

The Role of Metaverse in Women Entrepreneurship and Economic Complexity: Evidence from Pakistan

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ARTICLE INFO	ABSTRACT
<p>Article History: Received: 17 Sep, 2023 Revised: 01 Dec2023 Accepted: 14 Feb, 2024 Available Online: 29 Feb, 2024</p> <p>DOI: https://doi.org/10.56536/jebv.v4i1.66</p> <p>Keywords: Metaverse, Women Empowerment, Startups, Gender Equality, Pakistan.</p> <p>JEL Classification: M01, K12</p>	<p>The present paper investigates the effects of metaverse on Pakistani women's economic complexity and entrepreneurship. The data collect from 150 respondents from Karachi, which is technological and economical hub of Pakistan. The results of this paper shows that metaverse is surprisingly effect on women's entrepreneurship & enables them to surpass traditional gender equalities. Women's can participate actively in economical activities and overcome the social and economical issues in the metaverse era through their entrepreneurship initiatives or activities. According to the results, women's participates in metaverse can promote not only gender equality but also contribute in economical activities in Pakistan. Notwithstanding, the results also find that women's entrepreneurs still for several economical and social issues in the Pakistan. The results provide recommendations that it is encouraging for collaborative initiatives to overcome these social and economical issues in Pakistan, and make a entrepreneurship-based environment in Pakistan for several genders. The present results find out that metaverse have several potential to boost and improve the women entrepreneurs. The results showed that metaverse technologies changes the perceptions related to the women entrepreneurship and business, while acknowledge that, it is transformative experience for sheltering gender standards. The conclusion demonstrates that metaverse enhance women entrepreneurship and economical complexity, and provide many opportunities that encourages their advantages for empowering women's and overcome their societal and economical issues. In the end, metaverse can help women's entrepreneurship and economical complexities in Pakistan and enhance long-term and short-term gender equalities in Pakistan. At the end, the present paper provide suggestions for stakeholders, policy makers and also related for further research directions.</p>

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INTRODUCTION

The metaverse is an emerging and transformative experience that significantly change the global technological, social and economical environments in current period. This technique enhances women entrepreneurship and overcome their societal and economical challenges, and enhance their experience, which is cut the geographical areas and cultural boundaries. For this purpose, this study analyzes this transformative frontier role in women's entrepreneurship and economical complexity in Pakistan. Pakistan is emerging technological hub in South Asia, and also significant positioning at the connection of significant traditional values, culture, social and economical advancements. This rapid changes in technologies significantly impact on traditional social and economical standards, and also gender equality.

So, metaverse have significant features to overcome these challenges. The metaverse is emerging technological power, which is connected with virtual reality (VR), augmented reality (AR) and different digital spaces. Which is overcome these challenges and establish different trends in gender standards. The metaverse, which is integrate with several advanced technologies to provide digital spaces for enhance the experience of several users. It is interconnected with several digital environments (Yemenci et al, 2022). These Digital environments are range of endeavors such as AR, VR, AI, 3D gaming, social media platforms and several commercial and academic areas. According to Inder et al., (2023), these techniques enhance the potential of metaverse ecosystem. Notwithstanding, the Metaverse impacts are experienced by several users in different sectors such as healthcare, academic, agriculture, energy, high-tech companies, financial institutions etc. the metaverse has significant potential for investors, consumers and innovators due to their features and advanced human engagement activities. The metaverse have ability to enhance women entrepreneurship. Throughout history, women have faced several challenges and limitations due to their social and cultural standards. However, modern situation, women empowered not only traditional physically but also digital perspectives. With the capability of metaverse, these techniques provide opportunities for foster Gender diversity, business opportunities, overcome social and cultural boundaries and enhance women entrepreneurship. This technique enhances self-expression capacity, new avenues of entrepreneurship, collaborative initiatives in several areas. These techniques rise multiple contexts in which metaverse serve as a facilitator and driving power for resolve the issues of society. The purpose of this present paper is to investigate the viewpoints of women in Karachi related to the impact of metaverse ecosystem on their entrepreneurship. The paper aims to empower women entrepreneurship through metaverse technology and foster to resolve gender inequalities challenges.

The paper looks to significant analyze quantitative approach to explore the unexplored area and provide suggestions into social, cultural, economical, policy dialogues and technical process related to the metaverse. The paper's scope is to provide the path for Boost Gender Equality and women entrepreneurship in metaverse ecosystem and facilitate emerging transformations for women in Pakistan and other areas.

