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# Ensuring the Success of Unorganized Retail Supply Chains of Current Times- A Developing Nation Perspective

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**Abstract**
The goal of this study is to identify and evaluate key success factors (CSF) for unorganized retail supply chain management (UORSCM). The interpretative structural modelling (ISM) approach is applied for analyzing the CSFs. In India, the unorganized fast-moving consumer goods (FMCG) retail sector occupies a sizable amount of space and makes a significant GDP contribution. A total of 13 CSFs are analyzed, and to determine their driving and dependency power, MICMAC analysis is carried out. The outcome demonstrates that unorganized retailing suffers a variety of difficulties, like, the arrival of new competitors, product substitution, supplier problems, buyer threats, an increase in organized retailers, and co-manufacturer threats, in developing country settings. The factors with the highest positive impact are service quality in FMCG retail, time management at stores, product quality, and spoilage adjustment in retail. The factors, service quality in retail, time management at stores, and product quality have resulted in the highest driving power and lowest dependence power to attain the desired performance of UORSCM. The study's findings also indicate that by focusing on these factors, unorganized retailers can efficiently handle customers.

**Keywords-** Unorganized retail, Supply chain management, Interpretative structural modelling (ISM), Fast-moving consumer goods (FMCG), India.

**Abbreviation**

| | | | |
|---|---|---|---|
| SCM | Supply Chain Management | FRM | Final Reachability Matrix |
| GDP | Gross Domestic Product | CSF | Critical Success Fcator |
| ORSC | Organised retails supply chain | TOPSIS | Technique for Order of Preference by Similarity to Ideal Solution |
| SSIM | Stuctural Self Interaction Matrix | CPG | Consumer Packed Goods |
| UORSC | Unorganised retails supply chain | AHP | Analytic Hierarchy Process |
| FMCG | Fast Moving Consumer Goods | IRM | Initial Reachability Matirix |

## 1. Introduction

Fast-moving consumer goods (FMCG) are products that are relatively inexpensive, readily available, and used in daily life. According to their shelf life, these products are often used within days, weeks, or months (Chengappa, 2007; Chhabra and Farooque, 2018). The ability to store materials for a long time is constrained by the limited shelf lives of consumer packaged goods (CPG). Even the majority of retailers in

rural areas lack adequate storage space. The user typically makes these transactions on a daily, weekly, or monthly basis. The user retains a small amount of these items in storage in their homes. The majority of them are perishable goods that people prefer to buy regularly and as needed. FMCG products are inexpensive, frequently purchased, quickly consumed, and extensively sold. Processed foods, beverages, over-the-counter medications, prepared meals, fresh and frozen foods, cleaning supplies, apparel, cosmetics, toiletries, consumer electronics, office supplies, etc., are key items that fall within the FMCG category. In Figure 1, a few of these categories' items are also displayed.


**Figure 1.** Fast moving consumer goods [Sources: (Joseph, 2008; Renuka 2012; Chhabra and Farooque, 2018; Solani 2020)].

The FMCG sector is viewed as a low-margin industry on a national scale. The volume holed has a significant influence on the FMCG sector's success. The FMCG industry contributes roughly 14.5% of the nation's GDP, or $17 billion, through domestic consumption. India is likewise advancing into the era of "Retail Chains" by modernizing the conventional "Kirana Stores" structure. In order to advance and endure in the market, people are attempting to implement ideal management practices. The retail industry in India is expanding due to some important causes, including a change in lifestyle, economic changes, urbanization, IT deployment, etc.

Manufacturing, product creation, and maintaining a strong distribution infrastructure that firmly supports supply chain performance are crucial components of the FMCG sector's success. The FMCG supply chain (SC) is a system of procedures and the resources that go along with it. To market the products on a larger scale, it may comprise suppliers, manufacturers, logistical services, distributors, retailers, etc. (Chhabra and Farooque, 2019). Figure 2 displays a typical supply chain for FMCG products. The supply chain begins with obtaining raw materials from the source, shipping them to the producer, and finally selling the finished goods. The manufactured products are subsequently delivered to the distributor, who distributes them to

various retail locations from where the consumers initially purchased them. The FMCG industry's supply chain is made up of a sophisticated distribution network. With increased buying, distribution, and selling performance, the FMCG SC seeks to reduce costs. However, retailers play a significant role in the FMCG supply chain's selling function (Kumar and Bala, 2011).

