
Open Access Article

RESILIENCE OF INDIA'S SMALL AND MEDIUM-SIZED MANUFACTURING ENGINEERING ENTERPRISES

Dr. Ashifa. KM

Asst. Professor, Department of Social Work, Istanbul Gelisim University, Turkey. Email:
ashifakattur@gmail.com

ABSTRACT

SME's are critical for practically every country on Earth, but notably for those in developed countries and those facing substantial job issues and income inequality (OECD, 2017). Small and medium-sized enterprises (SMEs) benefit from the cheap cost and sustainability of their manufacturing. Generally, they employ less expensive local tools. Small firms benefit from cheaper production and operational costs as a result of decreased labor costs. Additionally, SMEs are ideal for custom manufacturing. The expansion of small and medium-sized companies results in increased supplies of produced items, which stimulates resource creation, develops indigenous entrepreneurial talent and skills, and generates jobs (Kumar, 2006). Small and medium-sized enterprises (SMEs) are an industry's kindergarten, driven mostly by individual inventiveness and invention (Kaul, 2019). According to the Development Commission of micro, small, and medium-sized enterprises, this sector has the largest amount of employment after agriculture. The enormous number of employees supplied by SMEs is critical to poverty reduction (OECD, 2004). The current study attempted to analyze the sustainability of Small and Medium-sized Manufacturing Engineering Enterprises (SMMEEs) in India using the Analytical Hierarchy Process (AHP) and identified priority indicators of sustainability with global priority weighting and Manufacturing Engineering enterprises' competitiveness in India.

Key Words: Sustainability, Competitiveness, Analytical Hierarchy Process

抽象的

中小企业几乎对地球上的每个国家都至关重要，尤其是对发达国家和面临严重就业问题和收入不平等的国家（经合组织，2017 年）。中小型企业 (SME) 受益于其制造的廉价成本和可持续性。通常，他们使用较便宜的本地工具。由于劳动力成本降低，小企业受益于更便宜的生产和运营成本。此外，中小企业是定制制造的理想选择。中小型公司的扩张导致产品供应增加，从而刺激资源创造、培养本土创业人才和技能并创造就业机会（Kumar, 2006 年）。中小型企业 (SME) 是一个行业的幼儿园，主要受个人创造性和发明的驱动（Kaul, 2019 年）。根据中小微企业发展委员会的数据，该部门的就业人数仅次于农业。中小企业提供的大量员工对减贫至关重要（经合组织，2004 年）。目前的研究试图使用层次分析法 (AHP) 分析印度

Received: October 05, 2021 / Revised: October 31, 2021 / Accepted: November 30, 2021 / Published: December 31, 2021

About the authors : Dr. Ashifa. KM

Corresponding author- *Email:

中小型制造工程企业 (SMME) 的可持续性，并确定具有全球优先权重的可持续性优先指标和印度制造工程企业的竞争力。

关键词：可持续性、竞争力、层次分析过程

INTRODUCTION

Small and medium-sized enterprises (SMEs) contribute considerably to employment and global economic development in the majority of economies, particularly in emerging countries. Around 90% of businesses and more than 50% of the global workforce are small and medium-sized enterprises (SMEs). Formal SMEs provide up to 40% of national income in developing economies (GDP). When informal SMEs are included, these figures significantly increase (World Bank, 2017). According to World Bank estimates, 600 million jobs will be required by 2030 to absorb the growing global workforce, making the growth of small and medium-sized businesses a top goal for many countries globally. Small and medium-sized enterprises (SMEs) generate the most structured jobs in emerging markets, accounting for seven out of 10 employees. However, access to capital is a basic constraint on SME expansion, ranking as the second most frequently mentioned impediment to SME growth in established and emerging markets (Kumar R., 2017). Tamil Nadu's anticipated SMI system has been an essential part of the state's rapid industrialization drive (Selvaraj & Balajikumar, 2015). Tamil Nadu's government has launched a variety of programs to spur development, including the most crucial systematic attempts to support small industry growth. Significant progress has been made in developing infrastructure and diversifying and expanding industrial operations. The state's economy has gained new vitality and dynamism,

