

Availability and Use of Technology Among SME Entrepreneurs in Mumbai and Navi Mumbai

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Abstract

The present research paper discussed the role of information and communication technology (ICT) within the small and medium enterprise (SME) sector in Mumbai and Navi Mumbai. ICT plays a significant role in maintaining business operations and to make businesses globally competitive. SMEs play a very important role in the economic growth and development in an economy and thus, it is important to focus on making them globally competitive with the use of ICT, as use of outdated technology or lack of technology also hampers growth of SMEs in India. The research focused on studying the availability and use of technology by entrepreneurs of SMEs in Mumbai and Navi Mumbai. The use of outdated technology or low level of use is one of the problems faced by SMEs to beat growing competition. SMEs should make use of different ICT tools for increasing competitiveness of their business. This research paper focused on availability and use of technology using structured questionnaire for data collection.

Keywords : Access to finance, availability of technology, ICT, SME, use of technology

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ICT has changed the way businesses work and the current era of globalisation and digitalisation has made businesses more competitive in the marketplace. Change in business is highly attributable to the growing Information and Communication Technology (ICT) boom. ICT, also known as knowledge economy lays the foundation for high pace growth and development in any economy. There are a varied number of globalisation activities with most of them related to economic productivity. The inclusion of ICT has helped reduction in transaction cost, thereby making globalisation more effective and SMEs competitive. ICT not only provides a large variety of solutions but also offers readily available connectivity, while improving transparency and accuracy (Kramer, Jenkins, & Katz, 2007). The role of ICT in countries which have taken up globalisation like India, Singapore, South Korea, Taiwan, etc. are countries which have benefited due to timely arrival of digital technologies as global business opened opportunities for international sub-contracting and international outsourcing. US economy has seen a high growth rate during the 1990s as it has been an early adopter of ICT, thereby an increase in productivity and employment in the country (Lucchetti and Sterlacchini, 2004).

Proper leverage of ICTs can be a high driver of economic growth (Galloway & Mochrie, 2005). The growth of the Indian economy has been more than 50% in 1990, the economy earned more than 75% of its revenue from exports with the adoption of ICT. "Currently, at the forefront of organisational performance are the organisations which recognised that information, knowledge, and their intelligent application are the essential factors of success in the new economy, and take advantage of information technology to achieve high level of efficiency and effectiveness." (Handzic, 2004).

Small and medium enterprises (SMEs) gained competitive advantage post globalisation as information plays a vital

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asset for businesses (Mutula & Brakel, 2007). However, lack of access to information due to ICT infrastructure had always been one of the major problems in developing countries like Botswana and South Africa. Thus, access to information and a strong ICT infrastructure has supported SMEs in taking informed decisions. "The ability of SMEs to survive in an increasingly competitive global environment is largely predicated upon their capacity to leverage information as a resource" (Mutula & Brakel, 2007). Thus, a strategic positioning and effective use of ICT can help SMEs in a way that they will maximise its benefits.

Micro, small and medium enterprises (MSMEs) sector is the backbone of the Indian economy as the importance of the sector is attributable to its ability for (a) employment generation (b) low capital and technology requirement (c) promotion of industrial development in rural areas (d) use of traditional or inherited skill (e) use of local resources, and (f) mobilization of resources and exportability of products. MSME sector is the second largest job creator in India, after agriculture and is expected to generate 15 crore jobs in the next five years. The MSME sector in India is quite diverse in terms of its size, level of technology employed, range of products and services provided and target markets.

This research paper focused on the role of ICT within Mumbai and Navi Mumbai to study use of technology by SMEs. The study investigated the concepts of ICT and SMEs. Second, it discussed the importance and adoption perspectives of ICT used. Third, it gave an overview of the empirical research conducted and sketches the findings and recommendations.

The objectives of the study were:

- ↳ To outline the definition of SMEs and ICT and understand the importance of ICT for businesses.
- ↳ To study the availability of ICT tools among small and medium enterprises (SME) entrepreneurs in Mumbai and Navi Mumbai.
- ↳ To study the relationship of years of existence and use of technology advancement by entrepreneurs of small and medium enterprises.

MSME Definition

Micro, Small, and Medium Enterprises Development (MSMED) Act in 2006 defined MSME terminology which stands for Micro, Small, and Medium Enterprises (Ministry of Micro, Small, & Medium Enterprises, n.d.). The enterprises were classified into two divisions:

- (1) Manufacturing enterprises that are engaged in manufacturing or production of goods in any industry.
- (2) Service enterprises that are engaged in providing or rendering services.

