

CHAPTER 8

THE SUMMARY AND CONCLUSIONS

8.1 INTRODUCTION

The lean practices followed by organisations worldwide have helped to improve the operational and sustainability performances, especially in the large-scale organisations. Multiple studies have been conducted in different countries for bringing out the benefits of lean practices. This research was aimed to identify the effect of the LMPs on the sustainability performances of manufacturing MSMEs. The research also focused on identifying the areas of linkage between lean and sustainability and the effect of operating system variables in these areas. To address these aims, initially a thorough literature review was conducted in the subject area and a descriptive research was designed. The constructs and variables for the dependent and independent variables were selected from the previous works. The relevant hypotheses were developed based on the objectives and literature available.

An exploratory survey was conducted by using a questionnaire generated out of the variables identified. The data collection was restricted to the sample frame selected as per the research framework and design. The data were collected from 252 manufacturing MSMEs from Kerala, India and was analysed using various statistical methods. like descriptive analysis, one sample T test, Kruskal Wallis-Chi square test, EFA and SEM, The SEM was conducted to identify the significant effect of LMPs on various dimensions of sustainability performances and the interrelationship between these performance measures. Finally, the test results were cross validated and analysed with five case studies selected from the same sample frame.

This chapter presents the main research findings from the study about the aim and objectives of this study. It also provides the limitations of this study and the directions for the future research. The chapter ends with the conclusions and recommendations arising from the research findings.

8.2 THE FINDINGS FROM THE STUDY

This study analyses the adoption of LMPs in Indian MSMEs. The descriptive analysis of the exploratory survey helps to understand the degree of intensity of adoption of lean practices in Indian MSMEs with a focus to identify the most used lean practices. This analysis shows that that MSMEs in the considered region are noticeably following lean principle. The results of the study reveal the followings.

- From the descriptive analysis, maintaining the long-term supplier relationship and customer focus are the two most important lean aspects followed in MSMEs. The 5S principle which emphasise to keep the tools and fixtures on the proper place and JIT delivery by suppliers are the two other mostly followed LMPs in MSMEs.
- Lean operations have a wide range of areas in which it can be integrated into the concept of sustainability, beyond waste reduction and environmental management. Other areas of linkage between lean and sustainability in MSMEs include quality, health and safety, continuous improvement, worker empowerment, performance improvement, value maximization, resource management, cost reduction, supply chain management, transparency, energy minimisation, community strategy and governance.
- The study identified the waste reduction is the most important area of linkage between lean and sustainability in MSMEs. Quality and health and safety are the other important areas of linkage between the lean and sustainability.
- The respondents classified based on the level of investment are statistically different in the areas of linkages between lean and sustainability. This result indicates that these firms classified based on the level of investment have different important areas of linkages between lean and sustainability. Hence separate detailed studies are

required on the different investment levels for the better understandings on the applicability of both these concepts.

- The respondents classified based on different manufacturing sectors have no statistical difference in the areas of linkages between lean and sustainability. This result is a clear indication for policymakers to frame common policies to all manufacturing sectors independent of the product type.
- The grouping variables, namely the manufacturing process based on job shop, batch production, and flow shop and production system based on make /assemble to stock and make /assemble to order causes a partial statistical divergence among the respondents on the linkages between lean and sustainability. These results indicate the need of detailed studies, in each categorisation of respondents to draw more accurate inferences on the integration of lean operations and sustainability.
- The factor analysis conducted on 19 variables of lean manufacturing practices shows that LMP in MSMEs can be grouped into five significant factors. These factors include flow management practices, process management practices, customer management practices, supplier management practices and workforce management practices.
- The descriptive statistics show that the most relevant construct in the LMP is 'supplier management practices' and the least dominating construct is 'workforce management practices' This result indicates that MSMEs have been emphasizing on supplier management by building long-term relationship and high level of information transparency or sharing with their suppliers.
- Based on the factor analysis the sustainability performances in MSMEs can be categorised into three constructs as "economic sustainability performance," "environmental sustainability performance" and "social

sustainability performance". The social sustainability performance explains the major share of variance explained by Sustainability performance.

