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Indian Women's Influence in STI in the Context of Globalisation

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Abstract. By 2024, more than 8,000 women-led businesses in India will have raised $23 billion in capital, accounting for 14.8 percent of the country's total technology capital. Currently, the percentage of professional women in India is only 10 percent, compared to 68 percent in China. A survey by Xeler8, an Indian venture capital database, shows that 670 companies were set up in India in 2016, of which 3% are gradually starting to be founded by women. Due to regulatory changes and labor market dynamics, more and more women are shifting from family roles to the workforce, and companies are increasingly inclined to hire women. Indian women's achievements in STI over the years cannot be underestimated, STI is commonly used to denote Scientific and Technical Information. In addition to the impact of the social environment, Indian women are bringing more impact to society through their leadership through their continuous efforts in education and self-improvement, which forms a virtuous cycle of impact, and through women leaders in different industries bringing more The impact is a virtuous cycle that brings more and more women through women leaders in different sectors.

Keywords: technology and innovation, female leadership, female entrepreneurs, globalisation, business management

1. Introduction

Furthermore, national and market conditions have created greater opportunities; the modern ideological awakening of women, through self-empowerment, has allowed them to elevate their position across several sectors, consequently having considerable impact on society as a whole. Concerning analogous demographics and the influence of young women, there is an increasing awareness of women's consciousness, resulting in the augmentation of women's collective strength and the creation of a socially virtuous cycle[1] . Female empowerment is proliferating globally from Western society and is currently gaining influence in the Indian region of Southeast Asia.

2. Status of women's involvement in STI enterprises in India

As gender issues evolve, the worldwide landscape for women's entrepreneurship is increasingly garnering attention from governments and the business sector.In 2017, IHS, a prominent research firm based in the United States, released the findings of its Women Entrepreneurs' Cities Index (WE

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Cities) rating. The survey encompasses 50 major cities globally and represents the sole gender-specific index ranking conducted. The objective is to evaluate the strengths and shortcomings of local female entrepreneurship growth and establish conducive environment for women to initiate firms. The study encapsulates the comfort level of female entrepreneurship through five characteristics: market, talent (female skills and expertise), capital, culture, and technology. The full review ranks New York top, succeeded by San Francisco, London, Boston, and Stockholm[1] . Singapore ranked 8th overall, making it the sole Asian city in the top 10, while Hong Kong and Taipei placed 16th and 22nd, respectively. Beijing and Shanghai were positioned 38th and 44th, respectively.

Figure 1. Results of the Women Entrepreneur Cities index (WE Cities) ratings shown by research firm IHS, which covers 50 major cities around the world

Within a distinctive religious and social framework, India's technological entrepreneurship is attracting global interest. By approximately 2020, the nation has emerged as a nexus of innovation and entrepreneurship, with the majority of start-ups closely associated with technology, propelling the 'Digital India' initiative. The initiative, introduced by Prime Minister Narendra Modi in 2015, seeks to advance the digital transformation of India's economy and society across three domains: digital infrastructure enhancement, digital government services, and digital education for citizens. The FY2020 budget includes plans for structural improvements to stimulate domestic and foreign investments. Tech startups are significantly impacting the startup ecosystem by optimizing transactions and delivery while addressing the nation's developmental challenges. Forbes published a 30 Under 30 Asia list that highlighted the representation of women in India, garnering public interest. The list identifies 10 sectors, each including 10 entries, with certain corporations serving as co-founders collectively. A total of 355 entries exist, with 93 Asian women picked, constituting around 26 percent. China had 96 entrants, including 23 women, representing around 24 percent of the total. India had 70 inductees, with 19 women, constituting roughly 27 percent of the total.

