

Digitized Value Chain in Food Industries: Opportunities and Challenges for SMEs

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Abstract

Nowadays businesses have become more aware about digitized value chains. Every business is trying their best to add values to their organizations. The adoption of digital technologies has changed organization in multiple ways at the same time. The food market is growing at global levels and various small businesses are coming up to promote and challenge their businesses to the big platforms and gaining benefit at enormous levels which automatically leads to the economic growth. But on the other hand, various Small and Medium sized Enterprises (SMEs) in food sector are facing problems to adopt digitization at every stage in terms of adding values to their firms due to various reasons. By adopting digitization in the value chains will not only results in the cost cutting, but also it will help the organizations to be more productive and efficient. In India, technology trends on daily basis and government is taking all possible steps to make the food industries fully digital, but still according to one of the surveys, it is observed that 53% of the corporates or businesses are far from their digital transformation goals. The main objective of this paper is to find out how the big firms of food industries are adding values to their organizations by accepting the digitization in their value chains. Also, this paper will identify different models and strategies used by famous organizations who are adding values in their organizations by adopting digitization at initial levels. Also, we will try to find out that what kind of budget friendly IoT devices are being operated by them which will also help the upcoming small enterprises in the near future.

1 Introduction

The digital era offers fantastic opportunities to boost competition in any industry, start a new company, or enhance existing operations [1]. Digitalization plays an important role in today's business world. Digital transformation in any sector not only boost the organizational performance but also results in value creation [2]. Majorly the companies are dependent on the digitization operations. They are working hard not only to get the best out from their businesses but also to compete with the international markets. Food sector is

majorly growing in the developing countries, India is one of them. The small and medium sized enterprises in food industry are established each day in huge number. The government is taking all possible actions to make the country fully digital. The implementation of new technologies in the businesses are becoming important part as to add these in their business models to achieve success [3]. But unfortunately, there are still some businesses who failed to add these changes in their organizations [4]. Due to ineffective operations by SMEs, the food industry in India is dealing with a problem of food wastage. Approximately 30% of farm products has been wasted due to the inadequate processes followed by the small and medium sized enterprises [5]. There are so many problems faced by the Indian small and medium food enterprises which includes financial issues, lack of technical expertise, lacking in business investment plans, poor alliance with the other small and medium sized enterprises or big companies and so on. To overcome all these issues various tech-oriented models should be considered in the enterprises to increase the value of the processes [5]. Value chain at each step of an organization needs to be examined and considered as an individual task to achieve success. The digitized value creation is possible by implementing new business models or adopting new techniques in the food market.

2 The Value Chain

Every firm is collection of activities that are performed to design, produce, market, deliver and support its product [6]. According to Porter value chain the activities are divided by two main activities which are primary and secondary activities as shown in Figure1. Porter developed this value chain to identify which activities in the firm is contributing the most in a competitive advantage. Primary activities include inbound operations, operations, outbound logistics, marketing and sales, service. Secondary activities include procurement and purchasing, human resource management, technological development, and company infrastructure [6]. Every firm of each sector is having broad strategy for developing value chains. They consider the value chains as a competitive advantage. The primary value activities include inbound logistics, operations, outbound logistics, marketing& sales and services. Secondary value activities include the firm infrastructure, Human Resource management, technology development and procurement. Primarily these activities looks separated from one another but on actual basis each activity in value chain is interlinked.