LITERATURE REVIEW

Metaverse

Metaverse is emerging concept, which is used to explore a advanced digital word, where peoples interact with each other's, work and other activities. It is still in its early days and its definition remains fluid and is likely to continue evolving. The metaverse is the next iteration of the internet, wherein the internet becomes something that people immerse themselves in more deeply rather than something they simply view; an evolution from 2-D and 3-D across a range of interfaces including augmented reality (AR) and virtual reality (VR). The metaverse is a digital reality that combines aspects of social media, online gaming, augmented reality (AR), virtual Reality (VR) and cryptocurrencies to allow users to interact virtually. It is a persistent and immersive simulated world that is experienced in the first person by large groups of simultaneous users who share a strong sense of mutual presence. To

achieve a true VR and AR experience, a user must be able to interact with virtual content in natural and immersive ways. This distinguishes VR from 3D movies and 3D simulations. It also distinguishes AR from “heads-up displays “(HUDS) that present non-immersive content into a user’s line of sight such as text, data and flat images. The metaverse is a massively interactive and immersive media system that spans multiple hardware devices, games, virtual worlds and platforms giving users the ability to transcend geography, identity and mortality. It is hopped by integrating many types of new technologies, XR (extended reality) to provide a real and immersive experience, digital twins to map the real world, blockchain to construct credit system, economic system and exchange system etc. The Metaverse is a multifaceted digital realm integrating virtual, augmented reality, and interconnected web domains to create a cohesive and engaging universe.

The discussed concept transcends the traditional dichotomy between the physical and digital realms (Kraus et al., 2023). The metaverse interconnected with VR, AR, AI, 3D environments, Digital platforms and other related techniques (Joy et al., 2022). The metaverse is collaborative virtual realm, which is interconnected with VR, AR and AI (ahn et Al., 2023). According to Weking et al., (2023), metaverse is a digital space that facilitates the users to interact, work, study and different other activities which they doing a physical perspective. Metaverse is advanced ecosystem which is interconnected with Digital environments that seamlessly integrated with several platforms such as social engagement, self-expression and creating collaborative virtual world (Kraus et al., 2023). Metaverse enables the seamless integration of digital and physical environments foster the shared experiences (Gupta et Al., 2023). Metaverse is a digital version which is facilitate social activities, working environment and other which is integrating with physical and digital realms (Usmani et al., 2022). The interconnected realms of this technique facilitate emerging expense and advanced digital universe. The digital space within metaverse range of different endeavors and techniques of physical activity. The metaverse is integrating with several techniques which is facilitate a seamless pattern between physical and digital space. Peoples can connect in several work within this technique including social, gaming and digital spaces (Ahn et al., 2023). This technique interconnected with users, enabled them to connect in actual communication with avatars and virtual identities. Creating virtual economy, where users interconnected with transactions including with several commodities such as Cryptocurrencies a seamless token of the metaverse (Gupta et al., 2023). Blockchain utilizing these economies to provide ownership facilities for virtual assets and enhance accountability and security. The metaverse functions AR, VR and AI improve the businessmen decision making process. According to Yemenci et al., (2022), these techniques foster consumer S to connect in virtual realms which is interconnected with physical and Virtual world. Peoples are more like to participate actively with users through VR and AR headsets. According to Calandra et al., (2023), peoples actively play a role in metaverse ecosystem to create and distribute several areas of content including VR settings, objectives and experiences. This significant impact foster uniqueness, gender diversity and creative abilities in virtual world. Data security and privacy are also important issues of users in metaverse ecosystem. Ensuring the safety of privacy and security is very important for implementing data interoperability norms which is foster the user’s confidence (Yemenci et al., 2022). Artificial intelligence enables the metaverse to provide personalized recommendations and realistic character.

AI facilitate in create a seamless and easy virtual milieu. Metaverse is provide accessibility to different devices. Which is provide seamlessly transition to consumers between headsets, devices, maintain their engagement and enhance their experience (Mumtaz et al., 2022). Metaverse is dynamic power for user-generated content, actual engagement and integrated with several techniques to provide creative and innovative communication platform (Weking et al., 2023). Metaverse expansions at global level has significant experienced due to collaborative initiatives of predominantly technology companies, emerging technological corporations and customers with innovative ideas (Mumtaz et al., 2022). Corporations including meta, Microsoft significant invest in these techniques which is related to metaverse (Khan et al., 2023). The use of VR, AR and AI platforms are rising in current situation. Digital environments, virtual activities. And collaborative virtual workplaces provide diverse range of work in metaverse ecosystem. Metaverse is extremely expanded in different advancements of blockchain, AI, 5G, AR and VR (Yemenci et al., 2022).