In 2016, YourStory and Kstart conducted an extensive poll regarding the obstacles encountered by women entrepreneurs[2]. The comments focused on the mentality of women entrepreneurs, availability of possibilities, access to information, and practical assistance. Among 505 respondents, 90 percent were female, and the principal conclusions are as follows: Seventy-nine percent of respondents assert that female entrepreneurs have distinct hurdles compared to their male counterparts. The primary challenge was the absence of investor confidence, succeeded by the equilibrium between career and personal life. Approximately 68 percent of participants assert that masculine attributes (e.g., confidence, risk-taking propensity, leadership, ambition, and aggression) are deemed more important than feminine attributes within the entrepreneurial ecosystem. Seventy-six percent say that women possess superior multi-tasking abilities[1]. Forty-four percent say that

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women find it easier to recover from misfortune. Male entrepreneurs are regarded as more proficient in risk-taking (60 percent) and capital acquisition (49 percent).

Currently, only 10 percent of entrepreneurs in India are women. According to data from the National Sample Survey Organization (NSSO), women currently oversee 14 percent of business organizations in India. Following International Women's Day, we present five women who have challenged gender inequality and the startups they oversee. The Women Scientists Scheme (WOS) was initiated by the Government of India in 2002-2003 and has since been operational, offering women scientists the opportunity to advance their research in fundamental or applied sciences within the domains of science and engineering. WOS offers women scientists the opportunity to advance their research and supports those who have paused their careers to finalize their studies and reintegrate into the workforce, such as by pursuing a degree or additional education[1].

3. Obstacles to women's involvement in STI enterprises in India

Conventional perspectives hinder women's professional advancement, compelling several women to abandon their occupations post-marriage.India's female labor force participation rate (LFPR) stands at a mere 23.3 percent, significantly lower than that of males, with women comprising only 34 percent of the technology sector. Women entrepreneurs represent merely 14 percent of funded enterprises in India, with only 3 percent advancing to Series C and beyond. Discrimination against women entrepreneurs by venture capital firms persists, hindering their ability to secure funding. A barrier exists to women's progression in the technology sector, and they are inadequately represented in senior management roles. Several corporations have enacted gender diversity policies; yet, their execution remains inadequate. Numerous female entrepreneurs lack mentorship, business connections, and market resources, hindering their ability to scale.

The Department of Science and Technology (DST) has initiated Disha, a program aimed at supporting mid-career women in science and technology (WST) who must relocate to different cities and resign from their current positions owing to familial obligations. The program is anticipated to create 1,000 employment opportunities for women in technology who are seeking alternative positions for these reasons. Data from India's Department of Science and Technology (DOST) indicates that the nation's financial investment in the program rose by 37 percent between 2014 and 2017. Concurrently, women's contributions to the advancement of science and technology have intensified. These policies have also motivated scientists and technicians to apply their expertise to tackle difficulties concerning women in remote regions. These rules have created additional chances for women scientists and technicians to re-enter the scientific and technology sector[2] .

The Government of India offers an international training program for women scientists and technicians. Annually, the Government of India, in partnership with the Indo-US Science and Technology Forum (IUSSTF) and COACh International, USA, conducts two conferences on "Leadership and Career Planning" for women in the fields of science and technology. These forums assist women scientists and technicians in augmenting their knowledge, tackling tough tasks, and enhancing their leadership skills. To enhance the representation of women in the scientific and technological workforce and their training in these fields, the Ministry of Science and Technology has initiated the 'Consolidation of University Excellence in Research and Innovation' (CURIE) program, which commenced in 2009. This initiative aims to elevate the standards of women's universities in teaching and research, ensuring that their quality aligns with that of other prestigious universities in the country, thereby securing superior teaching and research in the future. This program commenced in 2009 to elevate the standards of teaching and research at women's universities, ensuring their quality aligns with that of other national universities, thus facilitating a

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consistent influx of high-caliber women in science and technology in India. The Ministry of Science and Technology (MoST) has thus far extended financial support to six women's universities in the nation. A sum of Rs. 235 million would be allocated to these six universities over three years, mostly for the acquisition of specialized equipment.

4. Exemplary case studies of Indian women augmenting their impact in STI enterprises

The next section will give three representatives of women entrepreneurs in different fields to discuss the impact of their leadership on society as a whole through their work and study experiences.