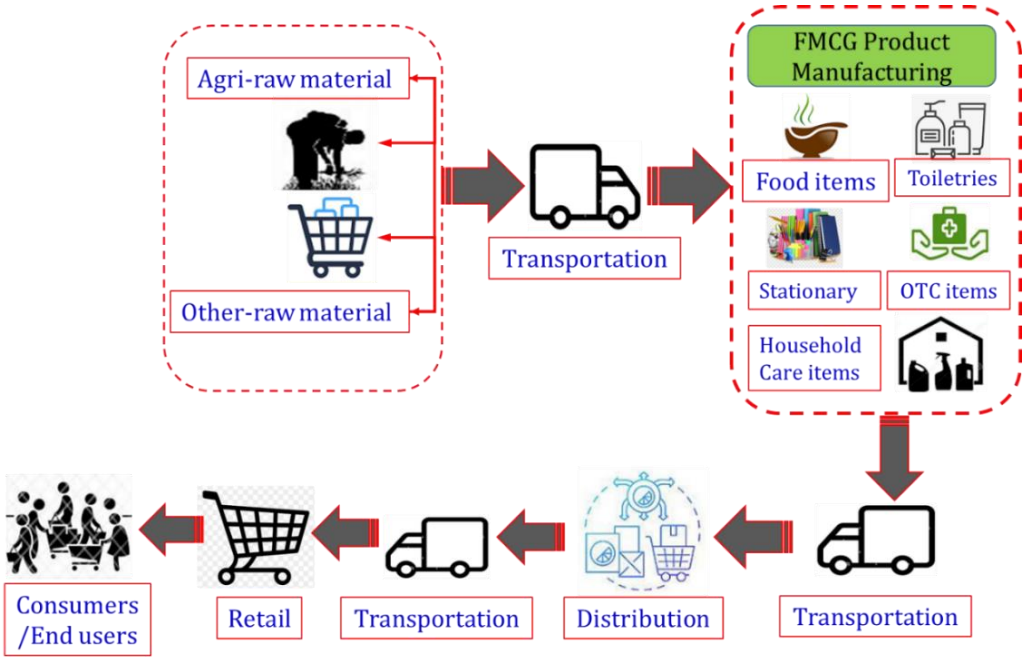


**Figure 2.** FMCG supply chain in the Indian context [Source: (Renuka, 2012)].

## 1.1 Unorganized Retail Supply Chain (UORSCM)

The unorganized retail supply chain is a complex system that involves multiple stakeholders and processes. In this type of supply chain, there is a lack of centralization, standardization, and control over the flow of goods and services. This often results in inefficiencies and challenges that can impact the overall performance of the supply chain. At the heart of the unorganized retail supply chain are small and medium-sized retailers who operate independently and source their products from multiple suppliers. These retailers often have limited resources and rely heavily on personal relationships with suppliers to ensure a consistent supply of goods (Sinha et al., 2012). This can result in less transparency and visibility, and issues related to product quality, pricing, and delivery times. The unorganized retail supply chain is also characterized by a lack of technology and automation. Retailers, distributors, and manufacturers often rely on manual processes and paper-based records, which can result in errors, delays, and inefficiencies.