This paper focuses only on Small and Medium Enterprises (SMEs) as per the old definition of MSME Act as shown in Table 1. Though the definition was revised in June 2020, the data were collected prior to this period, so the SMEs targeted were as per the old definition as stated.

Table 1. Classification of MSME Pre-June 2020

	Manufacturing Sector	Service Sector
	Investment in plant & machinery	Investment in equipment
Small Enterprises	> ₹ 25 lakhs, < ₹ 5 crore	> ₹ 10 lakhs, < ₹ 2 crore
Medium Enterprises	> ₹ 5 crore, < ₹ 10 crore	> ₹ 2 crore, < ₹ 5 crore

Source : MSME Website

ICT and Government Initiative

Definition of ICT

Ritchie and Brindley (2005) defined ICT as, "the array of primarily digital technologies designed to collect, organise, store, process, and communicate information within and external to an organisation and, in our case, SMEs." ICT covers broad categories of technologies ranging from a simple telephone, point-of-sale system, stand-alone PCs, networked environments to internet and credit card facilities.

Lucchetti and Sterlacchini (2004) grouped ICT into three categories, namely: general-user, production-integration, and market-oriented groups. The groupings were further explained as following:

- (i) General-user group comprised of basic technologies used such as telephone, e-mail, and internet used by SMEs for their administrative functions.
- (ii) Production-integration group comprised of ICT used for production of goods and functionality of business.
- (iii) Market-oriented group comprised of ICT used to market or communicate with the outside world.

ICT helps SMEs meet their business needs such as strategic, operational or marketing needs, or a combination of two or all of them. Even though a number of groups may be defined, the sole purpose of ICT is to support business purposes and make them more competitive both locally and globally.

This study comprises of use of any ICT software installed and used other than the general user group.

Literature Review

Caldeira and Ward (2003) discussed use of resource-based theory to explain success with the adoption and use of information systems and information technology (IS/IT) in manufacturing small and medium-sized enterprises (SMEs). The study emphasised that SMEs in traditional industries suffered from poor financial and human resources compared to large enterprises and were thus, less adaptable with regard to significant market changes. SMEs focused largely on offering solutions instead of focusing on the product. However, the development of new solution-oriented approaches was slowed by financial, personnel, and organizational constraints.

Lucchetti and Sterlacchini (2004) used econometric analysis on the adoption and effective use of Information and Communication Technologies (ICTs) among a sample of Italian SMEs. They divided the general-use ICTs (e-mail and internet access) into two groups of technologies (labelled production-integrating and market-oriented ICTs), the use of which is associated with different firm characteristics. It was observed that the availability of highly educated workers was a key factor for the effective use of ICT.

Modimogale (2008) highlighted the use of ICT and SME competitiveness in South Africa. It was observed that in South Africa the number of SMEs adopting ICT technologies was growing, especially in urban areas, but the pace of growth was slow. The author further highlighted some stumbling blocks to the rapid pace of growth of use of ICT which needed attention: the two key issues were the lack of knowledge about the strategic use of ICT and the lack of necessary IT skills.

Mutula and Brakel (2007) studied the readiness of ICT skills for the emerging global digital economy among small businesses in developing countries using the case of Botswana. It was observed that "pervasive use of ICT in the economy depends on well-trained human resources for developing relevant applications, supporting and maintaining systems."

Hamilton (2012) pointed out that nowadays most of the people first go online before doing their business and in some cases they don't open any shop at all as internet provides them enough possibilities for doing business.

Research Methodology

The study was carried out on 566 manufacturing and service entrepreneurs belonging to small and medium categories based in Mumbai and Navi Mumbai area. The data were collected using area simple random sampling. The study intended to prove the following hypotheses:

(1) H_0 : There is an association between awareness of availability of technology and years of existence among entrepreneurs of SMEs.

H_1 : There is a no difference between awareness of availability of technology and years of existence among entrepreneurs of SMEs.

(2) H_0 : There is an association between types of companies and use of ICT for entrepreneurs of SMEs.

H_1 : There is no association between types of companies and use of ICT for entrepreneurs of SMEs.