primarily through small and medium-sized industries. Tamil Nadu has around 50 lakh micro-enterprises operating in an unorganized, unregistered industry. According to Udyog Aadhar, the state reported 7.7 lakh MSMEs. These small and medium-sized businesses are active in manufacturing, aerospace, automotive, agriculture, food, information technology, and biotechnology. According to the MSMEs, the district of Chennai has the most productive businesses, followed by the districts of Coimbatore, Tiruppur, Kanchipuram, and Salem in the Tamil Nadu state (MSME-DI Chennai, 2019).

The growing strength of global competition and economic uncertainty have led companies to look for more effective and productive ways to manage their business (Emrouznejad & Tavana, 2014). In both academia and industry, measuring business process sustainability has become a central issue as enterprises challenged to achieve successful and productive results. To this end, the application of sustainability management models ensures alignment with the business policy, which implies an organizational dependence on the choice of sustainability indicators (Looy & Shafagatova, 2016). These assessment models, however, typically lack guidance about the current sustainability metrics and how they can be effectively applied. A proper sustainability appraisal is important in this context, not only for themselves but also for the creditors and investors themselves (Bhatti, M. Awan, Hassan,

& Razaq, Z., 2014). The assessment is one of the most critical tools to recognize internal vulnerabilities and strengths and evaluate external opportunities and risks, and this can also clarify the role of organizations over others. The present investigation tried to analyze the sustainability of Small and Medium-sized Manufacturing Engineering Enterprises (SMMEEs) in India with the support of Analytical Hierarchy Process (AHP) and identified priority indicators of sustainability with global priority weightage and competitiveness of Manufacturing Engineering enterprises in India. In today's context, the promotion of SMMEEs is the most important and viable choice for sustainable and open growth in India with extensive human resources. As SMMEEs emerge and grow extensively, skilled and unqualified workers may obtain remunerative jobs that will eventually help to achieve economic independence even in rural areas in the State. That helps to reduce the movement of rural unemployed people on a wide scale.

REVIEW OF LITERATURE

The Micro, Small, and Medium Enterprises Development Act 2006 (MSMED Act), which entered into force on 2 October 2006, was a significant development in India's history(Sarkar, 2018). In order to meet the requirements of the manufacturing and service sectors, the adoption of the Act by the Government of India to provide for an overall legislative structure has sought to resist foreign competition and develop better technologies and skills (*Ibid*). In addition to the industry's ability to expand and its crucial position in the production and value chain, there are essential

aspects to consider in policymaking and the implementation of programs in the heterotic and unorganized nature of the Indian MSMEs. Given their short gestational period, high job potential, and relatively low financial requirements, they will achieve economic growth faster (Essays, UK, 2018). In addition to shifting the industry to meet new challenges, globalization and new economic policies increase the competition level at home and globally in this field (Mrak, 2000). Besides, the Abid Hussain Committee suggests that products currently reserved for the small industry deserved. However, this must not cause a sudden disruption and problems for the poor small units, and a specific policy structure must be established that small companies slowly abandoned to sustain their growth (BSCAL, 2013).

New entrepreneurship issues are multidimensional. This can be overcome without any bureaucratic obstacles and bureaucracy by the organized efforts of entrepreneurs, the organized effort of promotional organizations, and government assistance. The employer must be educated and adequately qualified to learn the skills required to operate a company(Taneja & Gupta, 2011). The role and sustainability of the small-scale industries in India in terms of unit growth, production value, the number of people employed, and export value over the past decade. WTO's effect on the SSI sector and offered the Government a couple of recommendations on SSI sector growth in India (Hussain, 2004). Since independence, the tremendous growth of small-scale industries has been a confounding factor in the country's economic development. It led to economic growth and the generation of employment and exports. The number of SSI units, production, jobs, and exports has steadily

increased over the years. (Bargal, Dashmishra, & Sharma, 2009). Given all the progress the Indian SSI industry has achieved concerning numbers, investments, output, employment, or exports, its sustainability is much lower than expected. Indian small-scale enterprises have deficient capital and labor productivity (Mukherjee, 2018). However, their output in terms of the use of resources and the quality of the product is rather deceptive. They offer great opportunities even in unemployment, but the quality of their pay and work opportunities remains low (ILO, 2014). Every organization requires sustainability metrics and sustainability assessment and sustainability data that are strategically relevant to their respective circumstances to be effective (Sadler, Spices, & Chaston, 2001). This will result in strategic metrics of sustainability that assist senior management in determining the desired strategic path.

