

**BARRIERS FOR MANUFACTURING SMES: A SYSTEMATIC EMPIRICAL RE-VIEW  
AND FUTURE RESEARCH AGENDA**HN Hettiarachchi<sup>1</sup>, R Abeysekera<sup>2</sup>, S Divakara<sup>3</sup>**Abstract**

Small and Medium-sector enterprises play an important role in creating employment opportunities, poverty reduction, GDP growth and economic improvement in any country. Thus it is considered as the backbone of the economy. The objective of this paper is to examine the entrepreneurship literature that discusses the barriers for small and medium-sector manufacturing organizations and set future research directions through a systematic literature review. To do this systematic literature review, a number of researches that investigated the barriers for manufacturing SMEs have been taken into consideration. To conduct the re-view, the PRISMA Method (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) has been followed. This study is based on journal articles published in databases such as Emerald Insight, Sage, Research Gate Net, Taylor & Francis, Science Direct and Google Scholar. After setting inclusion & exclusion criteria, 60 journal articles were selected. Economic issues, financial barriers, political barriers, lean manufacturing barriers, internationalization barriers, e-commerce adoption barriers, lack of resources and management issues have been identified as the prominent barriers for manufacturing SMEs. However, there is no adequate evidence to support that institutions and human capital are strong determinants for SME development. In line with the systematic literature review, most of the research to investigate SME barriers had been done in developing countries. However, research is scarce in South Asian countries like Sri Lanka, Nepal, Maldives and Bhutan. At the same time, the majority of the studies utilized the quantitative methodology to investigate the SME barriers. Qualitative researches are comparatively less. Therefore, more attention is needed to fill these gaps in existing literature to get a full understanding of the matter. Thus, this literature-based study calls for a new research agenda to investigate such issues as it directly and indirectly results in to improvement of the entire SME sector.

**Keywords:** Barriers, Developed, Developing, Manufacturing, Smes.

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**Introduction.*****Background of the Study.***

Even if there is not a particular document that shows the beginning of SMEs, one could guess that it originated with the beginning of civilizations all around the world. Nowadays, Small and Medium Scale enterprises play a noteworthy role in economic development in any country. In discussing the importance of the SME sector, Kongolo in 2010, pointed out that the SMEs play a significant role in the transition of agriculture-led economies to industrial ones creating plain opportunities for processing activities that can generate sustainable sources of revenue and enhance the development process.

In developed countries, the contribution of SMEs to gross domestic product is very high. According to Pandey (2012), the SME contribution to US GDP is more than 95%. Further, he shows that the contribution of the SME sector to GDP in Japan is also more than 90 %. In contrast, according to the World Bank reports, in developing countries, SME contribution to GDP is only around 60%. However, according to Wang et al. (2015), access to finance is a common obstacle for SMEs in both developed and developing countries and the ability to overcome that barrier depends on the scale of the organization. Further, he argues that, when the top manager's or the owner manager's working experience increases, the probability of accessing finance increases. However, the role of SMEs in both developed and developing countries for employee generation is radically important. In other words, whether the country is developing or developed in nature, the importance of the SME sector is noteworthy for the entire economic development process.

In discussing the importance of the SME sector, Keskin et al. in 2010, pointed out that SMEs are seen as the main actors of both national and regional development in many countries. In another study done by Bakashaba (2018), there is evidence that SMEs in Uganda typically account for more than 90% of all firms outside the agricultural sector, constitute a major source of employment and generate significant domestic and export earnings. According to Kongolo (2010), the development of SMEs has been considered one of the most critical factors for the economic growth of both developed and developing countries due to their multiple contributions to economic growth, employment generation and innovations. Further, showing the importance of the small and medium sector, in 2014 Lee and Drever argued that at the individual level, SMEs play an important role in providing employment, improving individual sources of income and standard of living, improving innovation by promoting new ideas and creating grounds for entrepreneurs.

In such a situation, there is a growing academic interest in investigating the barriers to the SME sector. Several academic studies investigated the financial barriers, lean manufacturing barriers, internationalization barriers, e-commerce adoption barriers, open innovation barriers and so on. (Khan, 2022, Roy et al. 2016, Majocchi et al. 2015, Sodhi et al. 2016, Kumar et al. 2020). The primary objective of this systematic review is to investigate the existing entrepreneurship literature that discusses the barriers to manufacturing SMEs and highlight the particular uncovered areas. In order to achieve the so-called objective, the prominent barriers for Small and Medium sector organizations have been investigated in this literature review.