The unorganized retail industry of FMCG covers an ample space in India (Sinha et al., 2012; Chhabra and Farooque, 2018). The low cost and mandatory purchase provide a high profit for the business. No statistics are defined for unorganized retailers. Though the unorganized sector is strong, due to the modern challenges of life it has to adopt some formal retail patterns. It will help unorganized retailers the stability of their customers by avoiding their attraction towards organized stores (Dash and Chandy, 2017). The unstructured supply chain in retail encounters numerous challenges, including the emergence of new competitors, substitution threats, supplier and buyer bargaining power, intense competition, the rising presence of organized retail, complexities in distribution management, etc. There are new players in traditional fresh

products and the trend of co-manufacturing also impacts the business. The challenges in unorganized retail supply chains may be overcome by critical analysis and adoption of success factors that govern overall chain performance (Azeem and Reddy, 2011; Bala and Kumar, 2011).

## 1.2 Critical Success Factors of UORSCM

The supply chain success factor/attributes and dimensions may be related to supplier actions, manufacturer standards, distributor ability, and the regional status of the retailer to sell the final product to the consumer. Supply chain flexibility and integration are characteristics that directly affect supply chain systems. The supply chain's flexibility improves the company's agility to adapt to different optimal processes. It further enhances the effectiveness of the supply chain design, lead time, etc. In contrast, supply chain integration is a multi-dimensional concept that shows the efficient connection between all supply chain members.

The firm's speed in responding to customer requests is termed responsiveness to consumers. It plays a vital role in supply chain management performance. It also influences the efficiency of the company by managing the lead time. The service/product quality, innovative products, and market performance are potential factors to improve the performance of the retail supply chain. These factors affect service quality, creative design, market shares, etc. The non-financial measures like relationship measures and supplier performance are also important factors.

The FMCG supply chain comprises a complex network with competitive links that constantly thinks of new success ideas. The better the supply chain system, the better the performance and revenues. The system with poorly managed members of the supply chain faces many challenges to survive in competitive FMCG industry (Renuka, 2012; Kumar and Khan, 2020). Insignificant information is available in the literature to be aware of the importance, challenges, and survivalist frameworks for the unorganized retail supply chain of FMCG. Therefore, it is necessary to understand the challenges posed by current trends in the unorganized retail supply chain of FMCG in India. The challenges may emerge from any member of the supply chain. The performance of an individual member or the whole supply chain is influenced by numerous factors. To sustain in the competitive market of FMCG, a significant analysis of critical success factors (CSFs) influencing the unorganized retail supply chain's performance is necessary. The understanding and identification of causes are not sufficient to face the market challenges in an unorganized retail supply chain of FMCG. It requires quantifying and statistically analyzing the impact of individual success factors on unorganized retail supply chain management performance through potential and advanced techniques. The significant information obtained from the analysis of CSFs will generate new ideas to minimize the future challenges of the unorganized retail supply chain. The relationship between challenges, success factors, findings, and a road map to further survivability may provide a framework for an unorganized FMCG retail supply chain.

Since the unorganized supply chain of FMCG is facing many challenges, it requires further investigation and strategic planning. Though the inquiry into FMCG supply chain performance is not new. There have been several pieces of research that consider unorganized retail supply chain management. But these suffer from certain limitations. Many researchers have not assumed retailing in an unorganized fashion; they have only considered organized retailing. There is a need for research that should be capable of providing a dynamic and scalable solution. Some researchers are not considering work outside the Indian domain. Moreover, limiting factors have been considered during this research. Thus, there is a need to propose research where survey-based work should be made to improve unorganized retail supply chain management in FMCG. The unorganized retail supply chain in India presents a unique set of challenges and opportunities, and several CSFs can enable its efficient functioning. Past research indicates that an unorganized retail supply chain in India should focus on collaborative partnerships, efficient logistics and

transportation, technology adoption, standardization and quality control, access to finance, a skilled workforce, etc., to be competitive. The specific success factors identified may further enhance the focus and results for this sector.

This study intends to identify and evaluate the CSFs affecting the FMCG industry's unorganized retail supply chain performance in India. On the basis of survey data, factors are analyzed and models are created using the ISM technique. The literature research method of earlier publishing data and publications resulted in the identification of thirteen CSFs. A questionnaire was sent to experts through which the impact of the individual success factor is calculated. Using the ISM technique, the survey produced probable success criteria.