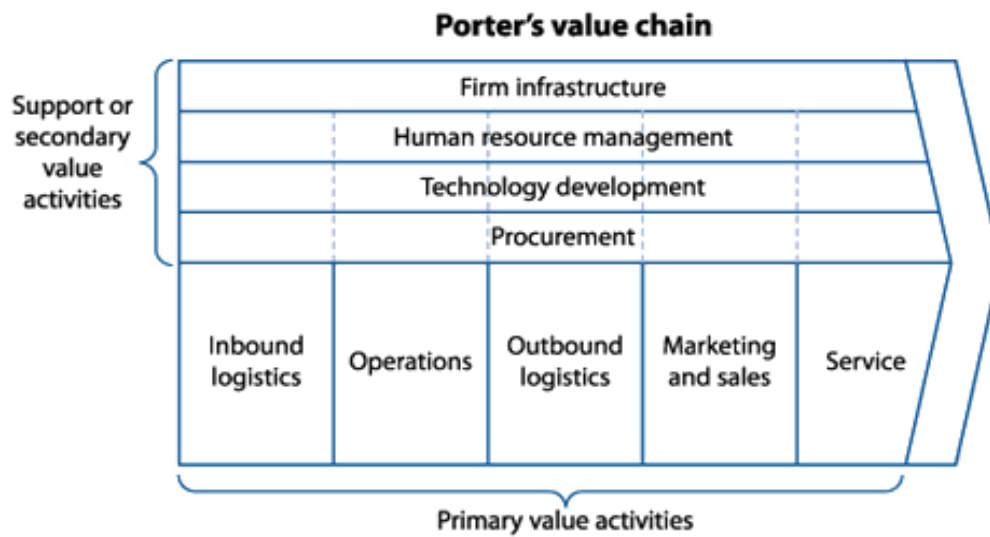


Figure 1. Porter's Value Chain Model [6]

3 The emergence of value chain thinking

It has been more than three decades that the Porter's model of the value chain is promoted by the organizations and also at the academic levels [6]. A value chain is series of the tasks performed in the organizations which is considered as the best practices to analyze not only the performance but also the efficiency at each level and it is considered as the best practice to the market. As described by the porter's value chain, organization is a system that is made of inputs. Processes for transforming them into the valuable outputs. Each activity includes the purchase and consumption of resources. Costs and revenues are based on how the organization executes value chain operations within the company. To achieve good results or to enhance the competitiveness its only possible to strengthening the value chain structure of a company. However, the value chain thinking, not received much attention [7].

4 Research design

4.1 Methodology and Framework

The digitization is becoming the most important aspect of every industry. SME's in the food sector are trying their best to achieve the goals. The literature review was one of the major sources included in the analysis.

Materials used in the analysis come from the literature review and the case studies. The literature review included research papers, peer reviewed articles and the famous case studies [8].

4.2 Objectives of the Research

The present study focusses on the two main objectives which are the general and specific objectives. The specific objectives were considered to find out all the results during the research. It includes the challenges and opportunities that came in the way of small businesses while implementing the digitized value chains and the other one is to find the competitive advantage of the SMEs. Also, the general objective was taken into consideration to find the results. The general objective was studied through some case studies and those were to know the internal collaboration, improved services, and optimized processes by implementing the different technologies within the companies [9,10].

4.3 Data collection and analysis of data

The overall aim of this paper is to find out what are the challenges and risks of small and medium sized food enterprises to adopt digitization in their value chains. The data was collected from the well-established academic databases through the online sources which is Web of Science, Scopus and Google Scholar. The two main keyword combinations “Digitization in SMEs” and “value chain in food industry” were taken into consideration to find the data. The objective of this investigation consisted in (4.2). The identification of the main articles and studies about this topic and the comparisons between different point of views. Some of the case studies of different companies have also been considered to find out the relevant result. Eventually we did sampling to our keywords before making the final keywords as our research keywords. The few keywords based on the topic were discussed by the authors which includes the value chain, logistics, digitized businesses, supply chain. Then after the two main keywords were decided and taken into consideration as mentioned above.