Socio-Economic Development in Metaverse

Metaverse significant change the social and economical areas. Metaverse enables the users to cut the physical limitations and work among several digital spaces. Which is provide different areas of Communicate, learning and business opportunities, which is empower the women's (Gupta et al., 2023). Metaverse boost the virtual workplaces where users can monetize their services (Mumtaz et al., 2022). Users face several challenges to get conventional job opportunities which is beneficial from the virtual workplaces, virtual assets and NFTs as a emerging technological power of income. The VR learning platforms of metaverse provide dynamic and advanced educational opportunities. Which has significant potential to address knowledge-related problems and skill development which is opportunity for women's to get higher education and training programs. Metaverse is dynamic power for advanced companies and entrepreneurs (Samad et al., 2022). Women entrepreneurs can offer their services and products, innovative ideas and working -related initiatives. These techniques alleviate the several gender inequalities and conventional commercial programs. Metaverse foster users to explore their identities and roles which is transform the traditional values by utilizing avatars and Digital personas. These capabilities enhance oneself expression and modifying the social expectations of gender (Shah et al., 2023). Metaverse have capacity to provide personalized work and collaborative platforms which is offer virtual and flexible job opportunities can contribute women empowerment and workforce (Khalil et al., 2023). It is very important for virtual learning in metaverse to provide women's pursuit of STEM programs foster more women representatives in male dominated areas (Malik et al., 2023). The digital economy in metaverse have capacity to create new areas for women entrepreneurs and create more earning sources. In social presence theory, Virtual realms have capabilities to improve strong social and emotional responses. In the context of women empowerment this technique provides Dynamic and meaningful engagement opportunities. Metaverse have ability to undergo the Proteus effect where the behavior of users aligns with the capabilities and characteristics of their avatars. This concept foster woman's explore their positions and dynamic assessment of conventional gender standards (Aziz et al., 2023).

This technique facilitates women's to explore their identities and social roles, self-assurance and empowering them. VR foster empathy and comprehension of women's in metaverse (Kakar et al., 2023). Metaverse capacity facilitate the women engagement in the healthcare area. Where women's enhance their self-expression, social engagement and community associations. VR, and AR platforms empowering the disability persons including women's (Moroojo et al., 2023). Women's engagement in Metaverse can create social standards and provide personalized Avenues of promoting social issues (Aziz et al., 2023). Metaverse in the professional development and learning context provide opportunities for growth and dynamic results especially in those areas where women's representations are low (Ahn et al., 2024). Metaverse support the women engagement and facilities then to encourage them to surpass their social expectations regarding gender inequalities and provide them opportunities to express their point of views (Malik et al., 2023). VR enhance women's sense of presence and empowering them to govern and guide them in their relationships (Usmani et al., 2022). VR have ability to assist women facing mental health-related treatments. Metaverse have ability to enhance women involvement and achievements in stem areas (Khan et al., 2023). Gender dynamin metaverse, the active involvement of women's in these techniques can empowering them by fostering their impacts, leadership skills and knowledge (Anzak et al., 2023). Metaverse positively impact on mental and overall well-being of women's serve as an emerging technological power for healing and self-expression (Rehman et al., 2023). These issues in metaverse access different genders and the Metaverse commonly associated to as the digital divide. The results provide significance of metaverse development related women's entrepreneurship. Metaverse bring a transformative frontier on community and economical significant magnitude. Metaverse contribute the emerging advancements of women empowerment in Pakistan and other areas can be strategically placed opportunities and addressing related issues.

Gender Equality and Challenges in Pakistan

Due to some civilizations, Pakistan face many gender equality issues and challenges. Various inequalities should be notice enclose little ease to assess economical opportunities, healthcare services, educational opportunities and participate in taking a choice. Protracted gender inequalities is facilitate by harsh structures, cultural standards and conventional gender roles (Sabir et al., 2023). Pakistan has a complex ecosystem of growth and dynamic issues in women's rights and opportunities. These issues has been created a implementing laws and regulations. It is significant to acknowledge more efforts require to achieve long-term objectives (Hassan et al., 2023). Emerging changes in political leadership, workforce initiatives and education continue existing about gender representation (Shah et al., 2023). Progress arises due to growth of cultural standards, insufficient legal regimes and limited public understandings of women's rights. Literacy rates within genders exhibiting 44% compare to 68% man (Rehman et al., 2023). In rural areas, the Gender Equality significant impact as results by the mere 285 women literates. The gender gap is a dynamic problem with different factors such as early marriage, poverty alleviation and cultural standards handle women access to education.

