technology. The domination of men over women shows patriarchal power evolving from the real world to the virtual world, and cyberfeminism is a partial solution to women's oppression.

Cyberspace provides a new space where gender relations can be rebuilt, and feminists must take advantage of online media. Feminist intervention in cyberspace is not limited to academic theory. Feminist politics has a crucial role in shaping cyberculture. Katie Ward (2000, in Bell et al., 2004) divides cyberculture practices into two categories. (a) Online feminism uses cyberspace to expand the feminist agenda by raising awareness of gender equality and justice ideas. (b) Cyberfeminism online refers to more expressive engagement in cyberspace by calling themselves 'geekgrrrls', 'nerdgrrrls', replicunts', and so on, who claim cyberspace as a space for women to realize their goals.

There are two other discursive views developed by M. Smitley (2004) regarding cyberfeminism, namely (a) An optimistic view, which is a virtual reality as a remedy for the loss of social capital; (b) A pessimistic view, the lack of enthusiasm for accepting technological innovations. Women use social media sites and resources to connect to the outside world and gain more knowledge, improve their social status, organize social causes, and deal with the injustices they feel. Women use social media to build capacity

and independence through productive activities, as illustrated in a study on MSMEs in DIY. Cyberfeminism believes that women can be empowered by using better knowledge of new media technologies and creating more opportunities to improve their work (Consalvo, 2002).

The evolution of the relationship between women and technology is more dynamic than before. Research into the connection between ICT, gender, and entrepreneurship, including women's empowerment, has been broad and evolving (Bourne & Calás, 2013; Esquivel, 2016). Nevertheless, previous studies tend to focus on the role of ICT in society, which has a significant role in the MSMEs sector (Barykin et al., 2020; Dini et al., 2011). ICTs are changing people's lives (Walsham, 2012) and are important for a better world (Qureshi, 2015). In addition, ICT bridges community interactions in businesses, such as interactions with customers, services, and product transactions (Braojos et al., 2019; Hajli, 2014). Society seems to depend on the ICT (Carillo et al., 2017). MSMEs, including women entrepreneurs, need ICT to develop their businesses (Nambisan et al., 2019; Pelletier & Cloutier, 2019; Wu & Parkvithee, 2017; Stephens et al., 2021).

For novelty, the authors make the following literary contributions: (1) This study offers a thorough explanation using cyberfeminism to explore the relations of women and technology from an MSME study area. Cyberfeminism is the framework that helps comprehend how gender is a fundamental factor affecting MSMEs' ICT-based activities. (2) The case study used the Special Region of Yogyakarta, a province with a digital platform with a driving force for lower-level regions. The platform could represent women's initiatives to develop in public areas using ICT, especially for the MSMEs sector.

Methods

This research was conducted with a qualitative approach. Qualitative research tries to understand or interpret phenomena or meanings brought by individuals, involving various empirical materials such as case studies, interviews, observations, history, and interactional and visual texts describing moments, meanings, and problems in an individual's life (Creswell & Poth, 2018). This study aims to describe conditions or events related to the research phenomenon systematically and accurately. Qualitative researchers contribute to specific disciplinary knowledge, especially in the social sciences (Hammersley, 2008). The case study method explores phenomena in this study regarding how and why (Yin, 2018) the relationship between women and technology in modern society. The unit analysis in the study is as follows: (a) The description of SiBakul, a digital marketing platform. (b) Identification of the use of the SiBakul platform by women entrepreneurs. (c) Identification of the relationship between women and technology using the concept of cyberfeminism.

The study was conducted in the Special Region of Yogyakarta (DIY/ Daerah Istimewa Yogyakarta) because it was considered strategic as one of the provinces targeted for ICT development, especially being proactive in digital transformation for MSMEs. The case study is taking the SiBakul Market Hub. SiBakul was chosen because it became the platform that initiated the development of marketing platforms at the district level in DIY Province. SiBakul is a digital platform that manifests how to achieve MSME development goals in DIY, namely realizing a vision to answer global challenges, anticipating rapid environmental developments and changes, and increasingly fierce competition. This goal underpins the government's support for

building MSMEs with capabilities aligned with information and communication technology development. MSMEs going digital is one of the strategic priorities for developing the cooperative sector and MSMEs in DIY.

Moreover, efforts to recover the economy from the impact of the Covid-19 pandemic have been encouraged by the government to oversee the creation of digital-based MSMEs so that they can rise and be competitive. The data obtained are mainly from interviews, observation, and documentation. Data analysis was carried out in stages: data collection, reduction, research, and conclusion (Milles et al., 1992). In the initial stage, interviews were conducted with MSMEs and government actors. Furthermore, the researchers mapped relevant data to see the relationship between female MSME actors and the use of technology. Moreover, an analysis was carried out in which researchers identified conditions in MSMEs and analyzed them using the basic framework of cyberfeminism theory. Finally, the relevant conclusions are drawn.