Aggarwal is the inaugural Indian woman to join the unicorn club.Valued at over $1 billion, Shopclues stands out as a prominent entity among India's indigenous e-commerce firms.Radhika Aggarwal and Sanjay Sethi co-founded the company in 2011.Last year, the company successfully secured over $150 million from current investors, including the Government of Singapore Investment Corporation. Last year, the company successfully secured over $150 million in capital from the Government of Singapore Investment Corporation (GIC) and current investors such as Tiger Global and Nexus Venture Partners. Aggarwal, a management graduate from Washington University, has experience in the United States with Nordstrom and Goldman Sachs in the sectors of retail, e-commerce, fashion, and lifestyle. She currently manages branding, marketing, acquisitions, sales, recruitment, and product portfolio for ShopClues. Aggarwal stated, 'There has never been a more opportune moment to conduct business in India.' ShopClues, an e-commerce network, currently boasts 350,000 small and medium-sized buyers and 14 million registered users. Do individuals continue to hold misconceptions around women entrepreneurs? It is not concerned with stereotypes. Male and female entrepreneurs have same problems. The sole distinction is the scarcity of women entrepreneurs, prompting inquiries such as, 'How will you maintain work-life balance?' As responsibilities escalate, a structure must be established to support both familial and professional obligations[3] .

Rajala Senior Director at HARMAN International (India), a prominent global entity in automotive akshmi Sakthivel serves as audio technology and an autonomous subsidiary of Samsung Electronics. At HARMAN, her responsibility is to unify the automobile audio team, which has expanded from an initial 10 members to over 300 currently. I was selected as Senior Director for the global leader in platform software. Furthermore, I was designated as the site leader for the automobile audio team. This entails the continual practice and application of policies and procedures across several functions of automotive audio', she stated. She obtained her bachelor's degree in electronics and communications engineering from Vinayaka Mission Krupananda College of Engineering in Salem in 1996. Nevertheless, it required much time for her to secure her initial opportunity as a research and development engineer at ADS Export. Although she has not reached the "creamy layer" of the organization, she has distinguished herself in her career, occupying pivotal roles in organizations such as APTIV and Delphi Automotive Systems. Sakthivel played a pivotal role in the introduction of the Tata Nano and was crucial in establishing the automotive audio division at Harman. Meerah Rajavel possesses approximately 30 years of experience and has collaborated with prominent IT corporations including Cisco, McAfee, and Forcepoint. She currently serves as the CIO of Palo Alto Networks. Rajavel currently supervises all facets of technology. This include overseeing a team that develops goods for clients, addressing challenges associated with operating a global office, and managing customer inquiries regarding applications. Furthermore, her team is pivotal in providing vital business and technical infrastructure capabilities for the company's operations. She supervises a team of 1,000 individuals in Palo Alto, supervising all technologies essential to the company's business operations and profitability. She recounts her

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narrative: "It is acceptable to falter if you possess the knowledge to rise." However, acquire the ability to rise rather than succumb. Moreover, if you are not experiencing failure, you are exercising caution. Following a seven-year hiatus in my profession[4].

Vaidyanathan commenced employment at Lowe's in 2020 and presently holds the position of Director of Software Engineering. In this position, she directs Procurement (Customer Promise) Engineering, tasked with ensuring the brand's fulfillment commitments to customers are satisfied. This entails monitoring product availability for each consumer across all channels, including postcode, estimated delivery duration, and ideal delivery location. Before that, she dedicated a decade to Lucent, engaging in innovative projects within the telecommunications sector. "Life events necessitate considerations of prioritization and time management." Occasionally, it is unnecessary to select one option over another; rather, one can learn to prioritize effectively. in times, professional obligations take precedence, while in other instances, familial responsibilities are paramount. Women ought to have the autonomy to make these decisions without experiencing shame and should be empowered to advocate for their desires," she stated. Priyanka Swain, Tully Solutions Priyanka Swain commenced her tenure at Tully Solutions in 2016 to oversee the engineering program. Swain, as Director of Engineering, oversees customer-oriented centres of excellence. She holds global accountability for advancing Tully's releases and diverse product advancements[3] .