Pakistan face also gender inequalities in labor force participation such as females merely 25% of the workforce while men's 80% higher. In rural areas, women's engage in labor market is very low with a participate rate of merely 15% (Hassan et al., 2023). The gender inequalities significant in different contexts. The gender wage gap in jobs should attribute several elements including poverty alleviation, early marriage and cultural standards restrictions women's workforce participates (Aziz et al., 2023). Pakistan has been facing Highest maternal mortality rates with 212 deaths per 100,00 live births. The several problems including healthcare accessibility, sanitation facilities issues and premature marriage contribute in this context (Rehman et al., 2023). Healthcare services in Pakistan significantly lower women than for males. The rates of women have physical examination is 60% lower than 80% for male (Kakar et al., 2023). This rate shows that Pakistani authority need to improve these rates. The participation of women's in local government roles 5% and national assembly designated 20% of its seats for women's. Different factors lead to gender gaps in job and education and the underrepresentation of women in political activities (Shah et al., 2023). Different organizations take initiatives to tackle the gender inequality problems. These organizations improve healthcare services for women and children and provide opportunities for women's in education, jobs and enhance engagement in politics (Kakar et al., 2023). Encountering these various problems, Pakistan has taken significant initiatives to address these gender equality issues. Now women's participations significantly in workforce, rise women's literacy rates. Nevertheless, these initiatives must be taken to achieve gender equality in Pakistan (Maqsood et al., 2022).

Technology and Gender Equality

The technologies within metaverse have capacity to significant impact on management of gender inequalities. Technologies effectively overpass the existing information gaps enabling Pakistani women to provide educational opportunities, healthcare information's and vocational training initiatives (Samad et al., 2022). Utilizing technologies enable women's to achieve educational opportunities and accessing information's otherwise inaccessible. Mobile devices should be using to distribute educational information's in rural areas (Ahn et al., 2023). Additionally, digital elements provide opportunities to connect with their mentors and resources. Integrate technologies in workplaces provide new opportunities for women's to improve their participations in the workforce (Hassan et al., 2023). Women's engage in e-commerce provide opportunities for buy and sell their products and services (Aziz et al., 2023). Nevertheless, telecom roles should be assigned to them. Using emerging technologies enhance women's engagement in political initiatives. Social media networks have significant features for enhanced women's voting participation and raising information about women's related issues (Moroojo et al., 2023). The interconnection of gender stereotypes and enhance gender equality should be facilitated is these techniques (Aziz et al., 2023). Women representatives in films and TV shows have capacity to provide and enhanced social perceptions of women positions. Technologies have capacity to empower women's with a platform to showcase their point of views (Shah et al., 2023). Women's utilizing mobile devices to access legal aid to report violence. The available results significant mitigating gender inequalities. Mobile phones to women's can lead a 15% of school attendance rates (Khan et al., 2023).

Several chances of women's for politically involving in social media sides (Kakar et al., 2023). However, it is critical for adopting technologies to represent and address gender inequalities issues. Online learning context and educational resources for women's effectively overpass to reduce the gender gaps in educational system (Malik et al., 2023). Facilitating women's to access ecommerce sites and other areas effectively improve their participations in the workforce (Khan et al., 2022). Gender wage gaps mitigating the women's to provide equal opportunities in technologies sites (Sabir et al., 2023). Women's should also engage in Remote labor market through digital platforms and e-commerce which is provide income generating sources beyond conventional standards (Moroojo et al., 2023). Digital learning platforms provide more opportunities and information regarding education to the women's, where women's engage in different ways of knowledge, collaboration activities, mutual support, which is overcome the geographical challenges and create professional relationships (Maqsood et al., 2022). Metaverse provide opportunities for women's to take more advantages of these techniques. This provides freely self-expression without any issues related physical world (Ahn et al., 2023). Adoption of mobile technologies foster digital literacy and improve women's role in digital economy. This technique provides many opportunities for women's (Samad et al., 2022).