NEED AND SIGNIFICANCE OF THE STUDY

In the economic growth of a nation, the sector of small and medium-sized businesses (SMEs) has a significant role. This sector contributes to the production of products and fulfills customer requirements (OECD, 2004). Manufacture and marketing are essential to the growth of small and medium-sized enterprises, and this sector is a commendable part of India's transformation from the agricultural to the industrial economies (McIntyre, 2001). SMEs in India account for 95% of industrial units and account for 40% of the total industrial output and 35% of direct exports in the country. There are approximately 3.6 million small industrial units in India, with around 19.3 million workers,

second in agriculture (Saikia, 2012). An Ordinance to help the State of Tamil Nadu in its ambition to be one of the country's most favored investment destinations by ensuring adequate accessibility of information to investors, thereby enabling them to make informed decisions and to ensure the receipt of single-point clearance applications that are needed to set up or expand a company and for clearance (Mukherjee A.). One of the leading sectors of the Indian economy is the micro, small and medium enterprises (MSMEs). This industry played a vital role in the nation's growth, leveraged exports, created enormous employment for unskilled, new graduates and the underskilled, and extended the opportunity to banks to give companies in this sector additional credit. The government ought to take the utmost care of this sector to provide growing benefits to MSMEs through better regulation, directly through enabling financial institutions to offer more credit at a lower rate for the survival of this sector or matters relating to it or otherwise. The present investigation focussed on the sustainability of Small and Medium Manufacturing Engineering Enterprises for sustainable development.