Results

Cyberfeminism uses new media and social media as the main tools that help gain control over their lives. It cannot be ignored that cyberfeminism is part of women's empowerment. Technology has the power to unleash men's domination of women, and it can help achieve gender equality, independence, and empowerment for women (Mohanty & Samantaray, 2017). The illustration of using the SiBakul platform shows women's ability to make strategic life choices. The online communication built by women is based on goals, objectives, ideologies, and interests. This website is a practical platform for the global village. Women can communicate one-on-one, one-to-many, many-many, and even do mass communication to build their business network through the internet. It helps facilitate mobilization, increasing geographic reach in the self-sufficiency movement, and providing a friendly platform for MSME actors to plan and implement their business goals.

DIY is the province with the smallest area after the Special Capital Region of Jakarta (DKI). However, DIY has various potential resources that can be developed for regional development. MSMEs are one of the sectors that are the mainstay for sustainable development. The MSME sector contributed to DIY's economic growth, reaching 79.6 percent of the Gross Regional Domestic Product or GRDP (Hardi, 2020).

DIY economy performance is also seen from the size of the GRDP, and in 2020, it was recorded at 138.39 trillion rupiah. This GRDP is generated from various business fields, including processing, agriculture, communication industries, construction, wholesale and retail trade, provision of accommodation, food and drink, government administration, education services, and information and other business fields. These various employment categories must be distinct from the business that develops in the MSME sector.

In terms of quantity, the number of MSMEs continues to increase. Data from the DIY Cooperatives and SMEs Service shows that the number of MSMEs continues to grow every year, as shown in Table 1; in 2020, the total number of MSMEs was 287,682; in 2019, there were 262,130 units; in 2018, there were 259,581. Furthermore, in 2017, there were 248,217 units. Based on the data, micro-scale businesses dominate the number of MSMEs in DIY. The data of DIY government (2020) is classified by type of business, including various businesses, trade, agricultural industry, and non-agricultural industry.

Table 1. Data of MSMEs in DIY

Year	Scale of MSMEs				Amount
	Micro	Small	Medium	Big	
2017	135.799	62.042	37.472	12.904	248.217
2018	141.991	64.896	39.196	13.498	259.581
2019	143.385	65.533	39.581	13.631	262.130
2020	188.033	58.980	30.664	10.005	287.682

Note: The table describes the data number of MSMEs in The DIY

In 2020, according to the Central Bureau of Statistics, DIY's economic growth tended to decline, influenced by the decreasing value in most business fields, especially those based on mobility and tourism. The Covid-19 pandemic contributed significantly to a decline in the DIY economy. As one of the efforts to restore the economic conditions in DIY, the Department of Cooperatives and SMEs developed an Information System for the Guidance of Cooperatives and Business Actors of the Special Regional Government known as SiBakul.

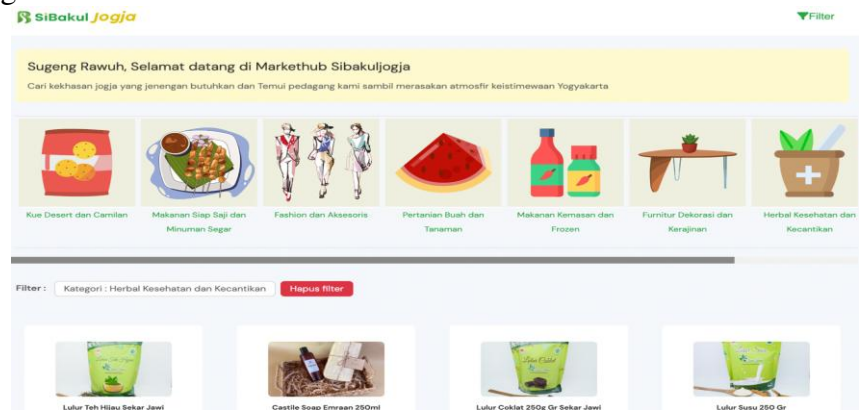

Figure 1: SiBakul-Digital Platform (source: Sibakuljogja.jogjaprov.go.id, 2021)

SiBakul is an information window for developing cooperatives and micro, small, and medium enterprises in the DIY province. The slogan is *"ngayomi segaligus ngurubi, ngayemi sekaligus nguripi."* This platform is a tool used by the DIY Cooperatives and SME Office to direct the development of cooperatives and SMEs to a future business model that is fast, accurate, and accountable. SiBakul Jogja is a data center for cooperatives and SMEs of the DIY local government. All activities are integrated to maintain solidity, update, accuracy, and data integrity that are precise, effective, and impactful.