Virtual space enhances job opportunities, education, skill development programs for women's (Mamtaz et al., 2023). Virtual spaces secure women's activism realms, where they face many problems (Joy et Al., 2022). Virtual spaces provide opportunities of earning money and cater their entrepreneurship initiatives. Virtual spaces also improve the Mobile banking system, which is change the women's financial management practices and their engagement in economical activities (Kshetri et al., 2022). Metaverse also expanded financial opportunities. These techniques also enhance women's agency and provide help in decision making and agriculture help in rural areas (Kraus et al., 2022). Rural areas women's using mobile devices improve their connections, get information's and empowering themselves (Gupta et al., 2023). Social media sides provide forms for dialogues, learning activities and overcome gender inequalities and provide sense of empowerment ((Khalil et al., 2023). Metaverse have capacity to provide complete power for empowering themselves thorough area of inclusivity, which is involved in several voices, appreciations and representations. Where these techniques provide digital environments for enhance creativity and innovation (Khan et al., 2023). Metaverse have also several limitations for women's due to privacy and security. Women's must use these techniques such as VR, AR properly to safe their privacy (Sabir et al., 2023). Metaverse improve the technical and non-technical skills of women's (Shah et al., 2023). And provide sense of empowerment in the cultural standards, gender stereotypes and others openly. Women's also face experience online harassment and abuse in metaverse ecosystem (Hassan et al., 2023)., which is effect on their engagement and involvement in Virtual spaces. Metaverse-based educational resources including online technical and non-technical programs provide accessible materials to engage in metaverse ecosystem and acquire advanced skills (Malik et al., 2023). Metaverse provide different events including games, storytelling, self-expression activities and other to enhance their confidence (Gupta et al., 2023).

Women's actively participate in these events to achieve success and engage in metaverse activities. These events provide opportunities to improve their abilities and skills. Different online platforms of metaverse provide User-generated contents in diverse experiences and point of views. This technique provides different capabilities and requirements. Gender inequalities in online world provide opportunities for enhance their communication skills (Inder et al., 2023). The term of "Gender-inclusive standards" refers to adopt and explain the gender standards in virtual realms (Maqsood et al., 2022). Women's also get experience in virtual games to understand the techniques required for create reliable world (Schiller et al., 2023). This technique improves the role of social platforms impact on women's in metaverse (Usmani et al., 2022). Women's in metaverse improve social standards and provide help to address normative issues (Mumtaz et al., 2022). Metaverse foster inclusive and driving social changes especially in marginalized population. Metaverse provide a landscape of communication strategies, promote inclusivity in digital realms (Sabir et al., 2023).

DATA AND METHODOLOGY

This paper adopts a cross-sectional method to explore the influence of metaverse on women entrepreneurship and economical complexity in Karachi, Pakistan. The data collect 150 women from Karachi, Pakistan. This paper focus on those women's who have experienced in metaverse-based technologies. During the first stage of the study, a random selection process was employed to choose a range of locales within the city of Karachi to guarantee representation from various city regions. Consequently, persons with expertise in metaverse operations were recruited from the regions above. The administration of an opinion poll conducted the collection of data. The participants were requested to evaluate their perspectives on twelve statements regarding the metaverse potential to promote women's empowerment. The participants were instructed to indicate their level of agreement. The survey responses were processed and analyzed using quantitative data analysis techniques. The objective of this study was to get insights into the prevailing attitudes of women towards the potential for female empowerment within the metaverse. The study methodology incorporated ethical principles and the researchers obtained informed consent from each participant. Respondent's anonymity and confidentiality were preserved to safeguard privacy and foster unrestricted discussion.

Data Analysis

Table 1. Socio-Demographic Profile of Women Working in Different Businesses

Socio-demographic status	Category	Frequency (n)	Percentage (%)
Martial status	Married	90	60.0
	Unmarried	60	40.0
Age Group	18-30 years	30	20.0
	31-50 years	90	60.0
	51 and above	30	20.0
Educational Background	Intermediate	35	20.0
	Bachelor's	80	60.0
	Master's or above	35	20.0
Monthly Income	Below 30,000 Rs	30	20.0
	30,000-60,000 Rs	90	60.0
	Above 60,000 Rs	30	20.0

Table 1 comprehensively presents an overview of the socio-demographic characteristics of women engaged in different enterprises in Karachi, utilizing developing technologies, such as the Metaverse. The table presents a comprehensive overview of the major categories, their corresponding frequencies, and the percentage distribution of responses for each group. Based on the data presented in the table, it can be observed that 60% of the participants are in a marital relationship, and the remaining 40% are not currently married. The observed distribution indicates that the marital statuses of the participants exhibit a moderate level of diversity. The age distribution of the responses demonstrates a balanced sample, with 20% of individuals falling in the 18-30 age group, 60% in the 31-50 age range, and an additional 20% in the 51 and beyond age range. This distribution indicates a diverse range of perspectives among different generations. The educational levels of the respondents are distributed throughout a spectrum of varying degrees. The sample exhibits a balanced distribution of educational levels, with 20% of the participants belonging to each category, below intermediate and bachelor. A significant proportion, 60% of the participants, reported a monthly Income falling between 30,000 and 60,000 rupees. A notable proportion of the participants, specifically 20%, reported incomes falling below 30,000 and over 60,000 rupees. This finding suggests that the sample exhibits a considerable degree of economic diversity.