RESEARCH METHODOLOGY

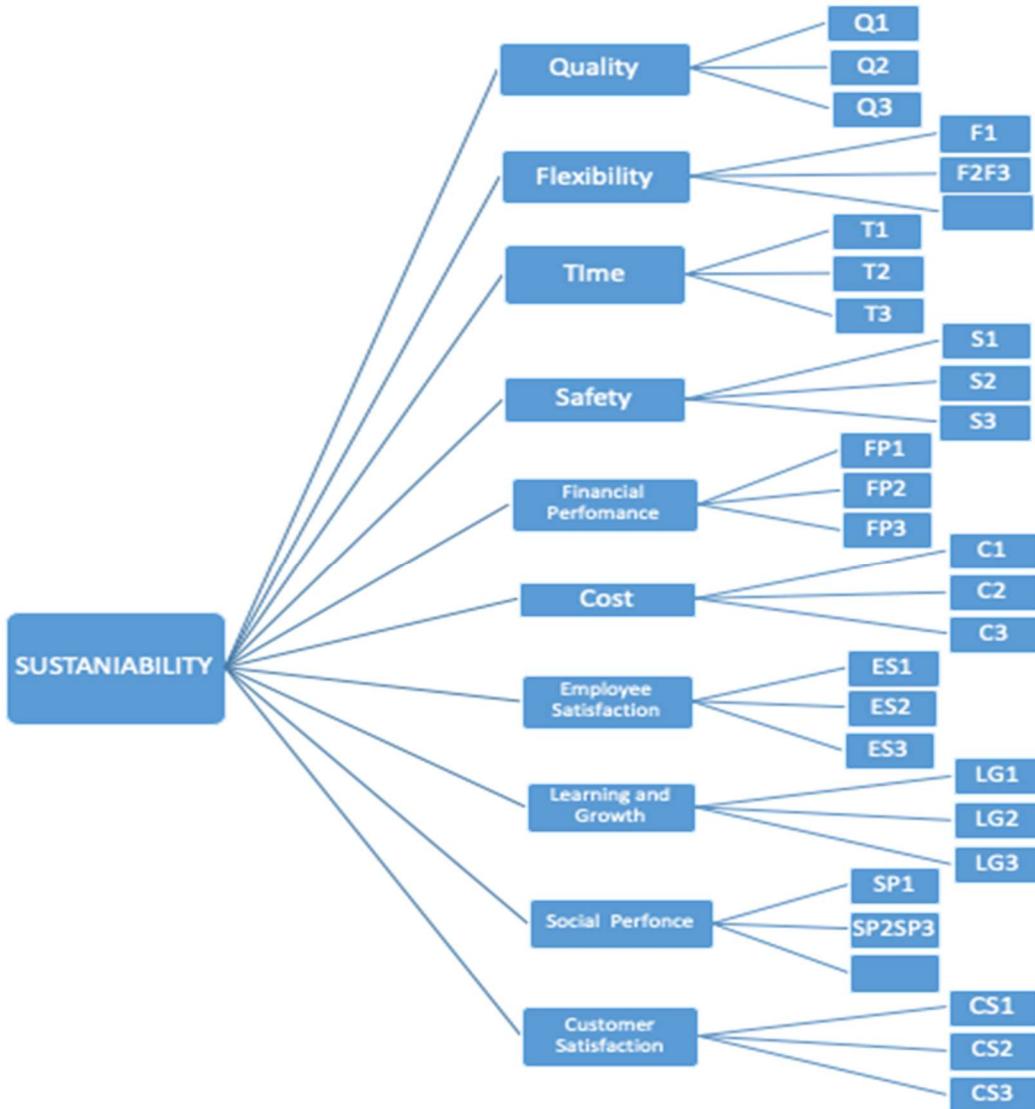
The present study is used to analyse the sustainability of Small and Medium Manufacturing Engineering Enterprises for sustainable development. Explorative research design is used to explore the factors contributing to the sustainability of SMMEEs in Tamil Nadu. It employed both primary and secondary data in order to fulfill the study objectives. Secondary data from the Ministry of Micro, Small and Medium Engineering, Government of India's Annual Report Series were collected. Primary

information was obtained using a formal interview program and a survey process. The research was carried out in the State of Tamil Nadu in India, second in the existence of MSMEs. The district of Virudhunagar is known for the numerous companies clustered in the district in several parts. In nature, each block is particular. Multifarious steps can be given by concentration sectors like matching, fireworks, printing, oil extraction, prepared garments, brick making, surgical cotton, textile products, cement, lime-based goods, rice mill, paper industry, food industry, tin-fed container, gold jewelry in different districts. It addresses policymakers' attention and anchors the growth of the industry in a balanced environment. According to the Annual report of MSME- Development Institute Chennai (2018), the district has 1832 SMEs. For the convivence of the study researcher randomly selected 15 Small and Medium Scale Manufacturing Engineering Enterprise in Virudhunagar Industrial Estate. In order to analyze the sustainability of Manufacturing Engineering enterprises, the researcher used the Analytical Hierarchical Process (AHP) method used. From the support of the literature researcher identified Ten Key sustainability indicators (Bhatti, Awan, & Razaq, 2014) for measuring the overall sustainability of the enterprises like quality, flexibility, safety,

Financial sustainability, cost, Employees satisfaction, Learning and growth, Social sustainability and customer satisfaction. The analytical hierarchy (AHP) method is used to prioritize the various sustainability measures. The indices of the ten specific indicators are focused solely on the global weight of priority.