SiBakul was initiated in 2017 as a service program to increase the capacity of both independent and MSMEs as members of cooperatives. As the Covid-19 pandemic challenged the implementation of Sibakul, some innovations and developments in line with these conditions are needed. The government is responding to some new problems for MSMEs and also considers that efforts are required to recover the economy by suppressing the spread of the pandemic. This government step is regulated in the Decree of the Governor (SK) of DIY Number 519/7669 regarding the call to purchase MSME products. Digital system innovation for MSMEs was developed with SiBakul Jogja free shipping costs (SiBakul Jogja free ongkir). The aim is that MSME products can still get buyers even though people do not do conventional transactions.

SiBakul program makes MSMEs clustering for its development, including institutional, production, financial, marketing, and digital marketing aspects, and is realized in an internet-based application. The role of the government through the

Cooperatives and SMEs Service, in this case, is to be the curator of MSMEs products and to bridge MSMEs through ordering online motorcycle taxis. Due to its online nature, the demand is to provide excellent service seven days a week. Human resource management is also prepared according to this need.

The innovation of the SiBakul free shipping program has specific objectives, which include (1) providing marketing stimulants to MSMEs affected by Covid-19 to consumers through online media (whether in the form of a marketplace, business WA, or other media content). (2) helping MSMEs to carry out business management and training in digital economic transactions. (3) providing support to online motorcycle taxis, which have experienced a decline in business turnover since the COVID-19 pandemic. (4) increasing people's purchasing power without violating social distancing policies. (5) supporting the regional economy in welcoming the new normal era to recover.

Figure 2. SiBakul Program Offline Activities (source: Author's Documentation, 2021)

The SiBakul program continues to be carried out with various innovations to adapt to new habits and post-pandemic recovery. The innovation carried out was a Sibakul product event held both online and offline by implementing health protocols. The offline events allow MSMEs to meet and inspire each other (see Figure 2). In addition, it can also develop the creativity of MSMEs to survive. DIY SMEs can access and use SiBakul openly. When identified by gender, the number of female workers in the MSME sector tends to dominate compared to men.

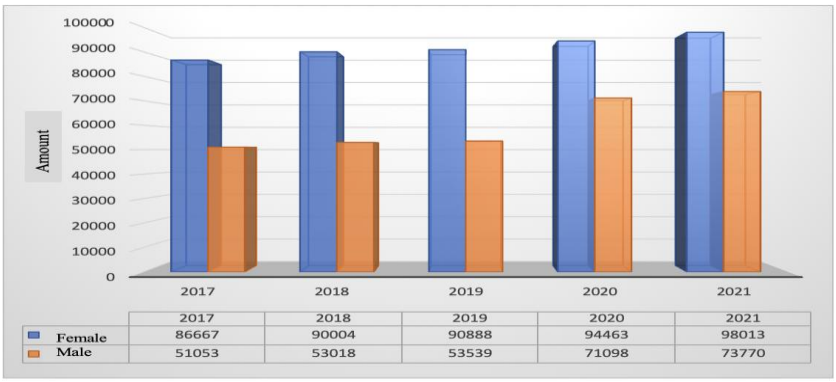

Figure 3. MSMEs Members in DIY (source: Analysis Secondary Data, 2021)

Based on Figure 3, the number of female workers in the MSMEs sector is higher than that of men, which always increases yearly. The challenge is that when women's access to technology is still limited, efforts must be made to improve it. The growth of

digital transformation in the MSMEs sector provides opportunities for women to have complete access to technology.

A case study using the SiBakul platform shows how women could access technology to market their businesses. The data show that in 2021, the number of female workers is as much as 57%, and the number of male workers is 43%. Meanwhile, when viewed from the aspect of using technology in the SiBakul case study, the percentage of women users is 49% and men 50.8%, so the quantity is still unequal. However, we can see that women's access to technology is only 1.8 percent different from men's. The details are presented in Table 2.

Table 2. User of SiBakul

No.	Gender	Bantul	Gunung Kidul	Kulon Progo	Sleman	Yogyakarta	Quantity	%
1	Female	40.496	24.347	16.131	42.115	16.631	148.436	49
2	Male	36.745	29.494	19.768	42.779	15.775	154.096	50,8
3	No mentions	91	18	19	100	40	269	0,2
				Total			302.801	100

Note: The table describes data users of SiBakul

Discussion

ICT is essential for everyday life (Qazi et al., 2022; Sun et al., 2020). ICT has enabled people to connect and communicate globally (Mackey & Petrucka, 2021). The growth of Internet use nowadays has become more heterogeneous in terms of geography, age, gender, class, and ethnicity compared to the beginning of its development in the mid-1990 (Paasonen, 2011). Technology, which tends to be specific to academics and programmers in affluent countries, is shifting to the technology used by more than 50% of the human population (Freuler, 2022). For MSMEs, technological innovation is essential. Innovation uses new technologies to improve efficiency and effectiveness (Sołek-Borowska, 2018). This mobile application and an internet network are crucial in developing several countries. The initial picture is in Europe, North America, East Asia, and Australia, where the internet is a medium for communication and information, and both contribute to classifying the ranks of users and encouraging a separate movement in cyberspace. The transformation of internet use is evidence of the equivalence between technology and the economy.

