

Comparative Studies on Industrial Management Among China, Japan, India and Other Countries Servitization

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Abstract—Servitization in India, China and Japan is increasingly becoming important for enhancing profitability and competitiveness of firms within different industries of these countries. An increased focus on servitization in developed countries such as in UK, USA and Australia made it imperative for firms in countries like India to embrace servitization for making their presence strong in the world. In India, Japan and China, most firms have servitized their businesses to cope with changing demand of customers in industries such as manufacturing, automotive, construction and so on. However, servitization level in India and China is much lower as compared to other countries such as Japan and USA due to several challenges in industrial management. This research has shed light on ways Indian, Japanese and Chinese industries are embracing servitization by addressing these challenges. A proper attention has been paid to deriving country-specific results that have ensured reliability.

Keywords—servitization, changes in industrial management, importance of servitization in India for enhancing competitiveness, changes in customer demand

I. INTRODUCTION

Servitization refers to a process of enhancing capabilities of organizations within an industry with an aim of delivering great experience for end consumers. An increase in environmental concerns, new technologies and globalization has changed expectations and behaviours of customers. Customers do not only expect to purchase a good product; however, they also expect to have a good experience while using the products. Due to these transformations in customers' preferences, companies in different industries are changing their approaches and aiming at providing value-based services to customers. Especially manufacturing, textile, IT, automotive and construction industries in countries such as India, Japan and China have undergone servitization to cope with changes in customer demand and transformations in economies.

Companies have started adopting a service-oriented management approach by changing their traditional product-oriented approach. It has been a revolutionary phenomenon in the Indian manufacturing industry

(Frederico, 2021). Firms in India have employed this strategy for surviving successfully in a highly competitive market for which firms have adopted integrated product-service business-model. Servitization in the Indian manufacturing industry led to an increase in GDP of manufacturing industry and overall GDP of this country increased by about 60% through development of service-led economy (Tpci, 2019).

In manufacturing, IT, automotive and service industry of China, firms adopted an input-servitization approach for enhancing their export probability for which prices of good quality products were reduced. Similarly, in other countries, such as in UK and Australia, this servitization took place for providing high value to customers with an objective of coping with adverse macro-environmental changes such as Brexit, changes in consumers' attitudes during Covid and so on. Present study has focused on providing a comparative analysis of ways industrial management amongst India, China, Japan and other few countries has changed to embrace servitization and factors that have triggered servitization in these countries.

II. RESEARCH BACKGROUND

Manufacturing sector constitutes a significant part in growth story of India. However, contribution of this industry in GDP of Indian economy seems to have decreased in recent years. During huge uncertainty caused by adverse events such as Covid-19, it became essential for manufacturing companies to shift their focus from setting financial standards to establishing non-financial standards for measuring business performance. Indian firms are aiming at up skilling the corporate culture within 2025 by adopting the new "As service offerings" approach for delivering a proof of value-oriented focus on their offerings (Economicstimes, 2021). However, servitization is still in a nascent stage in Indian economy as compared to the developed countries including UK and USA. In China, after industrialization, manufacturing in textile industry and aerospace manufacturing industry was slowed down and services were accelerated.

However, trend of servitization has made it possible to integrate manufacturing effort and service offerings (Zhu *et al.*, 2017). Still, servitization level of this country is lower as compared to other countries such as Japan and USA due to some issues like poor leadership-style,

resource constraints and so on. Keiretsu system of Japan is adopting Servitization for expanding market. With an increase in production cost, it started embracing servitization for focusing more on providing services rather than on developing new products.

A. AIM, Objectives and Hypothesis

Present study aims at providing a comparative analysis on industrial management in Japan, India, China and other countries for servitization.

Objectives

- To delve into ways servitization has influenced China, India, Japan and other countries differently
- To analyse ways industrial management practices of India, China and Japan have changed for adopting servitization
- To identify factors that created need of servitization in China, India and Japan

Fundamental research question is:

How has industrial management in different countries experienced changes to embrace servitization and how does this approach for servitization vary in different countries?