Data Interpretation and Analysis

The data were analysed using one way ANOVA for different types of companies and the use of technology for SMEs situated in Mumbai and Navi Mumbai. Table 2 shows the mean values derived from SPSS to check the type of company, awareness, and the use of technology by the entrepreneurs of SMEs. The data were collected from 566 different types of SME entrepreneurs having existence from one year to more than 7 years. They were asked about their awareness of technology software packages and ICT tools for businesses and use of different ICT software for business processes. The answers were analysed and the results for the same are as follows:

Figure 1 shows the availability of technology among entrepreneurs of SMEs. It was observed that around 61% entrepreneurs were in business for more than 7 years and they were more aware of the different software packages and technological advancements in business processes, while around 11-12% awareness was found among entrepreneurs with business existence of around 2-6 years, while a mere 4% existed for less than a year.

These entrepreneurs were further asked about the use of these technological software packages for their business processes and the results were similar with 61% entrepreneurs being in business for more than 7 years agreeing to use of different software packages and technological advancement in business processes, while around 11-12% also confirmed usage of ICT tools in business processes with business that existed for 2-6 years, while a mere 4% that used ICT had existed for less than a year (Figure 2). Figure 3 shows Mean and Standard Deviation of availability of technology among SMEs. Figure 4 shows Mean and Standard Deviation for use of technology by SMEs. Figure 5 shows Standard Error for use of technology by SMEs.

Table 2 shows that there is an association between years of existence and availability of technology and ICT softwares for SMEs ($p = 0.025$). Companies with existence of more than 7 years have confirmed the highest level of awareness of availability of technological software (mean availability of technology = 1.5965) and companies existing for a period of 1-2 years have the lowest awareness (mean availability of technology = 1.2429).

Table 2. ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Availability of Technology Advancement (out of 9)	Between Groups	11.462	4	2.865	2.820	0.025
	Within Groups	569.994	561	1.016		
	Total	581.456	565			
Use of Technology Advancement (out of 9)	Between Groups	12.397	4	3.099	2.139	0.075
	Within Groups	812.926	561	1.449		
	Total	825.324	565			