RESULT AND DISCUSSION

The Analytical Hierarchy (AHP) process is a rational multidisciplinary decision-making method, which helps decision-makers to mathematically and psychologically model the complex problem (Nizamudhin, Shalbia, Ghani, & Mohd Saifudin, 2012). It can be described as a decision-making approach that involves the structuring of hierarchy criteria. In the form of ten broad categories (e.g., cost, efficiency, flexibility, time, customer satisfaction, employee satisfaction, financial indicators, safety, organizational sustainability in terms of their contribution to the environment and the community), the respondents were asked about the various Sustainability Measures which are also the first-grade performers. Respondents were asked to respond to multiple sustainability measures in various categories The sustainability model for this study is with categories and subcategories were depicted in figure 1

**Figure 1: Sustainability Model for SMMEE****Table 1: Global Weights of Key Sustainability Indices**

SMMEEs	Quality	Flexibility	Time	Safety	Financial Sustainability	Cost	Employee Satisfaction	Learning and Growth	Social Sustainability	Customer Satisfaction
SMMEES 1	0.1213	0.1796	0.1338	0.2129	0.2851	0.1981	0.0501	0.3121	0.2212	0.2312
SMMEES 2	0.3123	0.2301	0.3216	0.2029	0.1152	0.2812	0.2132	0.1234	0.2413	0.3412

SMMEE 3	0.154 1	0.2312	0.38 23	0.22 59	0.1431	0.143 1	0.0815	0.1322	0.2313	0.2134
SMMEE 4	0.256 1	0.1385	0.17 34	0.17 46	0.1009	0.291 4	0.1756	0.1345	0.313	0.2546
SMMEE 5	0.107 6	0.1388	0.15 69	0.11 35	0.1731	0.254 1	0.1346	0.2453	0.2351	0.2543
SMMEE 6	0.237 1	0.0568	0.04 86	0.43 71	0.2306	0.034 1	0.1325	0.2145	0.2314	0.3214
SMMEE 7	0.145 4	0.1986	0.05 86	0.47 11	0.2147	0.112 1	0.3413		0.2132	0.1252
SMMEE 8	0.231 6	0.3124	0.12 87	0.11 72	0.1134	0.251 1	0.1311	0.1231	0.1213	0.1264
SMMEE 9	0.215 6	0.1469	0.05 25	0.25 12	0.1141	0.393 1	0.2123	0.3215	0.1254	0.2341
SMMEE 10	0.523 1	0.2624	0.27 35	0.39 53	0.4198	0.413 2	0.3845	0.3214	0.4914	0.5113
SMMEE 11	0.231 1	0.1276	0.09 13	0.32 11	0.1329	0.321 7	0.2315	0.3142	0.2154	0.2636
SMMEE 12	0.167 5	0.1067	0.08 59	0.04 37	0.0342	0.137 2	0.2351	0.2151	0.2165	0.4132
SMMEE 13	0.273 2	0.2355	0.11 13	0.11 72	0.1421	0.124 3	0.1443	0.1234	0.1247	0.1325
SMMEE 14	0.265 4	0.1433	0.06 34	0.03 21	0.0171	0.226 8	0.2131	0.2154	0.1236	0.3125
SMMEE 15	0.125 1	0.1631	0.15 38	0.11 42	0.1424	0.043 4	0.1352	0.2134	0.1243	0.2321

A thorough overview of the hierarchical index based on the global priority weights of the SMS sub-indicators was given in table 1. The results indicate that for the SMMEE's giving priory to the product quality (Global Priority Weight =0.5231) as compared to other sustainability indicators. The SMMEE's had priority to customer satisfaction (Priority weight=0.5113) as the second important factor and the social sustainability as the third important factor (Priority weight=0.4914). The

results further revealed that SMMEE had concerned with materials costs (priority Weight = 0.4132) and financial sustainability (priority Weight = 0.4198). The study revealed that they are giving more or less the same preferences to both costs of production and financial sustainability of SMMEE's in India. Safety (Priority weight=0.3953)and employee satisfaction (Priority weight=0.3845) were other sustainability indicators, which gave priority by the management of the Manufacturing

Engineering enterprises with sub-indicators, and it had sixth and seventh importance respectively. The priority of weight of learning and growth (0.3214) showed that the management of

SMMEEs gave vitality than other factors like time (priority Weight = 0.2735) and flexibility(priority Weight = 0.2624), had the position of ninth and tenth respectively