III. LITERATURE REVIEW

Manufacturing industry of India has become a low sector of a rapidly developing economy. Even before Covid-19 brought Indian economy to standstill in previous year, manufacturing industry of this country was ebbing (Indiatoday, 2021). As shown in Fig. 1, there has been a significant decline in growth of manufacturing industry during period of 2017 to 2021. Due to this, there has been an increased focus on servitization in recent two to three years and the primary motivation behind servitization in Indian manufacturing, service and IT industry is revenue generation.

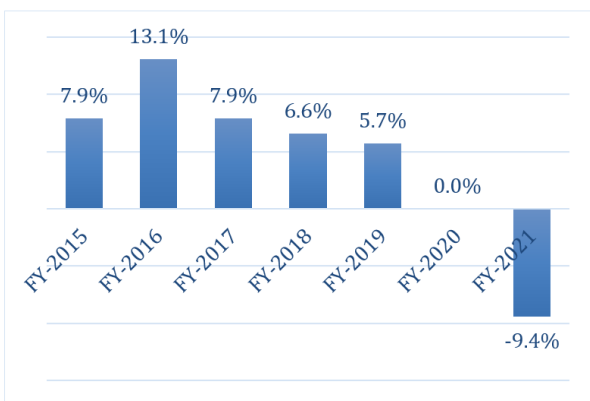


Figure 1. Decreasing growth in manufacturing industry. (Source: Author)

Apart from revenue generation, one of the major reasons that motivate firms to servitize includes changes in consumers’ needs. Firms in India are focusing increasingly on developing their capability of addressing needs of customers by providing customer-focused solutions for which it is important to servitize businesses.

Firms within construction industry of this country are servitizing their businesses to provide value-oriented construction services to clients by integrating machine-to-machine learning-technologies in their offerings for optimisation of timing and effective execution of their construction plans. It helps them to provide timely and superior quality services to clients. Chinese, textile and manufacturing industries have undergone servitization that has had a positive influence on export-technological sophistication (Hu *et al.*, 2021). Major motivation behind servitization of these industries in China was increased need for customisation of service-offerings for addressing local needs along with meeting the needs of international consumers. On other hand, fundamental factor that motivated firms of Japanese manufacturing and IT industries was development of competitive edge. Servitization of processes aided in development of process capabilities in Japanese manufacturing and IT industries leading to an increase in competitive edges of firms.

However, servitization in India, Japan and China is still at lower level as compared to the developed countries such as USA, UK and Australia. It has been due to poor industrial management, lack of proper leadership, improper infrastructure and many more factors that hindered smart servitization (Fan *et al.*, 2020).

Servitization has a significant positive influence on innovation-performance of firms operating in Indian IT, services, automotive and manufacturing industry. As cited by Shen (Shen *et al.*, 2021), servitization has triggered digitization in Indian manufacturing, automotive and IT industry. Digitization enhanced innovation performance of firms in these industries. For example, Indian manufacturing firms have adopted an integrated product-service business-model through servitization that aided in developing value-oriented products that addressed changing needs of consumers in these industries. It helped in enhancing profitability of firms in automotive and manufacturing industries of India.

TABLE I. IMPACT OF SERVITIZATION ON REVENUE OF INDIAN INDUSTRIES

Indian Industries	Increase in revenue after servitization
Manufacturing industry	2.6% in revenue of manufacturing industry after 10% enhancement in servitization (Grover & Mattoo, 2021)
Automotive industry	Huge investment in development and research activities after servitization resulted in an increase of 2.5 trillion revenue (Opazo-Bas áez <i>et al.</i> 2018)
IT industry	11% increase in revenue of IT industry after recovery from Covid-19 has been estimated

(Source: Author)

However, there are a few negative impacts on Indian firms as well as integration of services with products led to an increase in costs that made it challenging for firms to obtain desired gains. In China, servitization influenced

firms in different industries mostly in a positive way. As cited by Chang (Chen *et al.*, 2021), Chinese textile industry has undergone servitization that aided in development of new technologies and creation of sustainable value for customers. On the other hand, in Indian manufacturing and services industry, firms adopted a balanced-scorecard approach for measurement of their innovation performance within servitization context after implementation of integrated product-service business-models. This aided in ensuring success of firms after adoption of servitization approach. However, adoption of product-service strategy of servitization has not been sufficient for ensuring success of Chinese firms due to an increase in challenges such as improper understanding of servitization, absence of proper measurement strategy and ways of integrating services in a cost-effective manner.