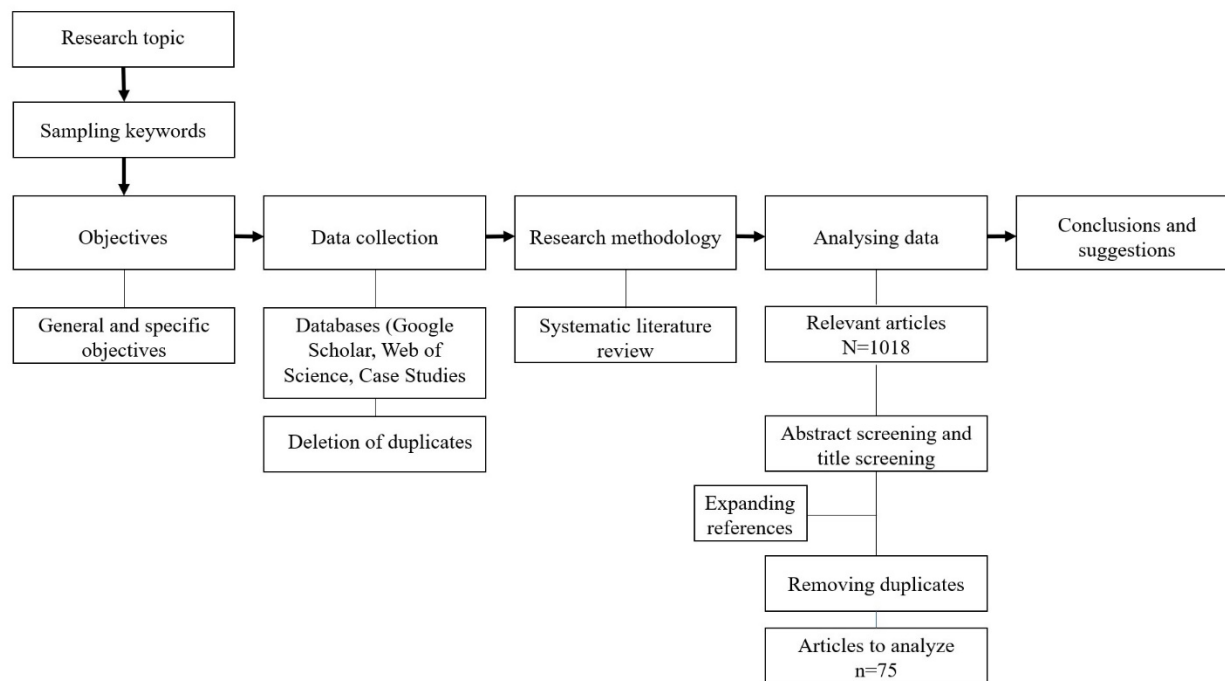


Figure 2. Research methodology framework

4.4 Paper search and selection criteria

Based on our keywords and topic we collected the articles from the three well established databases and the documents collected were 1018. It was completely based on the keywords. We also expanded our references during the process and did the abstract screening and the title screening at first and the number of articles that matched our research were 668. Later on, the authors found some articles which are irrelevant and duplicate papers and we tried to filter them and removed all the duplications and results in finding the 75 final articles. Then we analyzed all the 75 articles (Figure 3).