Based on the feminist paradigm, the development of the internet is seen in women's relations and technology. According to history, technology is dominated by men. Men are more proficient in technology than women (Goswami & Dutta, 2016). Despite women's increasing use of the internet, patriarchy is never absent. Men control the content and make benefits. They surf from site to site, while women only seek specific topics (Richard & Schall, 2006).

Sandra Harding (1993), as one of the initiators of feminist standpoint theory, emphasizes that research on women's lives will produce deviations not only from women's lives but also from men's lives and the entire social order. Feminist Standpoint Theory is a feminist epistemology and methodology for feminist researchers in the social sciences. It is arguably the theory with the feminist point of view that has had the most influence and is the subject of most of the debate (Alcoff and Potter, 1993).

The results of feminist research underpin the marginalization and exclusion of women in techno-scientific culture (the relationship between gender, science, and

technology). In addition, feminists analyze the impact of computers and the internet on women's lives, including positive and negative effects (Pujol & Montenegro, 2015), until cyberspace is seen as a patriarchal domain and domination that is structured to exclude women's participation. Cyberfeminism is closely related to cyborgs and cyber organisms (Bell et al., 2004).

One of Sadie Plant's dominant arguments is that technology is a masculine culture involving men's interests rather than women's. Technology is a masculine creation (Lie, 1995). To illustrate, although women have been involved in creating and developing computers, their contributions have remained marginal, and their participation needs to be addressed throughout history. Nevertheless, feminists such as Judy Wacjman, professor of sociology at the Australian National University in Canberra, and Cynthia Cockburn, an independent student and activist in London, argue that technology requires continued interrogation and reconceptualization and women need to be more active in technology to be better off (Consalvo, 2002). It is where cyberfeminism departs.

SiBakul is part of the expression of women entrepreneurs in DIY who want to develop and be independent through their productive efforts. According to Pollock and Sutton (1999), the women's community emphasizes 'communication technology' more than 'information technology'. Their process on the SiBakul platform is centered on communicating and building networks to introduce and sell their products.

Several facilities can be used on the SiBakul platform page, such as the free shipping market hub, which promotes MSME products, the Kotagede YIA market gallery, LADAKU (MSMEs data service), and others. The promoted MSME product categories include ready-to-eat food and fresh drinks, packaged and frozen food, dessert cakes and snacks, health and beauty herbs, and other product variants.

Women in cyberspace are placed more as participants, subjects who move the economic sector for their lives. Women entrepreneurs with various backgrounds in DIY as users of the SiBakul platform get the opportunity to present products and develop strategies to package their products via online marketing. Through interaction in this virtual world, they openly had the chance to market their products and distribute them free of charge through the free shipping market hub program.

For feminists, the internet and communication technologies have brought about a change in the way they work. ICTs enhance opportunities for underprivileged populations, government, and service delivery (Dar & Shairgojri, 2022). The reality of using the SiBakul platform can illustrate the spirit of women related to technology and how business actors, both women and men, use technology, promote products, and make transactions. Based on the SiBakul platform observation, free shipping market hub services are increasingly in demand by MSME players. In addition to displaying the products offered, they can track the product delivery process when a transaction occurs by entering an invoice number. It even encourages MSMEs to establish offline interactions and share business development information.

The virtual space on the SiBakul platform, with 49% female users, reflects that the internet is feminine. This context illustrates that there has been a change by eliminating boundaries between public and private spaces. Welcoming the spirit of Sadie Plant et al., (1997) the internet now become more of a medium for women. SiBakul is a platform where women and men can access technology equally. The participation of women and men as actors, subjects of presentation content, information production, and gender roles emphasize social relations in cyberspace.

Based on interview data from the DIY Cooperatives and SMEs Office sources (2021), SiBakul is part of a digital transformation where cultural aspects and gender differences are not obstacles to its implementation. Both women and men have equal access. The evaluation results of the training also showed the spirit of women in using the SiBakul platform as a medium to offer their products.

The spirit of cyberfeminism ensures that blurring the relationship between women and technology is one way to achieve gender equality. Transition is present in people's lives with new technology, both in the speed of information transfer, sharing information on a large scale, and providing close relations between groups of women online.