Table2: Sustainability Ranke of SMMEEs

SMMEEs	Sustainability Weight	Rank
SMMEE 1	0.3259	X
SMMEE 2	0.3824	VI
SMMEE 3	0.3331	IX
SMMEE 4	0.2134	XIV
SMMEE 5	0.4133	IV
SMMEE 6	0.4412	III
SMMEE 7	0.4789	II
SMMEE 8	0.3656	VII
SMMEE 9	0.1667	XV
SMMEE 10	0.4811	I
SMMEE 11	0.3181	XI
SMMEE 12	0.4123	V
SMMEE 13	0.2851	XIII
SMMEE 14	0.3432	VIII
SMMEE 15	0.2446	XII

Sustainability ranking of small and medium scale Manufacturing Engineering Industries in India is shown in table 2. Based on the Global priority weight of the fifteen mechanical enterprises, SMMEE 10 had shown high weightage as 0.4811. So the study inferred that SMMEE 10 preformed excellently as compared to the other fifteen industries in Virudhunagar Industrial estate, Tamil Nadu India. SMMEE 7 had a priority weightage of 0.4789; it showed that it had the second position in sustainability and more or less the same as the enterprise, which in the first position.

CONCLUSION

For enterprises, sustainability management is necessary to achieve a competitive edge about their competition. Only in this way can companies check whether they are moving in the right direction and accomplish or not their objectives. (Kak, 2002). In order to assess and track the overall industry activities, the sustainability metrics are used. These also used to assess and compare the sustainability of different organizations both in and outside the organization. The study showed the priority index of the sustainability model based on the APH

method. This model can be global acceptable as the priority, respectively, like quality, customer satisfaction, social sustainability, cost, financial sustainability, safety, employee satisfaction, learning and growth, time, and flexibility. A detailed study is performed for the creation of a hierarchical sustainability index based on the global priority weights of sustainability management sub-indicators, which indicates the relative significance for the selection of such indicators as KPIs for Indian SMMEEs.

REFERENCE

- [1] Ashifa K.M. & Ramya.P (2019). Health Afflictions and Quality of Work Life among Women Working in the Fireworks Industry. *International Journal of Engineering and Advanced Technology*, 8 (6S3), 1723-1725. DOI. 10.35940/ijeat.F1323.0 986S319.
- [2] Ashifa.K.M (2020). An assessment of the level of stress among the workers in Cotton mill Industries in India. *International Journal of Psychosocial Rehabilitation*, 24(7), 44-52. DOI.10.37200/IJPR/V24I7/PR270005
- [3] Ashifa. K.M. (2020). Performance Of Small And Medium Manufacturing Engineering Enterprises In India in Journal of Xi'an University of Architecture & Technology12(5)
- [4] Bargal, H., Dashmishra, M., & Sharma, A. (2009). Sustainability Analysis of Small Scale Industries- Astudy of Pre Liberation and Post Liberation Period. *International Journal of Business and Management*, 1(2).
- [5] Bhatti, M. Awan, Hassan, & Razaq, Z. (2014). The key sustainability indicators (KPIs) and their impact on overall organizational sustainability. *Quality & Quantity*, 48. 10.1007/s11135-013-9945-y.
- [6] BSCAL. (2013, January 27). *Abid Hussain Panel Report On Ssis Favours Dereservation Of Ssi*. Retrieved from www.businessstandard.com:
https://www.business-standard.com/article/specials/a-bid-hussain-panel-report-on-ssis-favours-dereservation-of-ssi-197010701089_1.html
- [7] Emrouznejad, A., & Tavana, M. (2014). *Sustainability Measurement with Fuzzy Data Envelopment Analysis*. Poland: Springer.
- [8] Essays, UK. (2018, November). *Analysis of SMEs in India*. Retrieved from www.ukdiss.com:
<https://ukdiss.com/examples/what-are-smes.php>
- [9] Hussain, V. S. (2004). Sustainability of Small Scale Industries in India and the Challenges Ahead. *Indian Journal of Industrial Relations*, 39(3).
- [10] ILO. (2014). *Report V: Skills for improved productivity, employment growth, and development*. Geneva: International Labour Office.
- [11] Kak, A. (2002). Sustainable Competitive Advantage with Core Competence: A Review. *Global Journal of Flexible Systems Management*, 3(4).
- [12] Kaul, V. K. (2019). Small Businesses and Franchising. *Business Organization and Management*,
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3421991.
- [13] Kumar, N. (2006). Strategies for Staying Cost Competitive. *Harvard Business*