In her daily responsibilities, she supervises design, personnel management, delivery oversight, quality assurance, and process development. She oversees various organizational projects, including the Tully Alumni Chapter and the Engineering Internship Programme. Her enthusiasm for STEM is derived from her father, an engineer. Before that, she dedicated 15 years to Infosys, participating in numerous financial and international initiatives. She advocates for increasing female representation in the technology sector, stating: "There should be a support network specifically for women, as many women are often hesitant to discuss their experiences or accomplishments, necessitating ongoing mentorship." The absence of relationships and familial obligations is driving women towards less demanding professions.

Kiran Mazumdar-Shaw, Founder and Chairman of Biocon, is an internationally acknowledged exemplar for women entrepreneurs and was included in Forbes Magazine's 'World's Most Powerful Women 2020' list. She has demonstrated that women can thrive in any domain and that their potential and talents are vital for societal advancement. Born in 1953, she established Biocon in 1978 at the age of under 24.Kiran, born into a Gujarati family in Pune, India, graduated from Cotton Girls' High School in Bangalore, subsequently attended Mount Carmel College, and earned a degree in zoology from the University of Bangalore in 1973. Nevertheless, she was determined to attend medical school, but could not fulfill her aspiration owing to scholarship complications. During his tenure in Scotland, Kiran encountered Leslie Auchincloss, an Irish entrepreneur seeking an Indian counterpart to establish a subsidiary in India. Kiran embraced this opportunity, marking the initial step towards business success. Biocon Biochemicals, a manufacturer of enzymes for brewing, textiles, and food packaging, reestablished operations in India in 1978, initiating Biocon in a rented garage in Bangalore with a start-up capital of Rs. 10,000. The company progressively transitioned to pharmaceutical manufacturing, utilizing revenues from enzyme product sales to finance drug research and production.

One year later, Biocon emerged as the inaugural Indian company to export enzyme goods to the United States and Europe. Kiran subsequently spearheaded the successful transition of Biocon from an industrial enzyme manufacturing entity to a fully integrated biopharmaceutical corporation with a research emphasis on diabetes, oncology, and autoimmune disorders. She founded two subsidiaries,

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Syngene in 1994 and Clinigene in 2000.Syngene offered early-stage R&D support services through contract research, whereas Clinigene focused on clinical research trials and the development of generics and novel pharmaceuticals.Clinigene was subsequently amalgamated with Syngene.In 2004, Kiran was encouraged to take Biocon public to secure funding for the development of Biocon's drug discovery program.Biocon became the inaugural biotech firm in India to initiate an IPO, which was oversubscribed by 33 times, and concluded its first trading day with a substantial market capitalization of US$1.1 billion, so becoming the second business in India to surpass the US$1 billion threshold on its debut trading day[3] .

5. Examination of strategies to augment the impact of Indian women in STI enterprises

Over 1.8 million entrepreneurs have gained from India's Startup India initiative, which offers loans to promote women's entrepreneurship, with 80 percent of the loans allocated to women. The initiative, designed to support grassroots start-up entrepreneurs, particularly women, has allocated about Rs. 4.07 billion (roughly Rs. 360 million) in loans. A McKinsey analysis indicates that a 10 percent rise in female employment in India might augment the nation's GDP by $550 billion. Consequently, female employment has emerged as a significant catalyst for India's development. Nonetheless, women's entrepreneurship in the country remains very challenging, as the majority of women lack assets in their names to serve as collateral, leading to over 70 percent of their financing needs being unmet. India's Finance Minister Sitharaman stated that the Startup India initiative has empowered women economically by providing direct financial resources to them. The execution of the program and the evolution of women's entrepreneurship trends will assist secondary market investors in comprehending the progression of the Indian economy and identifying investment chances[3] .