Conditions have changed when compared to the 1990s. Although a tiny part of the female population is still excluded, now the internet allows women to work as feminists aspire. However, sometimes, some difficulties arise in achieving inclusive relationships. As in the case study of SiBakul users, the tendency of the diversity of women's abilities and also age factors affect the accessibility of women to technology. This data means that transparency of information and the distribution of open accessibility between women and men are the keys that can encourage action and change in the future.

Cyberspace enables people to transcend the boundaries of the environment in which they live to exchange information and experiences with members of the MSME community. At the same time, freedom in this digital space footprint allows global resources to reach local communities. Moreover, membership in the SiBakul platform reaches the entire DIY community and global market reach. This means that information of an enormous scope will also bring significant changes. Women entrepreneurs of MSMEs must be prepared to face the global-local range areas in their daily lives. While the Internet can help communication across continents and countries, some barriers for women will arise related to language acquisition (Pollock and Sutton, 1999).

Another more significant challenge is the existence of equal access for women entrepreneurs. Feminism advocates for gender equality, individual freedom, and women's empowerment. It is an existential fight to declare one's uniqueness (Mohanty & Samantaray, 2017). For women who live in strategic locations, most can access infrastructure with internet services, and some rely on smart devices for now. Women entrepreneurs provide society with many solutions to organizational and business issues and creatively utilize entrepreneurial prospects (Roy, Sujit, 2014). The focus then is on women entrepreneurs who need to be covered by digital facilities, have limited conditions, have low incomes, and cannot bring this sophisticated infrastructure into their environment. The consequence that arises is the challenge of feminists to continue to synergize with various parties, especially the government. The conditions increasingly developing by relying on technology to support communication and relationships with other people will undoubtedly shape digital culture in the future. In addition, in line with the SDGs agenda, technology is essential to advancing gender equality.

This research focuses on describing the relationship between women and technology within the framework of cyberfeminism. The specified case study is the SiBakul Market-Hub platform because researchers limit the survey's focus to platforms that are identical and directly related to the MSME sector. On the one hand, the DIY Province has a variety of ICT-based platforms. It can be strengthened by adding case studies in other sectors, such as industrial and trade platforms and marketplace

platforms in lower-level regions. In addition, this study was conducted during the Covid-19 pandemic, when this condition became a catalyst for development in all ICT-based aspects. Further studies are needed to enrich data related to this theme about post-pandemic conditions with new habits.

Conclusion

A study of cyberfeminism can present a new understanding of the relationship between women and technology. According to cyberfeminism, technological sophistication will blur the boundaries between humans and machines, eventually making the categories between women and obsolete men. Women become free from power structures when technology advances and people's access to information technology gets wider. Technology now gives women the power to express their ideas, develop creativity, create new businesses, and complete their lives rationally and revolutionary. The depiction of business actors using the SiBakul platform in DIY is evidence of the openness of the flow of technology, the internet, and women. It reflects how women get out of the boundaries that create barriers and categorize identities for women. Various challenges will arise in the long term and require constant struggles and commitments within the feminist movement. In short-term situations, that must continue to be carried out, among others, monitoring uploaded content to establish online interactions, promote their products, and even develop their MSME level. These steps will impact the effectiveness of its use both for campaigning and as a vehicle for realizing gender equality between women and men. This research contributes to efforts to build gender equality in access to ICT between women and men as aspired to in the SDGs. In future studies, the scope of the case study can be expanded as a development study on the same theme. In addition, the research design allows it to be packaged in comparative studies between cases to look comprehensive. The uniqueness of the results of this study can be a baseline for developing relevant studies in the future.

Conflict of Interest

We certify that there is no conflict of interest with any financial, personal, or other relationships with other people or organizations related to the material discussed in the manuscript.

Acknowledgements

Appreciation is extended to all co-authors, research collaborators and the SiBakul for their valuable contributions and constructive discussions that enriched the quality of this study.

References

Ajja, S. H., Samiti', S., Arts, S. K. S. J., & Sheshgiri, S. M. (2019). Women Empowerment And Women Entrepreneurship: An Overview. In *Ethics and Society* (pp. 44–54). The Bhopal School of Social Science. https://www.researchgate.net/publication/331982270_Women_Empowerment_and_Technology_An_Overview

Alcoff, L. and E. P. (1993). *Feminist Epistemologies*. Routledge.