Table 2. Metaverse Contributing Towards Women Empowerment

Sr	Opinion Statements	Agree	Disagree	Can't Say
1	The metaverse provides new avenues for women's entrepreneurial endeavors.	120	15	15
2	Virtual collaboration in the metaverse helps women break geographical barriers.	135	10	5
3	The metaverse allows women to explore diverse roles and identities.	125	20	5
4	Virtual networking platforms empower women to build professional connections.	130	15	5
5	Online education and training in the metaverse enhance women's skill sets.	140	5	5
6	The anonymity of the metaverse enables women to express themselves freely.	110	25	15
7	Virtual marketplaces provide women with opportunities for economic independence.	125	15	10
8	The metaverse offers safe spaces for women to share experiences and insights.	130	10	10
9	Collaboration in virtual teams within the metaverse enhances women's leadership skills.	115	20	15
10	Women's participation in metaverse communities challenges traditional gender roles.	130	10	10
11	The metaverse fosters a sense of community and belonging among women.	135	10	5
12	Women's engagement in the metaverse promotes self-confidence and self-expression.	125	15	15

Table 2 displays the participants' viewpoints about the perceived advantages of the Metaverse in promoting women's empowerment. The tabulated data presents the distribution of replies obtained from the respondents about the 12 opinion statements. The three expressions "Can't Say," "Agree," and "Disagree" is commonly used to indicate one's stance or opinion on a given topic. The observation that 120 participants concur with the notion that the Metaverse presents novel avenues for women in terms of commercial prospects highlights the possibility for socioeconomic empowerment. A

significant majority of individuals (135) agree that virtual collaboration within the Metaverse allows women to surpass geographical limitations and broaden their range of participation choices. Most individuals (125) agree that women can engage in many roles and develop different identities inside the Metaverse, facilitating personal exploration and empowerment. A total of 130 participants agrees that utilizing online networking tools is beneficial for women in terms of enhancing their professional networking capabilities and, thus, enhancing their employment opportunities.

A significant majority of individuals (140) agree that online education and training inside the Metaverse enhances women's skill sets, facilitating their professional and personal growth. While most (110) scholars agree that women can freely express themselves within the Metaverse due to its inherent anonymity, a significant minority (25) holds a contrasting viewpoint. This dissenting perspective raises possible issues regarding the implications of anonymity within this context. A significant majority of individuals (125) agree that online markets allow women to achieve financial independence, potentially empowering them. Based on a significant majority, it has been observed that the Metaverse offers secure spaces for women to exchange experiences and perspectives, fostering a feeling of community (130). Most participants (115) believe that engaging in virtual team environments enhances women's leadership skills, while a notable minority (20) express dissent, potentially indicating a degree of skepticism. The involvement of women in metaverse communities' challenges established gender norms, as indicated by a significant majority (130), indicating a viable avenue for societal change. Based on most participants' responses, it can be inferred that the Metaverse fosters a feeling of connectivity and inclusion among women, augmenting their emotional welfare (135). While a significant proportion (125) of individuals believe that women's involvement in the Metaverse positively impacts their self-assurance and ability to express themselves, a smaller subset (15) expresses dissent, suggesting the presence of divergent perspectives.

RESULT AND DISCUSSION

This study focuses on metaverse and its impact on women's entrepreneurship and economical complexity in Pakistan. Where respondents show their point of views regarding metaverse and their personal experience. This result shows that metaverse foster the woman entrepreneurship and economical complexities in Pakistan. Respondents express that metaverse have capacity to provide personalized geographical limitations for collaborative initiatives for Work. Respondents express that metaverse have ability to engage women's in different activities and overcome the physical proximity. Respondents express that metaverse technologies provide a landscape for engage in different roles and different identities. These identities enhance self-assurance and express their point of views. Respondents express that metaverse technologies increases professional relationships of women's. And also, metaverse have ability to enhance professional development and provide opportunities for career development. Respondents express that online educational activities in metaverse improve the skills of women's. Online learning sites facilitate women's personal and professional development. Metaverse provide a sense of freedom speech. Respondents express that in metaverse technologies they also experience about harassment and privacy issues. Respondents express that metaverse

technologies provide opportunities for achieving financial freedom and metaverse enhance engagement of women's in e-commerce solutions. Respondents express that metaverse is secure tool for women's to share their experience and ideas. Respondents express that metaverse foster the advancement of connected systems and provide help in relationship building and interacting others. Metaverse have ability to enhance the leadership skills of women's through collaborative initiatives, where women's share provides their opinions openly. Respondents express that metaverse have ability to tackle the issue of social standards and biases. Respondents express that metaverse technologies provide a sense of presence and community development. Metaverse provide new social spaces for women's. Metaverse positively impact on self-expression and confidence of women's. Metaverse impacts of self-perception and assertiveness of women's. Metaverse provide a landscape for women's to engage in business communities. Metaverse provide opportunities for entrepreneurship, skill development and tackle gender inequalities. Women's interpersonal engagements, provides mutual encouragement for wellbeing.