In Japan, servitization of organizational structures in manufacturing and other industries helped in developing efficiency of firms. During servitization of organizational structures, many firms such as Toyota focused on human-resource components that enhanced efficiency of firms in Japan. Servitization level in this country is much higher as compared to other countries such as China and India and has an immense positive impact on industries. It has been due to adoption of effective servitization strategies through proper industrial management as other developed countries such as UK and USA. In India, territorial servitization was stressed for expansion of businesses that allowed firms to follow various paths for expanding businesses.

A. Research Gap and Probable Contribution

Previous studies on servitization have provided limited attention to making country-specific assumptions and deriving industry-specific results that were the most significant gap in those studies. Present study has attempted to bridge this gap by collecting country-specific data for providing a comparative view of servitization in different countries.

IV. METHODOLOGY

Research philosophy should be selected based upon type of study to be conducted. Present research aims at providing a comparative analysis on industrial management and servitization in China, India, Japan and other countries. It has covered a range of different issues that influence industrial management among India, Japan and China for servitization and for this, different dimensions of servitization have been considered. Pragmatism Philosophy has been selected in this research, as it is an appropriate philosophy for deriving the exact “nature of reality (Kaushik and Walsh, 2019) this philosophy has aided in addressing fundamental research questions as it has allowed for studying different aspects of servitization in a broad manner. Research approach should be selected properly to ensure development of valid conclusion after selecting right processes for analysing collected information. Explanatory design has been selected for developing causes and impact relations amongst variables such as drivers and impact of

servitization in different countries. It helped in analysing causal impact of different industrial drivers on servitization.

A. Data Collection

Mixed data-collection-method has been selected in present study through which both secondary and primary data have been collected for gaining detailed information on ways industrial management, servitization approaches in China, India, Japan and other countries differ, and ways industries in these countries are implementing servitization. Managers of manufacturing, IT, construction and automotive firms have been selected for the collection of primary data and journal articles and websites have been consulted for collection of secondary data.

B. Sample Design

Purposive sampling has been selected through which 50 managers of manufacturing; IT, automotive and construction firms have been selected. 20 managers were from Indian firms, 10 managers were from IT firms, 10 managers were from construction firms and rest were from automotive firms.

C. Tools and Techniques

Survey questionnaires have been set for collection of primary data and descriptive statistics were used to represent this data.

V. ANALYSIS AND DISCUSSION

To answer the deferent sub-questions are dealt meticulously to problems. The analysis and interpretation provides the concrete answer to the questions.

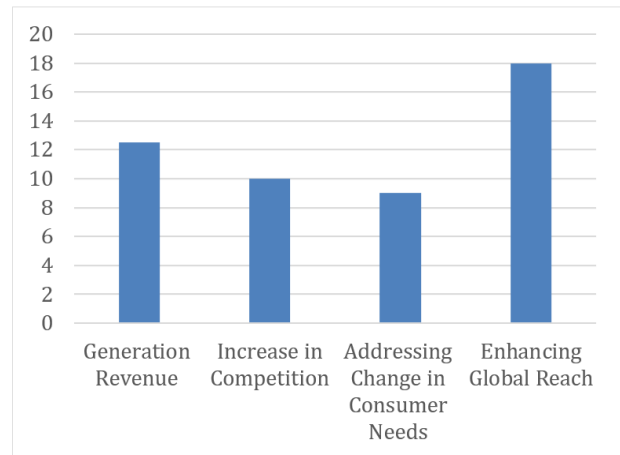


Figure 2. Importance of embracing servitization.
(Source: Author)

As shown in Fig. 2, according to 26% of total managers, servitization is essential for generation of huge revenue. According to 20% of total managers, servitization should be embraced for enhancing competitiveness of firms. According to 18% of total participants, servitization is essential for addressing changes in consumers’ needs in an effective manner. On the other hand, according to 36% of total managers, servitization is important for increasing global reach of firms in India, Japan and China and

competing successfully with servitized firms in developed countries such as UK and USA.