By conducting this literature review, the researcher will be able to have a clear understanding of the SME barriers discussed in existing entrepreneurship literature. At the same time, this systematic review helps to understand the different barriers faced by manufacturing SMEs in both developed and developing countries. On the other hand, this systematic review contributes to identify the gaps in existing entrepreneurship literature. Therefore, this will be helpful for future researchers to open up new research agendas by filling these gaps.

The next section includes the literature review that investigates the importance of the SME manufacturing sector, the barriers and their effect on the performance of the SME manufacturing sector. To conduct this review the PRISMA method has been used and the entire selection process is explained in the methodology section. The results and discussion section has outlined the identified SME barriers throughout the existing entrepreneurship literature and highlighted the uncovered areas. Thereafter, directions for future research and conclusions are provided as per the identified research gaps.

### ***Literature Review.***

In many countries, manufacturing SMEs are the main drivers of generating employment opportunities. Notably, many studies show that there is a positive relationship between SME growth and economic development. According to Cater and Evans (2006) and Mubarik et al (2020), the growth of the SME manufacturing sector has a positive impact on the country's economic development through the creation of wealth and jobs. Further, they analyzed that the majority of SMEs, especially in developing countries, are located in rural areas. Thus, these SMEs are creating job opportunities for the uneducated and inexperienced people in rural areas while contributing to reducing poverty. On the other hand, manufacturing SMEs are the most important unit in the economy in the world and their contribution to employee creation and GDP growth is superior to large firms in many countries. (Musneh et al. 2021, Ramadaz & Satis, 2017).

Akbar et al. (2017), researching Malaysian manufacturing SMEs, pointed out that this sector is notably important to that country due to its contribution to GDP growth, unemployment reduction and poverty reduction. Raj and Mahapatra, in their research regarding the SME manufacturing sector in India in 2009 had significantly shown that the contribution of this sector is remarkable in providing employment opportunities and generating 60% of domestic product.

### ***Barriers in SME Manufacturing Sector in developing countries.***

The existing literature proves that, despite the numerous contributions offered by SMEs in any country, they are consistently faced with some mitigating factors warranting their sustainability. Amoah et al. in 2021 did a research to investigate the barriers to sustainability in manufacturing SMEs in Ghana and pointed out that factors such as financial challenges, poor access to technology, market penetration & acceptability, and lack of research & development are the barriers facing SMEs' sustainability in the Ghanaian manufacturing sector. On the other hand, the literature shows that the absence of a standard procedure, lack of professional approach, lack of proper training, low-quality standard materials from suppliers, bad vendor inspection, communication gap between employer and the employee, and lack of resources are the identified barriers to implementing lean manufacturing process in manufacturing SMEs. (Sodhi 2016, Ramadas & Satish 2017, Dora et al. 2014, Bhadu et al. 2021, Kumar et al. 2014). Meanwhile, Abdullah et al. in 2023 and Sibiya & Kele in 2019, conducted a study to investigate the barriers to the sustainable manufacturing process in SMEs and identified ineffective enforcement of the law, complexity in implementing 6Rs, ineffective controlling and monitoring systems and heavy dependence on fossil fuels are the main barriers that obstruct the implementation of sustainable manufacturing. At the same time, investigating the barriers in the handloom manufacturing sector in Sri Lanka in 2020, Wanniarachchi and Dassanayake pointed out that the structure of the industry and lack of access to markets and information act as barriers to both innovation and growth in this sector.

Further, e-commerce adoption barriers have been identified as a main obstacle to manufacturing SME growth. These investigations revealed that lack of awareness of the IT field, financial inadequacies and the negative attitude of both entrepreneur and customer towards e-commerce are the main barriers to

adopt e-commerce in manufacturing SMEs. (Sing et al.2019, Kwadwo et al. 2016, Nazir et al. 2020, Busaidi et al. 2019, Mohan and Ali 2019)

On the other hand, the notions of technological innovation, open innovation and Industry 4.0 are also identifiable as interesting areas in research. (Stentoft 2020, Obembe 2018). When it comes to the developing country perspective, small and medium-scale manufacturing organizations face numerous barriers when adopting technological innovation, open innovation (OI) and Industry 4.0 (I4.0). A cross-country analysis done by Becheikh & Bouaddi in 2022 has identified the SME innovation barriers in Egypt, Morocco, and Tunisia and pointed out that political instability, corruption, and competition from the informal sector are the macro-level inhabitants. These kinds of research provide a platform to understand the similarities and differences of barriers in different geographical settings.