- Labour relationship, safety and health, and decreases in the rate of customer complaints are the most important sustainability performances from lean practices. This is a clear indication of the social relevance of LMPs in the manufacturing MSMEs.
- The SEM analysis provides a solid basis for the link between sustainability and lean implementation in MSMEs and the interlink of sustainability performances. Findings reveal significant positive effects of LMPs on the three dimensions of sustainability performances of MSMEs namely economic, environmental, and social sustainability performances. These results corroborate that LMPs are a valuable means for achieving sustainability.
- There is a positive relationship of LMPs and economic and environmental performances in MSMEs. This result is in line with the findings from previous works (Rothenberg et al., 2001; Ng et al., 2015; Fullerton and Wempe, 2009; Ball, 2015; Yang et al., 2011).
- The LMPs focus on the “people” in addition to “profit” and “planet” with particular attention given to safety and health, labour relationship, training and education and customer satisfaction. The findings in this research work are important and relevant than the earlier works conducted in this field precisely due to a positive link of LMPs toward the social benefits
- Adoption of LMPs is one of the ways to achieve sustainability in manufacturing MSMEs This finding is in line with the recommendations of Thomas et al. (2012).

- The study tested the interrelationship between the 3BL sustainability performances and their linking with each other. The study shows that there are significant positive effects of environmental sustainability on economic and social sustainability performances in manufacturing MSMEs.
- The study shows that there does not exist a significant relationship between economic and social sustainability performances in manufacturing MSMEs. This finding indicates that the attainment of the economic sustainability may not guarantee the social sustainability.
- The study clearly indicates that conflict of interests of organisations (Wong and Wong, 2014) have been existing in manufacturing MSMEs among the entities of sustainability, giving more emphasis on profit without much consideration to the people.

8.3 LIMITATIONS OF THE STUDY

Since this work leads to theory and practice, it has the following limitations that will need to be considered in the future works. The respondents of this study were from a particular state in India and hence the sampling frame of the study was limited. Hence, to generalise in global scene, it is required to conduct similar studies in other economies of the different countries.

Another limitation of this study is that the responses obtained are views of a single respondent representing their respective organisation as a whole. There might be dissenting views among respondents within the same organisation. Hence, the results cannot be extrapolated entirely to the global MSME landscape. The survey uses a cross-sectional data collection framework, and this limit from obtaining a longitudinal inference. The cross-sectional survey designs adapted for this study limit the derivation of causal inferences. This study did not consider audited information on the 3BL positions of the organisation during the survey, which prevented the use of, results on sustainability indicators from crossing reference with actual audited statements.

In future researches, the outcomes of the present research need to be externally validated in other emerging economies in the world. The replication and extension of the same work in the other economies will give the basis for the external validation of the finding. The results are also needed to be validate by conducting case studies in various manufacturing sectors before generalisation. Empirical study with multiple respondents from every organisation in the longitudinal time frame will give more robust and accurate inferences.

8.4 CONCLUSION

The present study postulates the role of lean manufacturing as a powerful tool to gain the sustainable advantages in the MSMEs. The results of the study provide a solid basis for the link between sustainability and lean implementation in MSMEs and the interlink of sustainability performances. The study summarises the positive effect of LMPs toward the three dimensions of sustainability performance and the positive effect of environmental sustainability on economic and social sustainability performances. It also highlights the insignificant effect of economic sustainability on social sustainability. The outcome of this study is relevant to the academic community as well as the practitioners. It gives a crucial perceptive of the importance of the LMPs on the sustainability performance of MSMEs. These results provide an insight and important insinuation for decision-makers in developing and implementing lean strategies in this sector.

This study has made a significant contribution to the theoretical development of the effect LMP has on social performances in addition to economic and environmental benefits. These findings greatly equip the managers to implement LMPs in MSMEs by convincing various stakeholders. The fear of the workforce about the loss of their job due to the adoption of LMPs can be alleviated with the proper utilisation of social benefits derived from LMPs. Apart from these, the practitioners can highlight the relevance of lean practices which would be a requirement for the success of MSMEs and also their survival in a global environment. The study will help to recognise the affinity of lean and sustainability to support the managerial community for convincing

multiple layers of stakeholders in the investment and efforts incurred for the lean implementation.

Nowadays, the policy makers and agencies are continuously striving toward transferring of competency level of MSMEs so that the failure rate of MSMEs can be minimised (Urban and Naidoo, 2012). Upgrading competency and business sustainability of MSMEs is the primary concern in addressing economic development and combating unemployment. The findings of this study support the call for more targeted training and investment toward implementation of LMPs contributing to the endurance of MSMEs.