1. Challenges Firms that are facing during and after servitization?

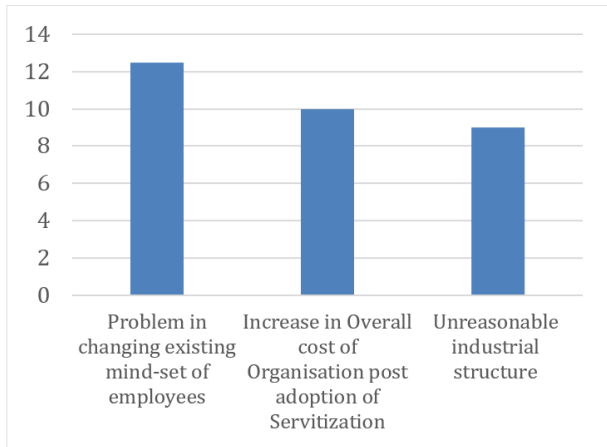


Figure 3. Challenges faced by firms in embracing servitization. (Source: Author)

As shown in Fig. 3, according to 40% of total managers problems in changing mind sets of firms' employees can hinder implementation of servitization in firms. According to 32% of total managers, an increase in overall cost of organizations after adoption of servitization often reduces its effectiveness. On other hand, in view of 28% of total participants, unreasonable structure of industries is responsible for hindering successful implementation of servitization.

2. Fundamental drivers of servitization in the industries of your country?

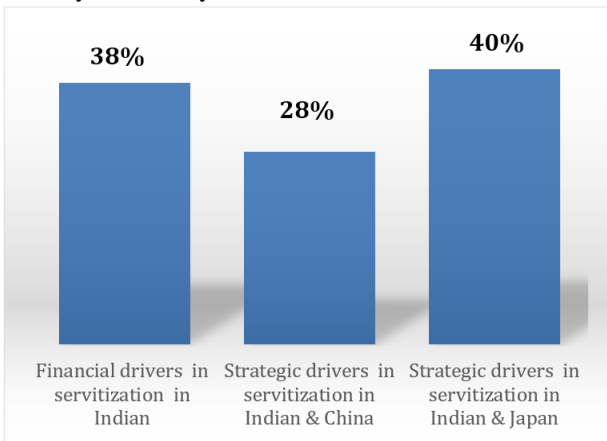


Figure 4. Drivers of servitization in different countries. (Source: Author)

As shown in Fig. 4, according to 32% of total participants, financial drivers play a significant role in servitization of businesses in Indian industries. On the other hand, according to 28% of managers of Indian and Chinese manufacturing and automotive industry, strategic drivers play major roles in servitization of businesses in those industries. In view of approximately 40% of total participants, customer satisfaction is major driver of servitization in Indian and Japanese industries.

3. Effectiveness of servitization strategies, be improved to ensure success of firms post servitization

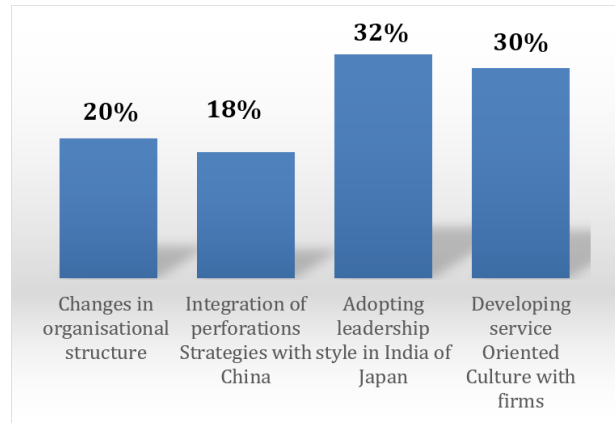


Figure 5. Increasing effectiveness of servitization strategy. (Source: Author)

As shown in Fig. 5, according to approximately 20% of total participants, changes in organisational structure should be stressed for ensuring success of firms after servitization. In view of 18% of the managers of Chinese manufacturing firms, it is essential to focus on integrating a proper performance measurement strategy such as balanced-scorecard with servitization strategy. 32% of managers stated that, in Indian and Japanese manufacturing industries, proper leadership styles should be adopted for ensuring success after servitization. According to 30% of total participants, development of service-oriented culture within organizations is necessary to increase effectiveness of servitization.