CONCLUSION AND POLICY IMPLICATION

The research shows that there is significant relationship between metaverse, women entrepreneurship and economical complexity in Pakistan. This paper shows the point of views of women's who experienced in metaverse based techniques. The data collect 150 women's for Karachi, Pakistan. The study provides importance of metaverse regarding women's entrepreneurship, capabilities and social roles and different challenges. Respondents express that metaverse improve their abilities, engaging different networks, and economical complexity. In metaverse ecosystem, women's have ability to overcome the geographical limitations, conventional issues and provide secure landscape for share their experience within metaverse. These elements improve self-expression, self-confidence and foster sense of belonging. This study also shows the challenges for women's in metaverse ecosystem such as privacy rights and cybersecurity. Women's experienced that metaverse help them to improve their leadership skills. Several suggestions to this paper, such as stakeholders need to create safe spaces, foster unique collaborative initiatives, skill development programs, policy campaigns etc. This paper provides body of knowledge related women's entrepreneurship and metaverse in Pakistan. Stakeholders should engage in metaverse technologies to foster technical and non-technical ways of gender equalities, economical benefits and social developments etc. metaverse have capacity to enhance women's technical skills, entrepreneurship skills and leadership skills via educational resources and other areas. Metaverse provide different visual learning opportunities with different educational system. Developing a effective policy for online communities secure their safety, privacy addressing online harassment. This policy provides secure support for guidance of governing behavior with metaverse groups. Developing a effective policy for mentorship programs and business incubations to support women's in metaverse ecosystem provide guidance, materials to grow their entrepreneurship initiatives. Arrange different programs to enhance financial literacy, different business practices which is support women's. These programs provide support and awareness related women's contributions and achievements in metaverse ecosystem. Organize weekly based digital programs to facilitate women's professional developments and career development. Create platforms

regarding women's to interact with the experts, professionals about their business. Implied different initiatives to equip women's necessary information and materials to engage in metaverse. Take initiatives with stakeholders and government agencies for creating legal regimes which is support women's participations in metaverse and promote gender equality. This legal regime helps against privacy rights, harassment and other areas.

REFERENCES

- Ahn, J., & Lee, K. E. (2023). Experiences of peer support activities and the need for a metaverse-based program in young women with breast cancer: A qualitative study. *Asia-Pacific Journal of Oncology Nursing*, 10(7), 89-99.
- Aziz, N., Khan, I., Nadahrajan, D., & He, J. (2023). A mixed-method (quantitative and Qualitative) approach to measure women's empowerment in agriculture: evidence from Azad Jammu & Kashmir, Pakistan. *Community, Work & Family*, 26(1), 21-44.
- Ahn, J., & Lee, K. E. (2023). Experiences of young women with breast cancer in peer support activities and the need for a metaverse-based peer support program: A qualitative study. *Asia Pacific Journal of Oncology Nursing*, 9(3), 100-253.
- Anzak, S., Sultana, A., & Zeeshan, M. (2023). Digital Technologies: Enabling Environment for Women Entrepreneurs. *Russian Law Journal*. 11(5), 99-107.
- Calandra, D., Oppioli, M., Sadraei, R., Jafari-Sadeghi, V., & Biancone, P. P. (2023). Metaverse meets digital entrepreneurship: a practitioner-based qualitative synthesis. *International Journal of Entrepreneurial Behavior & Research*, 9(3), 26-31.
- Gupta, B. B., Gaurav, A., Albeshri, A. A., & AL Salman, D. (2023). New paradigms of sustainable entrepreneurship in metaverse: a micro-level perspective. *International Entrepreneurship and Management Journal*, 2(2), 1-17.
- Hassaan, H. M., Baber, M. Q. Z., & Shoukat, K. (2023). Role of Social Media Apps in Accelerating Women Empowerment in Pakistan. *Human Nature Journal of Social Sciences*, 4(1), 505-517.
- Inder, S. (2023). Entrepreneurial opportunities in metaverse. In *Promoting Consumer Engagement Through Emotional Branding and Sensory Marketing* (pp. 52-62). IGI Global.
- Joy, A., Zhu, Y., Peña, C., & Brouard, M. (2022). Digital future of luxury brands: Metaverse, digital fashion, and non-fungible tokens. *Strategic change*, 31(3), 337-343.
- Mumtaz, P. P. (2022). Some very simple economics of web3 and the metaverse. *Fintech*, 1(3), 225-234.
- Maqsood, M., Bokhari, S. F., & Bukhari, S. F. (2022). Facebook to Metaverse: A Philosophical insight into Monetization, Practices and Preferences in Pakistan. *Global Digital & Print Media Review*, 1, 154-163.
- Moroojo, M. Y., Shafiq, M. O., Hingoro, A. A., & Baqar, S. (2023). Examining Women Empowerment through Media and Knowledge Sharing Among Women of Sindh, Pakistan. *Journal of Positive School Psychology*, 7(6), 180-191.
- Malik, A., Park, S., Mumtaz, S., Rowther, A., Zulfiqar, S., Perin, J., & Surkan, P. J. (2023). Perceived social support and women's empowerment and their associations with pregnancy experiences