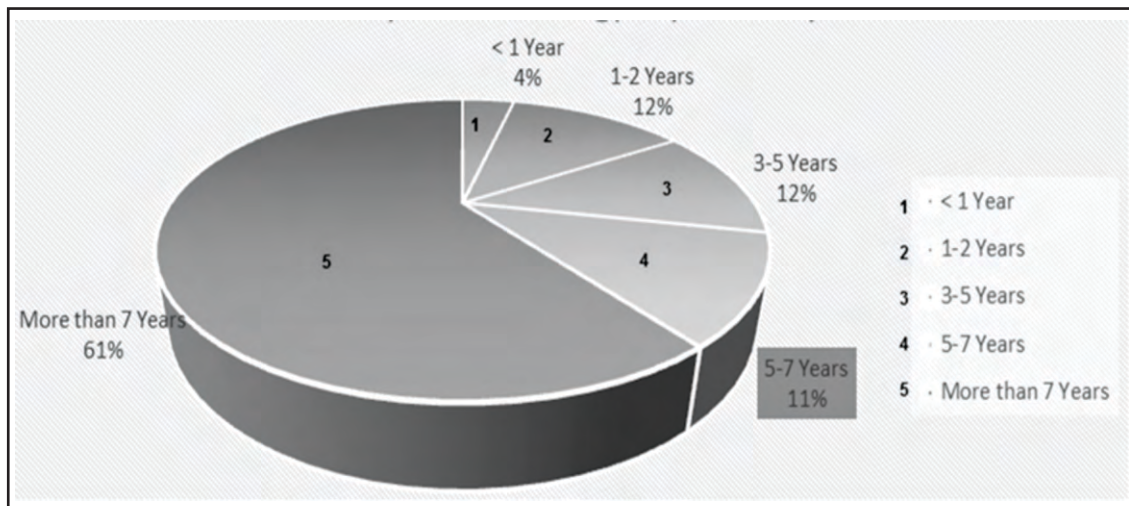


Figure 1. Availability of Technology as Reported by SMEs

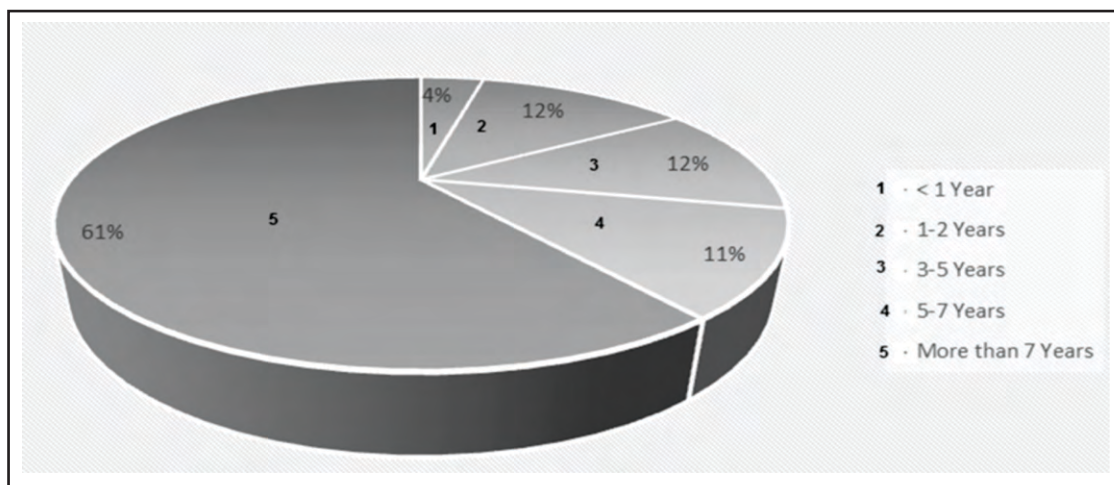


Figure 2. Use of Technology by SMEs Based on the Number of Years of Their Existence

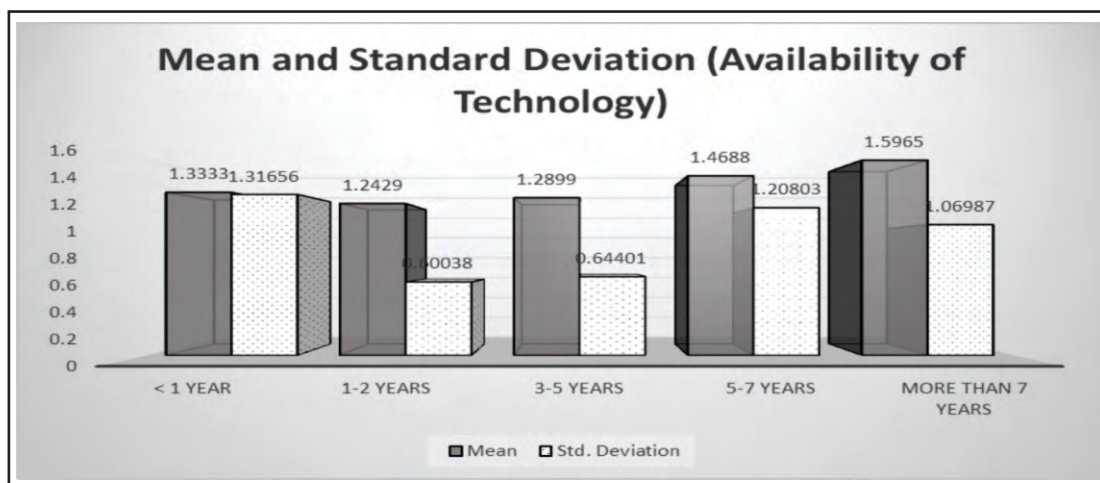


Figure 3. Mean and Standard Deviation of Availability of Technology Among SMEs

Table 2 shows that there is no or very low association between years of existence and use of technology and ICT software for SMEs ($p = 0.075$). Companies that have existed for less than one year have confirmed the highest use of technological software (mean use = 1.42219), while companies existing for a period of 5-7 years shared the second highest use of technology (mean use = 1.37003), and companies with existence of 1-2 years have lowest use of ICT tools (mean awareness = 0.83098).

The results were checked to ascertain whether the years of existence of SMEs has a relationship with awareness of ICT and technological software. The results of one-way ANOVA showed statistically-significant difference in