APJII. (2017). *Penetrasi dan Perilaku Pengguna internet Indonesia (Penetration and Behavior of Indonesian Internet Users)*. https://web.kominfo.go.id/sites/default/files/Laporan Survei APJII_2017_v1.3.pdf

Ascher, J. (2012). Female Entrepreneurship – An Appropriate Response to Gender Discrimination. *Journal of Entrepreneurship, Management and Innovation*, *8*(4), 97–114. https://doi.org/10.7341/2012847

Baines, S., & Wheelock, J. (2000). Work and employment in small businesses: Perpetuating and challenging gender traditions. *Gender, Work and Organization*, *7*(1), 45–56. https://doi.org/10.1111/1468-0432.00092

Baral, R., Dey, C., Manavazhagan, S., & Kamalini, S. (2023). Women entrepreneurs in India: a systematic literature review. *International Journal of Gender and Entrepreneurship*, *15*(1), 94–121. https://doi.org/10.1108/IJGE-05-2021-0079

Barkhuus, L., & Polichar, V. E. (2011). Empowerment through seamfulness: smart phones in everyday life. *Personal and Ubiquitous Computing*, *15*(6), 629–639. https://doi.org/10.1007/s00779-010-0342-4

Barykin, S. Y., Kapustina, I. V., Kirillova, T. V., Yadykin, V. K., & Konnikov, Y. A. (2020). Economics of Digital Ecosystems. *Journal of Open Innovation: Technology, Market, and Complexity*, *6*(4), 124. https://doi.org/10.3390/joitmc6040124

Bell, D, E. al. (2004). *Cyberculture: The Key Concepts*. Routledge.

Bourne, K. A., & Calás, M. B. (2013). Becoming "real" entrepreneurs: Women and the gendered normalization of "work." *Gender, Work and Organization*, *20*(4), 425–438. https://doi.org/10.1111/j.1468-0432.2012.00591.x

Braojos, J., Benitez, J., & Llorens, J. (2019). How do social commerce-IT capabilities influence firm performance? Theory and empirical evidence. *Information and Management*, *56*(2), 155–171. https://doi.org/10.1016/j.im.2018.04.006

Cansiz, Mehmet, Teknici, P. D. (2018). Innovative and Technology-Based Women Entrepreneurs in Turkey: Capital and Performance. *Journal of Economy Culture and Society*, 151–183. https://doi.org/10.26650/JECS372449

Carillo, K., Scornavacca, E., & Za, S. (2017). The role of media dependency in predicting continuance intention to use ubiquitous media systems. *Information and Management*, *54*(3), 317–335. https://doi.org/10.1016/j.im.2016.09.002

Chaturvedi, K., Vishwakarma, D. K., & Singh, N. (2021). COVID-19 and its impact on education, social life and mental health of students: A survey. *Children and Youth Services Review*, *121*, 105866. https://doi.org/10.1016/j.childyouth.2020.105866

Consalvo, M. (2002). *Cyberfeminism: Encyclopedia of New Media*. SAGE.

Creswell, J. W., C. N. P. (2018). *Qualitative Inquiry & Research Design* (4th ed.). Sage Publication.

Dar, S. A., & Shairgojri, A. A. (2022). ICT: An Innovative Move to Promote Gender Equality and Sustainable Future for Women in India. *LC International Journal of STEM*, *3*(2). https://doi.org/10.5281/zenodo.6849974

Deepak BJ, U. M. R. & P. R. (2020). The Internet's potential: A study of Indian news sites. *SEARCH Journal of Media and Communication Research*, *12*(2), 39–57.

Dini, P., Iqani, M., & Mansell, R. (2011). The (Im)possibility of Interdisciplinarity: Lessons from Constructing a Theoretical Framework for Digital Ecosystems. *Culture, Theory and Critique*, *52*(1), 3–27. https://doi.org/10.1080/14735784.2011.621668

Esquivel, V. (2016). Power and the Sustainable Development Goals: a feminist analysis. *Gender & Development*, *24*(1), 9–23. https://doi.org/10.1080/13552074.2016.1147872

Freuler, J. O. (2022). The weaponization of private corporate infrastructure: Internet

fragmentation and coercive diplomacy in the 21st century. *Global Media and China*, *8*(1). https://doi.org/https://doi.org/10.1177/2059436422113972

Gani, I. (2021). Poverty of Women and the Covid-19 Pandemic in Indonesia. *Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences*, *4*(1), 1034–1041. https://doi.org/10.33258/birci.v4i1.1710

Goswami, A., & Dutta, S. (2016). Gender Differences in Technology Usage—A Literature Review. *Open Journal of Business and Management*, *04*(01), 51–59. https://doi.org/10.4236/ojbm.2016.41006

Hajli, M. N. (2014). The role of social support on relationship quality and social commerce. *Technological Forecasting and Social Change*, *87*, 17–27. https://doi.org/10.1016/j.techfore.2014.05.012

Hammersley, M. (2008). *Questioning Qualitative Inquiry: Critical Essays*. SAGE Publications Ltd.