An investigation of barriers for SMEs in Sri Lanka, revealed that the growth of SMEs is constrained by financial inadequacy, the lack of access to new technology, and some regulations imposed by the government. (Amaradiwakara & Gunathilake 2016, Wijayarathne & Perera 2018.). Further, lack of financial usage limits the financial inclusion of SMEs and also the financial inclusion level was highly dependent upon the quality of the financial services used by the owners. (Thathsarani et al., 2023).

China is still in the state of a developing country and according to the literature, 99% of companies in China are small and medium-scale enterprises. (Wang et al., 2015). A research was conducted to investigate the constraints for SMEs in the city of Tianjin in China. (An & Zhang, 2021). According to this research, these SMEs are crossing the “Valley of Death”. Here, the metaphor, “Valley of Death” is used to describe the relative lack of resources and expertise in the area of development. According to the findings of this research, the high-tech SMEs in Tianjin can bridge the so-called valley of death through coordination and institutional support.

### ***Barriers in SME Manufacturing Sector in developed countries.***

At the same time, the existing literature clearly shows that, not only in developing countries, but also in developed countries, financing and institution have become a serious matter for small and medium-scale organizations. For instance, an investigation of Portuguese small and medium manufacturing firms (Forte & Moreira 2014, Yukhanaev 2015, Ganau et al. 2021) has pointed out that, those SMEs in Portuguese have fewer tendencies to participate in export activities due to financial barriers. According to Gilmore et al. 2013, the manufacturing SMEs in the European Union face serious issues due to financial constraints.

It is equally important to investigate the literature regarding barriers for SMEs in terms of developed countries. An investigation done by Kotey and Armidale in 2014, shows that the manufacturing SMEs in rural Australia are facing barriers to inadequate infrastructure, lack of access to skilled labor, technology, and finance, and uncertainty about government policies. On the other hand, an investigation of the small manufacturing sector in the UK reveals that these companies face challenges in finding adequate finance due to the smallness of the organization. (Lee & Drever, 2014). Further, Antonio et al. in 2022 have done a research to investigate the barriers in Spain and Latin America and revealed that these manufacturing SMEs face I4.0 barriers due to technological barriers, training barriers, economic barriers and contextual barriers.

On the other hand, Sánchez-Rodríguez et al. have done a research in 2019 to investigate the obstacles in manufacturing SMEs in Canada and pointed out that IT obstacles and strategic purchasing are the

main barriers for manufacturing SMEs in Canada when implementing e-procurement in manufacturing SMEs.

### ***Theories Used in Existing Literature.***

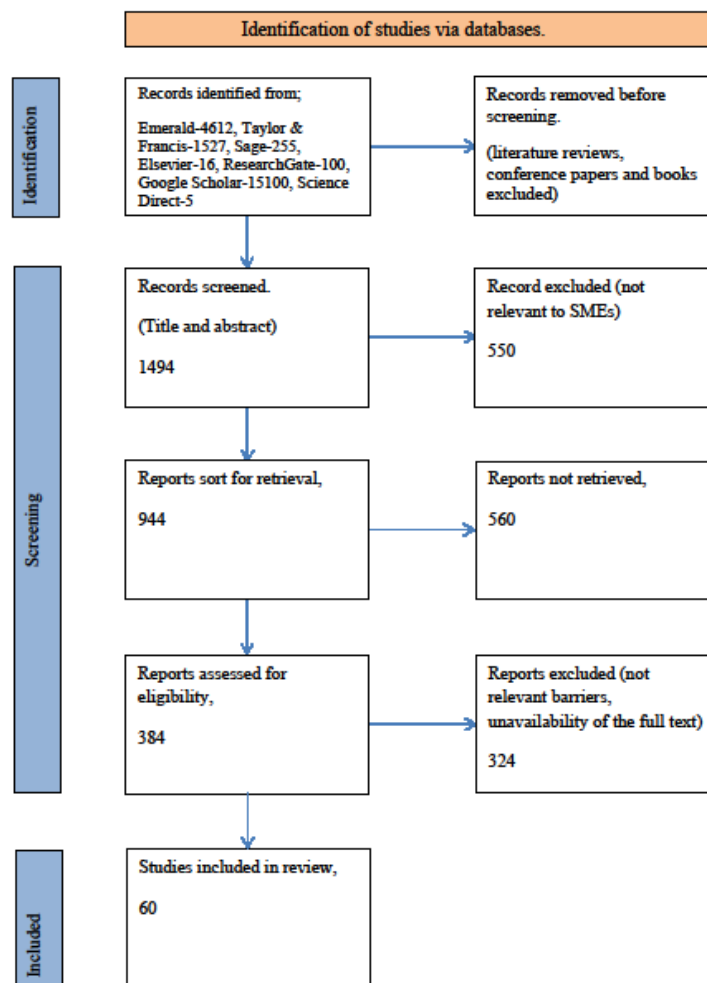
In discussing the barriers for SMEs, theories such as the Resource-Based View, Transaction-Cost Theory, Networking Theory, Agency Theory, etc. have been widely used by researchers all around the world. (D'Este, Rentocchini, & Vega-Jurado, 2014; Kahn 2021; Ullah 2020; Nguyen et al. 2018; Nayak 2014; Kolade 2018). Exploring the barriers to internationalization in small and medium-sector enterprises was given special attention over the last ten years. The framework of Resource Based View (RBV) and Networking Theory had been widely applied by scholars to investigate the barriers in manufacturing SMEs. For instance, Roy et al. in 2016, used the RBV and Networking Theory to investigate the internationalization drawbacks in Indian SMEs. This study reveals that these organizations lack the resources to enter the international market. On the other hand, they revealed in line with the NT perspective, these firms can overcome this barrier through networks and business group affiliations.