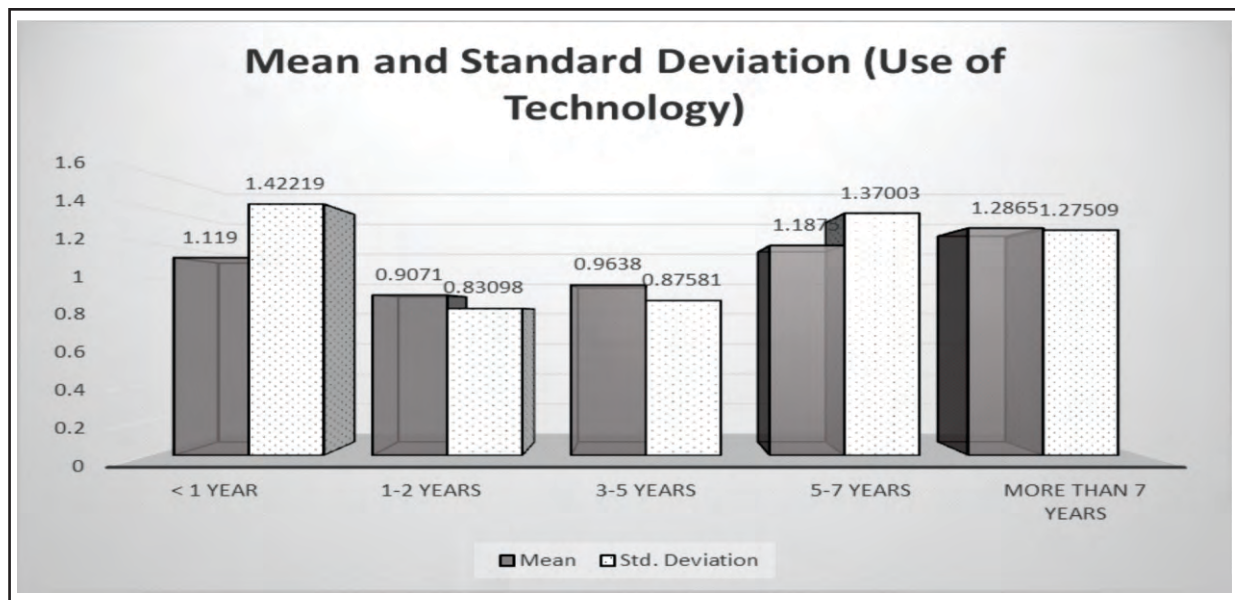


Figure 4. Mean and Standard Deviation for Use of Technology by SMEs

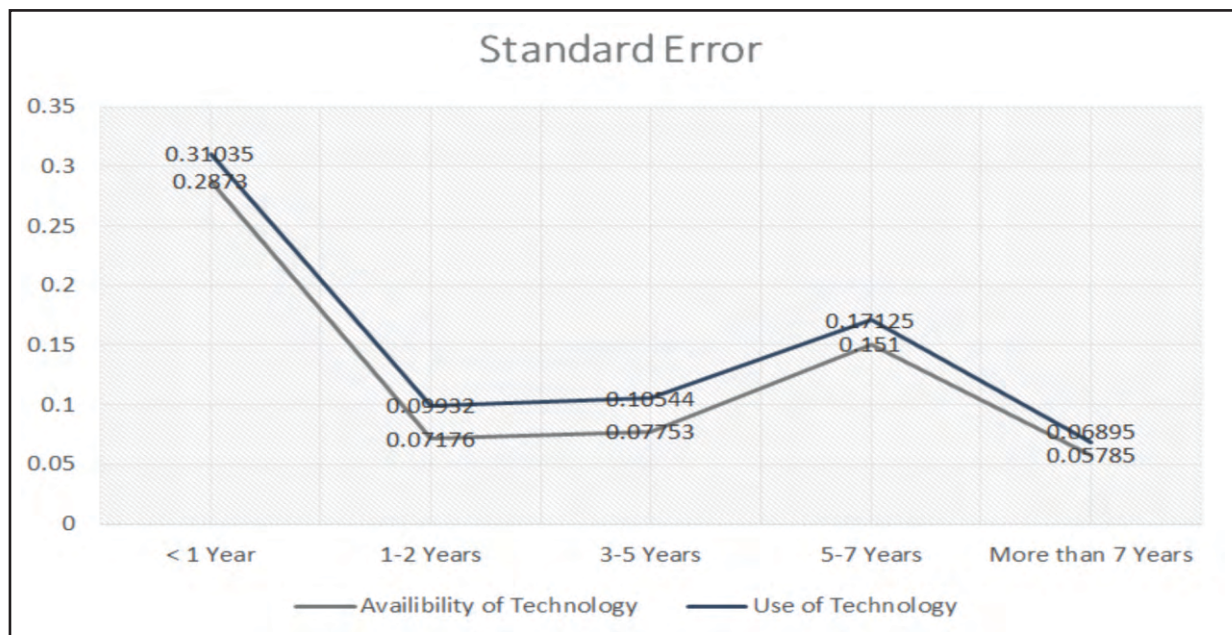


Figure 5. Standard Error for Use of Technology by SMEs

awareness of ICT and technological tools and years of existence of SMEs with f value of 2.820 and $p < 0.025$. The p -value of F -test was 0.025, which is less than the significance level 0.05. To conclude, there is a significant difference between years of existence of SMEs and the awareness about ICT and technological software for business processes.