Hardi, A. T. (2020). *Penggerak Ekonomi di DIY, 76% dari Sektor UMKM (Economic Drivers in DIY, 76% from the MSME Sector)*. https://mediaindonesia.com/nusantara/331683/penggerak-ekonomi-di-diy-76-dari-sektor-umkm

Harding, S. (1993). Rethinking Standpoint Epistemology: What is Strong Objectivity? In *Alcoff and E. Potter. Feminist Epistemologies*. Routledge.

Hawthorne, S., R. K. (1999). *Cyberfeminism: Connectivity, Critique and Creativity*. Spinifiex.

Kusnandar, V. B. (2019). *Survei 2018: Pengguna Internet Didominasi Laki-laki*. https://databoks.katadata.co.id/datapublish/2019/07/25/survei-2018-pengguna-internet-didominasi-laki-laki

Lestari, A. P., & Sunarto, S. (2018). Digital Gender Gap for Housewives. *Jurnal The Messenger*, *10*(1), 63. https://doi.org/10.26623/themessenger.v10i1.729

Lie, M. (1995). Technology and Masculinity. *European Journal of Women's Studies*, *2*(3), 379–394. https://doi.org/10.1177/135050689500200306

Mackey, A., & Petrucka, P. (2021). Technology as the key to women's empowerment: a scoping review. *BMC Women's Health*, *21*(1), 78. https://doi.org/10.1186/s12905-021-01225-4

Marchessault, J. (2005). *Marshall McLuhan: Cosmic Media*. Sage Publication. https://doi.org/DOI:http://dx.doi.org/10.4135/9781446217276

Mariscal, J., Mayne, G., Aneja, U., & Sorgner, A. (2019). Bridging the Gender Digital Gap. *Economics*, *13*(1). https://doi.org/10.5018/economics-ejournal.ja.2019-9

Milles, M. B., A. M. H. (1992). *Qualitative Data Analysis. Terjemahan*. UI-Press.

Mohanty, J. R., & Samantaray, S. (2017). Cyber Feminism: Unleashing Women Power through Technology. *Rupkatha Journal on Interdisciplinary Studies in Humanities*, *9*(2). https://doi.org/10.21659/rupkatha.v9n2.33

Mosey, S., Guerrero, M., & Greenman, A. (2016). Technology entrepreneurship research opportunities: insights from across Europe. *The Journal of Technology Transfer*, *42*(1), 1–9. https://doi.org/10.1007/s10961-015-9462-3

Nambisan, S., Wright, M., & Feldman, M. (2019). The digital transformation of innovation and entrepreneurship: Progress, challenges and key themes. *Research Policy*, *48*(8), 1–9. https://doi.org/10.1016/j.respol.2019.03.018

Paasonen, S. (2011). Revisiting cyberfeminism. *Communications*, *36*(3), 335–352. https://doi.org/10.1515/COMM.2011.017

Pelletier, C., & Cloutier, L. M. (2019). Conceptualising Digital Transformation in

SMEs: An Ecosystemic Perspective. *Journal of Small Business and Enterprise Development*, *26*(6–7), 855–876. https://doi.org/10.1108/JSBED-05-2019-0144

Pertiwi, W. N. (2019). *Sebanyak Inikah Jumlah Pengguna Instagram di Indonesia?* https://tekno.kompas.com/read/2019/12/23/14020057/sebanyak-inikah-jumlah-pengguna-instagram-di-indonesia

Plant, S., By, V. N. S. M., & Galloway, A. (1997). *A Report on Cyberfeminism*. 1–9.

Pollock, S. and J. S. (1999). WomenClick: Feminism and The Internet. In *Hawthorne, S., Renate K.. Cyberfeminism: Connectivity, Critique and Creativity*. Spinifiex.

Prasetyo, R. (2020). Peran Pemerintah Daerah dalam Akselerasi Transformasi Digital Industri Kecil dan Menengah Local Government Role in the Digital Transformation. *202.89.117.136*, *22*(1), 59–75. https://202.89.117.136/index.php/iptekkom/article/viewFile/3042/1357

Pujol, J., & Montenegro, M. (2015). Technology and Feminism: A Strange Couple. *Revista de Estudios Sociales*, *51*, 173–185. https://doi.org/10.7440/res51.2015.13

Qazi, A., Hasan, N., Abayomi-Alli, O., Hardaker, G., Scherer, R., Sarker, Y., Kumar Paul, S., & Maitama, J. Z. (2022). Gender differences in information and communication technology use & skills: a systematic review and meta-analysis. In *Education and Information Technologies* (Vol. 27, Issue 3). https://doi.org/10.1007/s10639-021-10775-x

Qureshi, S. (2015). Are we making a Better World with Information and Communication Technology for Development (ICT4D) Research? Findings from the Field and Theory Building. *Information Technology for Development*, *21*(4), 511–522. https://doi.org/10.1080/02681102.2015.1080428

Rassanjani, S., Risky, N., Maz, D., Alqarni, W., & Achdan Tharis, M. (2021). Impact of COVID-19 on Economic Activities and Poverty Threats in the Asia-Pacific Region. *Policy & Governance Review*, *5*(1), 82. https://doi.org/10.30589/pgr.v5i1.353

Regional Development Planning Agency. (2020). *Rancangan Rencana Kerja Pemerintah Daerah Istimewa Yogyakarta Tahun 2020 (Draft Work Plan of the Special Region of Yogyakarta Government for 2020)*.