In exploring the barriers to SMEs' open innovation adoption in Ghana, both Networking Theory and Transaction Cost Theory (TCT) were used. (Oduro, 2018). According to this study, a firm can exchange knowledge, technology and other resources with competitors ( NT) and reduce production costs by providing some goods from the market rather than producing them internally (TCT) and access open innovation. Despite the RBV, Kumar et al. in 2020, used the Stakeholder Theory and Agency Theory for their research to investigate the barriers to adopt Industry 4.0 and sustainability in SMEs.

### **Methodology.**

The literature for this study was selected systematically focusing on the barriers for small and medium scale enterprises. Literature from both developed and developing countries had been studied giving more focus on the developing countries' research. This study is based on the journal articles published in databases such as Emerald Insight, Sage, ResearchGate Net, Taylor & Francis, Science Direct and Google Scholar that had covered a large area of journals in the field of Social Science. To conduct the review, the PRISMA Method (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) has been followed. The keywords used for finding articles were barriers, SMEs, manufacturing sector, institutional and human capital.

The initial search in "Barriers for manufacturing SMEs" produced 21594 results from all databases. After removing duplicate records, literature reviews, conference papers and book articles, 1494 journal articles were taken for screening. From the screening 550 journal articles were excluded as they are not relevant to small and medium sector enterprises and 944 remained. From the remaining 944, 560 journal articles were removed since their focus is not on SME barriers. Reports assessed for eligibility are 384 and finally 60 articles were selected for the study after excluding 384 due to their less focus on the subject matter and unavailability of the full text. The entire selection process is presented in Preferred Reporting Items for Systematic Reviews and Meta-Analysis in the following figure.



Selection of research articles according to PRISMA

## Results and Discussion.

### *Empirical Gaps.*

This systematic review was done with a view to find the barriers for manufacturing SMEs as mentioned in the introduction. In line with this objective, prominent barriers for Small and Medium Sector organizations have been identified first. According to the literature, financial constraints, technological barriers, poor infrastructure, e-commerce adoption barriers and internationalization barriers have been identified. (Sodhi 2016, Ramadas & Satish 2017, Lee & Drever 2014, Antonio et al. 2022, Abdullah et al. 2023). According to the systematic review conducted, it was found that, due to these various types of barriers manufacturing SMEs cannot sustain in the business and the majority of them cannot achieve the target profit margin. (Kimathi, 2015. Anderson, 2017). Further, it was found that, due to financial barriers, they cannot practice required R&D activities, cannot compete with high-tech organizations and cannot enter the international market. (Gilmore et al. 2013, Kwadwo et al. 2016).

When doing this systematic literature review, it was identified that the existing literature comprises a number of researches that investigate the barriers to manufacturing SMEs. It was noted that, according to the literature, the majority of the articles have focused the developing countries in order to investigate the barriers. Out of the total number of journal articles taken for this literature review, 65% of articles had investigated the manufacturing SME barriers in developing countries. Mostly identified manufacturing SME barriers in developing countries are financing barriers, credit constraints, internationalization barriers, institutional pressures and e-commerce adoption barriers. (Amoah et al. 2021, An & Zhang 2021, Sodhi 2016, Amaradiwakara & Gumathilake, 2016 ). At the same time, barriers for Open Innovation (OI) and Industry 4.0 (I 4.0) are also identifiable in existing literature. (Becheikh & Bouaddi, 2022).