This survey has provided critical understanding of drivers of servitization in China, Japan and India and hence, specific insight has been provided which is strength of this survey. However, this study failed to provide proper analysis of importance of servitization in specific industries of these countries (Weakness). Moreover, future researchers can conduct their studies on industrial management and servitization in these countries based upon the results of this survey. It is essential to focus on being more industry specific in future as lack of focus on being industry specific while generating outcomes can lead to lack of reliability and it can be one of the threats.

4. Need for increased focus on successful servitization in India for successful expansion and increase in competitive advantages

Servitization has had a positive impact on digitization of firms in India and it enhanced competitive edge of firms in manufacturing, construction and other industries. There is a positive interaction between servitization and digitization. Full-fledged servitization triggered need for implementing advanced technologies and transforming firms digitally for adding value-oriented services to product offerings of Indian firms in different industries (Kohtamäki *et al.*, 2020). In world of fierce competition, it has become essential for enhancing attention to embracing digitization and for developing this capability; servitization can play a crucial role.

Apart from this, firms need to servitize for ensuring success after international expansion in countries such as UK and USA as most firms in these countries have servitized their businesses. Hence, to compete successfully with these firms, Indian firms need to develop their capability through adoption of an effective servitization strategy.

5. Proper management within manufacturing and other industries for successful servitization

It is essential for managers of organizations within manufacturing, automotive, IT and other industries to develop a learning culture within organizations to cope with servitization in an effective manner (Dmitrijeva *et al.*, 2020). In most cases, organisations especially in Japan and India lack proper organizational structure that results in complications in embracing servitization. A flat-structure is effective for implementing servitization, as it would help in creation of a collaborative learning culture in organizations.

VI. FINDINGS AND SUGGESTIONS

Primary data collected through survey provides a proper understanding of importance of focusing on servitization in industries of India, Japan and China. Majority of participants stressed on the fact that servitization is importance of enhancing global reach and competing successfully with servitized firms in UK and USA. As cited by Mart  (Mart -Pe a *et al.*, 2019), servitization can create strategic advantages through increased focus on digitization that can help firms to differentiate their services from other firms. Hence, it would be beneficial for effective internationalization. Major challenge that is hindering servitization in Indian industries is problems in transforming employee mind sets.

Previously, employees used to work under a product-oriented culture which would not require much attention to ensuring customer loyalty by building proper relationship with them. Due to this, a service-oriented culture often imposes huge pressure on employees for which, in response to fourth question majority of participants stressed importance of adopting proper leadership style for embracing servitization successfully. As per secondary data, it is important for Indian firms to enhance efficiency of servitization for enhancing competitiveness as markets are becoming highly competitive across the world (Kowalkowski *et al.*, 2017). It also analysed importance of paying attention to transforming organisational management system for embracing servitization in Indian industries.

In this study it has been found that, servitization is sometimes highly challenging as poor understanding of service-oriented approach is often leading to an increase in cost of firms in India and Japan (Rabetino *et al.*, 2017). Hence, for Indian firms it will be essential to design a knowledge-based culture to foster learning within organisations. It will be beneficial for embracing service-oriented culture that would ensure success of firms after servitization. Apart from this, it is also important for firms to conduct market studies to understand customer

preferences especially in India, as customer demand in this country changes rapidly.

Hence, it is crucial to examine whether it would be beneficial for firms to servitize their businesses or not. It will prevent them from facing financial losses. Firms should also study external market environment to determine possible challenges present in economic or political environment as success of servitization depends largely upon stability of market environment. It will aid in developing proper strategies for coping with environmental issues during or after servitization in India and other countries.

CONFLICT OF INTEREST

The author declares no conflict of Interest.

AUTHOR CONTRIBUTIONS

Work delves into ways servitization has influenced China, India, Japan and other countries differently. Analyse has spoken about industrial management practices of India, China and Japan have changed for adopting servitization. The work has identified factors that created need of servitization in China, India and Japan Industrial management in different countries experienced changes to embrace servitization and how does this approach for servitization vary in different countries.

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