Reyes, C., & Neergaard, H. (2023). Feminist perspectives on gender and technology entrepreneurship in incubator settings. *International Journal of Gender and Entrepreneurship*, *15*(1), 64–93. https://doi.org/10.1108/IJGE-09-2021-0153

Richard, A., M. S. (2006). *Cyberfeminist: Networking on The Net*. www.feminist.com/resources/artspeech/cyberfeminism.html

Richards, K. (2003). *Qualitative Inquiry in TESOL*. Palgrave Macmillan. https://doi.org/10.1057/9780230505056

Robert K. Yin. (2018). *Case Study Research and Applications: Design and Methods* (6th ed.). SAGE.

Roy, Sujit, S. M. (2014). Women in Entrepreneurship: Issues of Motivation and Choice of Business. *Journal of Entrepreneurship and Management*, *3*(2). https://www.researchgate.net/publication/314036127_Journal_of_Entrepreneurship_Management_-_Women_in_Entrepreneurship_Issues_in_Motivation_and_Choice_of_Business

Royal, C. (2008). Framing the Internet: A comparison of Gendered Spaces. *Social Science Computer Review*, *26*(2), 152–169.

Schwandt, T. A. (2007). *The SAGE Dictionary of Qualitative Inquiry* (3rd ed.). Sage Publications, Inc.

Sibakuljogja.jogjaprov.go.id. (2021). *Promosi Produk MarketHub (MarketHub Product Promotion)*. https://sibakuljogja.jogjaprov.go.id/publik/diy_ukm.php?c=3, accessed on 7 January 2022

Smitley, M. (2004a). Women and the Internet : Reflections on Cyberfeminism and a Virtual Public Sphere By. *Womens Studies*, *August*.

Smitley, M. (2004b). Women and the Internet: Reflections on Cyberfeminism and a Virtual Public Sphere. *Essay Discussion of "the Social Aspects of Computers", University of London*.

Sołek-Borowska, C. (2018). The use and benefits of information communication technology by Polish small and medium sized enterprises. *Online Journal of Applied Knowledge Management*, *6*(1), 211–225. https://doi.org/10.36965/OJAKM.2018.6(1)211-225

Stephens, S., Cunningham, I., & Kabir, Y. (2021). Female entrepreneurs in a time of crisis: evidence from Ireland. *International Journal of Gender and Entrepreneurship*, *13*(2), 106–120. https://doi.org/10.1108/IJGE-09-2020-0135

Sun, B., Mao, H., & Yin, C. (2020). Male and Female Users' Differences in Online Technology Community Based on Text Mining. *Frontiers in Psychology*, *11*. https://doi.org/10.3389/fpsyg.2020.00806

Tu, J. (2020). *Why We Must Pay Attention to Women's Online Safety During COVID-19*. https://womensagenda.com.au/politics/why-we-must-pay-attention-to-womens-online-safety-during-covid-19/

Verma, P. M., Haq, F., & Rai, G. (2018). Social media a tool of cyber feminism activism. *International Journal of Research Culture Society*, *2*(2), 488–497.

Walsham, G. (2012). Are We Making a Better World with ICTs ? Reflections on a Future Agenda for the IS Ffield. *Journal of Information Technology*, *27*(2), 87–93. https://doi.org/10.1057/jit.2012.4

Widyastuti, D.A.R., Ranggabumi, N., Thomas, A. P. S. (2016). Literasi Digital pada Perempuan Pelaku Usaha Produktif di Daerah Istimewa Yogyakarta (Digital Literacy in Women Productive Business Actors in the Special Region of Yogyakarta). *Jurnal ASPIKOM*, *3*(1), 1–15.

World Health Organization. (2020). *COVID-19 and Violence Against Women What the Health Sector/System Can D*. Human Reproduction Programme: Research for Impact.

Wu, W., & Parkvithee, N. (2017). Promoting International Competitiveness for Small and Mediumsized Enterprises: A Case Study of Chinese Small and Mediumsized Enterprises in Thailand. *International Review of Management and Marketing*, *7*(3), 320–330.