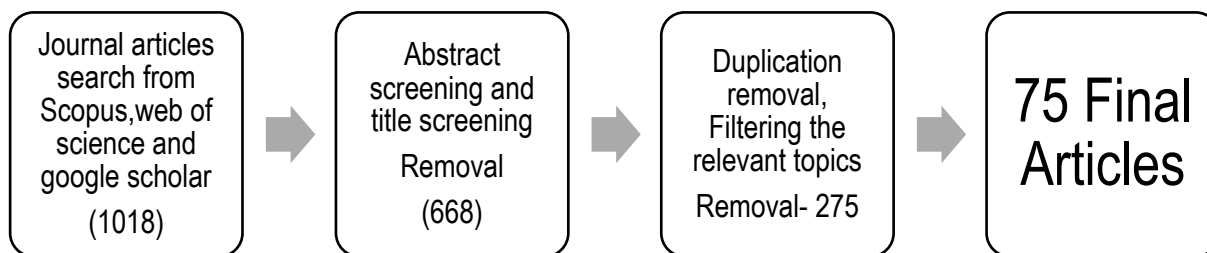


Figure 3. Paper search and selection criteria

5 The Role of digitized value chain and its competitive advantage

Digitalization not only raises the production but also helps in improving the company's performance, shedding light on the strong relationship between the investment in digitalization and the financial performance [11]. The Indian food sector is having great potential for competing with the bigger markets. But unfortunately, small and medium sized enterprises are facing lot many problems at initial levels of production. In small and medium sized enterprises, the lack of digitization in the processes of value chain is responsible for the failure of these companies [5]. The government is taking all possible to actions to upgrade the businesses but failed to achieve the targets. By this way, there is no way possible to achieve the sustainable goals. To achieve sustainability standards and provide consumers with high quality and safer food, the higher management in the organizations or managers in the firms must create an effective tech friendly value chain system [5]. Digital technologies - such as social, mobile, analytics and cloud - are changing organizations and most areas of human activity. Organizations in food industries need to integrate these digital technologies and their capabilities to transform processes, engage talent and drive new business models to compete and strive in the digital world [12]. The organizational culture of businesses appears to be less influencing factor in implementing digital technologies and both the factors leadership and organizational structure signifies factors with low impact in digital technology adoption [13]. By the adoption of technology in all the processes or activities of value chain it will not only leads to the firm growth but will also achieve the sustainable goals. The researchers examined the association between a company's advanced technical adoption activity and its impact on performance. They believed that technological changes are one of the best driving forces to economic growth [14]. Businesses rely largely on their capacity to adjust to these new changes and successfully incorporate them into their business models on an industry level [15]. The internet, networks, and widespread use of smart devices have enormous promise for the value chain and scalability [16].

5.1 Technology enhance performance

Technology advancements such as the Internet of Things (IoT), cloud computing (CC), cyber physical systems (CPS), additive manufacturing (AM), and big data analytics (BDA) enable interoperability between machines and devices, modularity of processes, decentralized decision-making, and information transparency [17], paving the way for the creation of smart systems. The SMEs embrace of technology boosts the industry's capacity for innovation [10]. According to one of the surveys [18] on 85 small manufacturers in the US, confirms the great and positive relationship between the SME's and the product innovation strategies

and the value chain digitization, particularly in matured organizations. According to Hall [9], the SME's information systems give owners or managers of the businesses the chance to obtain the appropriate and comprehensive information they need to make business decisions. They also mention that the use of technology at small levels increased the value of their organization [9, 19].

6 Challenges while adopting digitized value chain in SME's

All levels of the hierarchy, managers and owners are directly engaged in the processes of digital transformation. This proves that SME managers are fully aware of the important role that digital business change performs. The main difficulties and obstacles to the digitization of companies are not only technologies, but human factors, cultural traditions, employees' resistance to change, lack of appropriate knowledge and good practices, lack of sufficient resources, lack of motivation and risk taking.

- **Transforming traditional business models to advanced business strategies**
The organizational structure and the organizational culture of small medium enterprises appear to be less influencing factor in terms of accepting the new technologies at every step of activities. The traditional way of work culture is the main challenge for the food sector. The leadership styles and old strategies are tested to promote the businesses which usually results in a huge failure of the organizations [20].
- **Complex processes**
Some of the SMEs believe that by implementing the advanced computing solutions in their organizations will result in the complexity of the processes. Because they believe that by enhancing the technologies in their value chain completely offers real time monitoring and control solutions. By doing this, they must upgrade the business models and strategies and by doing so is a huge risk in their work. So, they believe in following the same processes at each level [21].
- **Financial aspects**
Implementing technology is not easy in any organization but it is way more difficult when it comes to maintenance [21]. The managers believe that managing and maintaining such technologies is too expensive. It is observed that management between technologies and the business models is another difficult task for the SME's. Especially the software's needs to be maintained timely [22].

7 Conclusion

Digitization is becoming the role model of businesses these days. It is observed that digitization is not only important, but it is becoming the necessity of the companies to promote their products and achieve all the goals. It is playing a crucial role in competing not only at national levels but also to the international markets. Digitization in value chain comes with both opportunities, challenges, and risks. After reviewing the articles, we come up with the most discussed challenges, importance and risks in the organizations while promoting digitization in the value chains. Further future studies need to be empirically evaluated for the SME's business strategies and also to the different activities of organizational technical strategies.

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