- Review*, <https://hbr.org/2006/12/strategies-to-fight-low-cost-rivals>.
- [14] Kumar, R. (2017). *Targeted SME Financing and Employment Effects*. Retrieved from www.worldbank.org: <http://documents.worldbank.org/curated/en/577091496733563036/pdf/115696-REVISED-PUBLIC-SMEs-and-Jobs-final.pdf>
- [15] Looy, A. V., & Shafagatova, A. (2016). Business process sustainability measurement: a structured literature review of indicators, measures, and metrics. *Springer Plus*, 5, <https://doi.org/10.1186/s40064-016-3498-1>.
- [16] McIntyre, R. (2001). *The Role of Small and Medium Enterprises in Transition: Growth and Entrepreneurship*. Helsinki: UNU/WIDER.
- [17] Mrak, M. (2000). *Globalization: Trends, Challenges, and Opportunities for Countries in Transition*. Retrieved from www.unido.org: https://www.unido.org/sites/default/files/2006-10/mrak_0.pdf
- [18] MSME-DI Chennai. (2019). *Annual Report 2018-19*. Govt of India, Ministry of MSME. Chennai: MSME- Development Institute
- [19] Mukherjee, A. (2011). Regional Inequality in Foreign Direct Investment Flows to India: The Problem and the Prospects. *Reserve Bank of India Occasional Papers*, 32(2).
- [20] Mukherjee, S. (2018). Challenges to Indian micro, small scale, and medium enterprises in the era of globalization. *Journal of Global Entrepreneurship*, 8.
- [21] Nizamudhin, Z., Shalbia, D., Ghani, A., & Mohd Saifudin, A. (2012). analytic Hierarchy Process (AHP) in Multi-Criteria Decision Making: A case of Locating The Operations of Low-Cost Carrier In Malaysia. *WASTE*. Penang.
- [22] OECD. (2004). Promoting Entrepreneurship and Innovative SMEs in Global Economy: Towards a more responsible and Inclusive Globalisation. *2nd OECD Conference of Ministers Responsible for Small and Medium-sized Enterprises (SMEs)*. Istanbul: OECD.
- [23] OECD. (2017). *Enhancing The Contributions of SMEs in a Global and Digitalised Economy*. Paris: OECD council.
- [24] Ramya P. & Ashifa K.M(2020).A Study on Stress Management among Sales Women in Textile Industry . International Journal of Advanced Science and Technology,29 (S) .
- [25] Sadler, S. E., Spices, D. P., & Chaston, I. (2001). Learning orientations and growth in Smaller organizations. *Long-Range Plan*, 34(2).
- [26] Saikia, H. (2012). Capacity Utilization in Small Scale Industries of India: Some Empirical Evidence form Underdeveloped Industrial Structure. *Journal of Social and Economic Statistics*, 1(1).
- [27] Sarkar, R. (2018). *Made in India: History of Post Independence Economic & industrial Development in India*. Chennai: Notion Press.
- [28] Selvaraj, N., & Balajikumar, P. (2015). A Study on the Development of Small - Scale Industries in Tamilnadu, India. *Irrigation & Drainage Systems Engineering*, 4.

-
- [29] Taneja, S., & Gupta, S. L. (2011). *Entrepreneur Development- New Venture Creation 2nd Ed.* Ahmadabad: Galgotia.
- [30] World Bank. (2017). *Small and Medium Enterprises Finance*. Retrieved from www.worldbank.org:
<https://www.worldbank.org/en/topic/smefinance>