At the same time, when it comes to the South Asian region, many empirical researches to investigate the barriers to manufacturing SMEs had been done only in India, Pakistan and Bangladesh. Therefore the existing literature importantly lacks the researches to investigate the barriers in manufacturing SMEs in countries like Sri Lanka, Maldives, Bhutan and Nepal.

In line with the literature review, manufacturing SMEs in developing countries face more barriers than in developed countries. Comparing to the number of obstacles that SMEs face in developing countries more researches are needed to discuss them.

On the other hand, when it comes to the developed country perspective, out of the total number of selected journal articles for the literature review, 25 % of articles have discussed the manufacturing SME barriers in developed countries. According to them, financial constraints and barriers for applying technology, barriers to I 4.0, innovation barriers, and energy efficiency barriers, have been identified as the main obstacles. (Kotey and Armidale 2014, Antonio et al. 2022).

Just like in developing countries, manufacturing SMEs in developed countries also face financial barriers due to the smallness of the organization. (Armidale 2014 & Lee & Drever 2014). Therefore, it was found that financing has become a common issue for manufacturing SMEs all around the world. On the other hand, according to literature, poor human capital and poor institution of the home country are the other prominent barriers for manufacturing SMEs in developed countries. (Armidale 2014). Thus, need for more researches to investigate the manufacturing SME barriers in developed countries was identified.

#### ***Methodological and Theoretical Gaps.***

Another interesting observation noted during the review is that, the majority of the researchers had used the quantitative method (55%) and 45% of the researchers have utilized the qualitative methodology. Therefore, the present literature review has identified another research gap for qualitative researches. Qualitative researches are important for this field in order to gain a deeper understanding of the matter through in-depth interviews. (Saunders et al. 2011)

Additionally, as mentioned in the literature review section, theories like the Resource-Based View, Transaction-Cost Theory, Networking Theory and Agency Theory had been widely used by researchers to investigate the barriers in SMEs. However, there is a dearth of studies that had utilized the Human Capital Theory and Institutional Theory. While resources are certainly vital, it was identified that issues such as regulations, culture and the legal environment of an organization can impact entrepreneurial success (Baumol, Litan, & Schramm, 2009). Further, by using Institutional Theory for entrepreneurship research it would be able to cover a vast area that had been neglected by RBV. Apart from that, using

Human Capital Theory for entrepreneurship studies is important to identify human capital matters of organizations. (Becker, 1964).

In this way, the notion of SMEs has been given special attention over the last few decades and international research has investigated about it after identifying their importance for economic development. Further, investigating the barriers for manufacturing SME development became more attractive rather than investigating the plus points among them as it is an ongoing issue all around the world.

### **Directions for Future Research**

This systematic literature survey clearly shows that Small and Medium Sector Enterprises face various difficulties on their way to success. While the existing literature provides many examples regarding the fact, it is identifiable that some areas like institutional and human capital barriers are not properly investigated both in developed countries and developing countries. Therefore, future studies could focus on the institutional and human capital barriers in manufacturing SMEs. Moreover, there is a need to draw attention on the corruption and discrimination generated through institutions as it harms the sustainability and development of the entire SME sector. On the other hand, more researches are needed to investigate the manufacturing SME barriers in developing countries as they face more barriers than SMEs in developed countries. Further, conducting qualitative researches will be helpful to have a profound understanding regarding the matter.

### **Conclusion**

The objective of this systematic review is to provide a crystal clear understanding of the main obstacles for small and medium-sector enterprises giving special attention to the manufacturing sector. By analyzing the empirical evidence, mostly discussed SME barriers have been identified. As stated at the beginning of the article, the small and medium sector is the main driver of economic development in many countries. Due to this reason, there is a growing interest in doing studies regarding various aspects of this sector. In the existing literature, financial barriers, political and economic uncertainty, resource scarcity, management issues and barriers for innovation are identified as the major obstacles to SME development in both developed and developing countries. However, there is a scarcity of research to exploit the institutional and human capital matters in manufacturing SMEs. Therefore, more attention is needed to investigate human capital and institutional barriers in small and medium-sector organizations to get a full understanding of the matter. At the same time, more and more qualitative researches are needed to investigate the SME barriers in developing countries like Sri Lanka, Maldives, Bhutan and Nepal. Thus, this literature-based study calls for a new agenda to investigate such issues in manufacturing SMEs as it directly and indirectly results in to improvement of the entire SME sector.

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