WOS provides a training program for female scientists to establish their own enterprises. The one-year curriculum encompasses both theoretical and practical instruction in intellectual property rights, including patent searches, know-how, writing, filing, trademarks, trade secrets, and copyrights, and is executed in collaboration with law firms and governmental entities. In 2015, an online examination for WOS-C was implemented, with candidates evaluated at 41 locations across 33 cities, significantly augmenting the candidate pool and facilitating greater participation of women scientists in the WOS program. In India's 11th Five-Year Plan, 733 women successfully secured WOS funding, leading to an average of over 500 articles in prominent journals and magazines by women in science and technology. The Government of India has established several Women Science and Technology Parks (WSTPs) across the nation, particularly in remote regions, to enhance the status of women in science and technology by offering information and training in relevant skills for their scientific and technological pursuits. Simultaneously, pertinent organizations have been established within the science and technology parks to assist women in science and technology in generating more income through small and micro firms located in these parks. By the conclusion of 2015, 32 women's scientific and technology parks had been established and were operational.

6. The effect of globalization on the enhanced influence of Indian women in STI enterprises

Female leaders often exhibit heightened empathy due to their awareness of the unique problems and obligations encountered by other women. Although professionalism and work do not compromise each other, a discernible equilibrium exists, propelled by empathy and a grasp of life's dynamics—be it in establishing client expectations or optimizing flexibility for female workers. The female founder exemplifies leadership through her transparency and integrity. This paper's case study and

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policy research demonstrate that the economic standing of women in India has improved, along with their propensity to purchase and capacity to expend. Entrepreneurs are increasingly addressing the demands of the female demographic, exemplified by POPxo, a media business aimed at women; Wooplr, a women's fashion platform; Maya, a women's advisory service; and Celes Care, a women's health service platform, among others. Celes Care, among others. The government has acknowledged the significance of women's empowerment, with the Minister of IT in Karnataka establishing a US$1.4 million fund to foster women's business. As the market progresses, so do women entrepreneurs, and the 30under30Asia list provides insight into the advancement of female entrepreneurs in India [5].

Inequities in the educational system and limitations on women within the social framework exemplify the challenges women face in ascending the social hierarchy. The multireligious, multiracial, and multicultural milieu, rooted in ancient Indian culture and the hierarchical caste structure, has shaped Indians to be exceptionally flexible. This talent is essential for many Indians, particularly among women.

In this culturally fragmented context, Indian women have harnessed the potential of digital technology to elevate their voices and discussions, leveraging the influence of the digital revolution to dismantle the constraints that confine them, progressively. The voices of enterprising women in the community are increasingly prominent. There is a growing empowerment of women facilitated by digital technology, driven by enhanced policy incentives and support from external technology firms and organizations.By adopting new technologies and transcending conventional constraints to generate technological value, Indian women in technology are endeavoring to bridge the internal 'digital divide.' In their transition from mere survival to development, they are progressively emerging from the shadows, illuminating the path toward a digital future characterized by 'her power.' The digital future of 'her power' is being developed[6].

The increase of women's involvement in STI in India necessitates a multi-stakeholder engagement among the government, corporations, educational institutions, and social organizations. In the future, we can concentrate on: supporting women's entrepreneurship in growing sectors such as AI and renewable energy; implementing female employment initiatives for multinational technology firms in India; and providing leadership training for women to cultivate more executives in the technology sector.With systematic support, Indian women are anticipated to attain significant advancements in science and technological innovation and foster socio-economic growth[5].

7. Conclusion

The achievements of Indian women in science and technology are as much the result of individual struggles as they are the result of progressive improvements in social support systems. They have paved the way for the women of tomorrow through leadership breakthroughs, skill enhancement and systematic advocacy: visibility of role models has lowered psychological barriers, support networks have provided resources and policy changes have created an equitable environment. These contributions have not only propelled India towards becoming a tech powerhouse, but have also globally confirmed the critical role of gender diversity in innovation. In the future, as more women enter the tech sector, they will continue to rewrite the rules of the industry and make the transition from “catching up” to “leading the way”.

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