The results were checked to ascertain whether the number of years of existence of SMEs has a relationship with use of ICT and technological software. From the results of one-way ANOVA, it was found that there is no statistically significant difference in use of ICT and technological tools and years of existence of SMEs with F value of 2.139 and $p > 0.025$. The p -value of F -test is $p = 0.075$, which is more than the significance level 0.05. To conclude, there is no significant difference between years of existence of SMEs and the use of ICT and technological software for business processes.

Research Implications

The study was conducted in the pre-COVID period on use of technology in the SME sector in the metro city of Mumbai and in the state developed industrial corridor of Navi Mumbai. This research discusses the awareness level among entrepreneurs and their use of technology. These results may be used by state authorities to design awareness programs and run technology upgradations scheme for the state of Maharashtra. The Startup India schemes run by the Government of India should also focus on the research implications presented and boost the sector participants by running some special schemes for technology advancement and making the sector enterprises competitive.

Conclusion

IT plays an integral part in scaling up business and development of small and medium enterprises across the world. The use of technology not only makes processes work efficiently for organisations but also enhances the product process and output quality. The products become scalable not only in the geographic region of the country but also across international markets. Several emerging economies are trying to give the best incentives and subsidies to small and medium entrepreneurs to deploy technological solutions. It has been observed in many studies that use of ICT and software packages for business processes if used with proper strategy by businesses or SMEs may not guarantee better performance or output for each, but it adds to competitive advantage and value to the business. Thus, availability and use of ICT and technological software if implemented in the right manner can add value and competitive advantage for SMEs.

As SMEs are considered to be an important segment for economic development and growth for businesses, making ICT tools available is one of the key drivers to make them globally competitive. Thus, Government of India is also promoting the use of ICT and making the same available to SMEs for monthly small amounts of rentals. This research has also found the use of technology at a very high level among SMEs pointing towards growing awareness and availability and use of ICT and technological advancements by entrepreneurs of SMEs in Mumbai and Navi Mumbai. The small and medium entrepreneurs in India are now registered on the digital Micro Small and Medium Enterprise (MSME) portal and are able to have access to Computer Aided Design (CAD) software, Bar coding machine and software, Goods and Service Tax (GST), software and Enterprise Resource Planning (ERP) services software by paying a minimal lease or rentals through the MSME portal. The Indian Government is not only supporting the processes through technology but is also promoting and supporting MSMEs by providing support for digital marketing services to small and medium enterprises. The evidence of small and medium entrepreneurs' growing awareness and use of technological solution through this study further shows that technology is now also a major tool for business among small and medium businesses and is not confined only to large organizations. Thus, the technological sector and software developers should now focus on solutions and small packages for the micro and small enterprises as the near major customer needs are bound to change the face and style of doing business for all.

Limitations of the Study

The study was conducted among SMEs in the city of Mumbai and Navi Mumbai and the results and implications are based on survey, the results of which may vary state wise. Also, the data were collected in the year 2019, so the old definition of SME was used for the choice of the company. The new definition cannot be implied for the results as micro enterprises were not considered for the study and the focus group was small and medium entrepreneurs.

Scope for Future Research

The study has special focus only on the entrepreneurs of small and medium enterprises, while the micro segment was not covered. Future research should be conducted on enterprises in the micro segment in other parts of the state. Future studies can also be conducted on understanding the challenges faced for growth by the sector, the government schemes offered to MSMEs, and the impact of the schemes on their business processes. The new definition and bifurcation could be used by the researcher as several enterprises have registered themselves as MSMEs post COVID-19.

Authors' Contribution

Namrata Acharya and Govind Shinde are the joint authors of the paper and have conducted the entire study and work described in the paper. Both of them collected the data, ran the statistical test, and analysed the output.

Conflict of Interest

The authors certify that the work done is original and they have no affiliations with or involvement in any organisation or entity with any financial interest or non-financial interest in the subject matter or materials discussed in the manuscript.

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