- in anxious women: a study from urban Pakistan. *Maternal and child health journal*, 27(5), 916-925.
- Rehman, T., & Basit, A. (2023). Sociocultural Factors, Religion and Cognition Development: An Integrated View of Psychological Empowerment of Female Entrepreneurs. *Journal of Entrepreneurship and Innovation in Emerging Economies*, 23(12), 12-16.
- Shah, E., Ali, S., & Katper, N. (2023). An Overview of Women Empowerment Policy with a Social Justice Lens and Frugal Innovation. *Frugal Innovation and Social Transitions in the Digital Era*, 8(2), 123-132.
- Schiller, S., Nah, F. F. H., Luse, A., & Siau, K. (2023). Men are from Mars and women are from Venus: dyadic collaboration in the metaverse. *Internet Research*, 4(3), 18-23.
- Samad, T. F. D., & Hasan, N. (2022). Women entrepreneurs in the era of metaverse: An Islamic economic perspective. *Review of Islamic Social Finance and Entrepreneurship*, 8(4), 131-140.
- Sabir, R. I., & Majid, M. B. (2023). Factors Affecting Women Empowerment: A Micro Financing Perspective. *Journal of Entrepreneurship and Business Venturing*, 3(1), 7-15.
- Kakar, M. M., Rahim, M., & Ali, S. (2023). Balochistan Women in Politics: An Examination of Political Participation and its Effects on Women Empowerment in Balochistan, Pakistan. *Pakistan Journal of Humanities and Social Sciences*, 11(2), 1051-1059.
- Kshetri, N. (2022). Web 3.0 and the metaverse shaping organizations' brand and product strategies. *IT Professional*, 24(02), 11-15.
- Khan, S. A., Bhutta, M. H., Afzal, A., & Hanif, M. (2023). Women Social Inclusion through Micro Financing in Case of Pakistan. *Pakistan Journal of Humanities and Social Sciences*, 11(1), 300-318.
- Kraus, S., Kanbach, D. K., Krysta, P. M., Steinhoff, M. M., & Tomini, N. (2022). Facebook and the creation of the metaverse: radical business model innovation or incremental transformation?. *International Journal of Entrepreneurial Behavior & Research*, 28(9), 52-77.
- Khalil, A., Haqdad, A., & Sultana, N. (2023). Educational Metaverse for Teaching and Learning in Higher Education of Pakistan. *Journal of Positive School Psychology*, 7(12), 1183-1198.
- Khan, S. A., Qurrat-Ul-Ain Fatima, K. A., Ahmad, M., Mirbahar, A. M., & Safdar, S. (2022). Advertising Mental Healthcare through Metaverse: Consequential Effects on Stigmatizing Beliefs, Psychological Safety, and Mental Health Literacy. *Pakistan Journal of Medical & Health Sciences*, 16(12), 268-268.
- Usmani, S. S., Sharath, M., & Mehendale, M. (2022). Future of mental health in the metaverse. *General Psychiatry*, 35(4), 99-105.
- Weking, J., Desouza, K. C., Fiel, E., & Kowalkiewicz, M. (2023). Metaverse-enabled entrepreneurship. *Journal of Business Venturing Insights*, 19(2), 371-375.
- Yemenici, A. D. (2022). Entrepreneurship in the world of metaverse: virtual or real? *Journal of Metaverse*, 2(2), 71-82.