## 2. Methodology

### 2.1 Identification of CSFs

To identify the CSFs for UORSCM in the Indian setting, the authors used a methodology that is a mixed approach based on benchmarking and brainstorming. To start, the literature on UORSCM is researched to determine the current CSFs. The specialists' established track record of carrying out empirical research and their focus on the CSF may help UORSCM in India succeed. The CSF can be found by looking through previously published research papers on databases and portals like Science Direct, Emerald Insight, Springer, and Taylor & Francis. Additionally, the articles were obtained using Google Scholar and Scopus. With AND/OR operators, the databases are searched for relevant terms like retail supply chain, Unorganized retail supply chain management, CSFs, and their combinations.

Though many factors were found that may influence the performance of retail supply chain management. From the literature, 33 factors were found to be impactful for the selected case. From numerous success factors, only 13 are suggested as critical success factors. A team of eight experts was formed for the brainstorming session to construct the contractual matrix for the selected CSFs. The experts advised the thirteen most common CSFs for the investigation in this research study. The CSF are selected based on their potential for the changing performance of unorganized retail supply chain management. Thereafter, these factors are validated through the benchmarking process to judge their suitability, validity, and utility for the analysis based on brainstorming sessions with two people who have known for more than 15 years how to handle the unorganized retail supply chain in India. The identified factors are described in the following subsection.

***Customer Satisfaction in FMCG (CSFMCG)***

The supply chain metrics of FMCG SC are closely related to operational effectiveness and customer happiness. Businesses need to concentrate on developing an effective retail supply chain since it has high customer satisfaction and quick delivery times (Lapide, 2000; Ramaa et al., 2009; Agami et al., 2012b; Mjongwana, 2018; Kumar and Singh, 2023).

***Service Quality of FMCG Retail (SQ)***

As a means of enhancing consumer value and offering a competitive edge, ensuring customer happiness, retention, and loyalty is becoming increasingly crucial (Mehta et al., 2000; Kim and Jin, 2002; Parikh, 2006; Kaul, 2007; Anbuoli and Sakthivel, 2020).

***Time Management at FMCG Store (TM)***

It involves creating a timetable and making decisions about how to divide your time between different activities. The most prosperous individuals are excellent time managers.

***FMCG Product Quality (FMCGPQ)***
It reflects the extent to which a product satisfies customer needs, performs its intended purpose, and meets standard compliance. The effectiveness of the FMCG supply chain is highly correlated with the quality of a product.

***Spoilage Adjustment of Retail (SPA)***
It is the number of scraped items from a lot. The better adjustment to scrap helps with supply management and revenue generation (Trisha, 2015).

***Transportation System (TS)***
Transportation is the process of moving goods and services among people. An efficient transportation system can minimize delays which further cuts costs and increases revenues (O'Byrne, 2020).

***Perfect Order System (POS)***
The main features of a perfect order are being on time, complete, accurate, and safe. The perfect order minimizes inventory and handling costs (O'Byrne, 2020).

***Service Levels in a Retail Store (SLRS)***
It is the proportion of time that a store has important items in stock. For instance, if your service level is 67%, you will be able to satisfy a customer's request to buy specific things 2/3 of the time (Amer et al., 2010).

***Capital equipment availability and utilization (CESAU)***
The management approach to comprehension of how the interactions between the flows of information, materials, money, labor, and capital equipment affect an industrial company's ability to succeed (Al-Odeh, 2016).

***Societal Culture and Environment (SCE)***
The factors, including languages, cultures, and technological level, are significant terms for the success of supply chain management (Borges, 2015).

***Incorrect Product Quality (IPQL)***
The tax invoice that the consumer received lists a different product with an inaccurate quantity. For FMCG stores, the wrong product amount results in unfavorable feedback (O'Byrne, 2020).

***Volume Flexibility (VF)***
The ability of the supply chain to change volume levels in response to changing demand, and other factors like socioeconomic conditions profitably and with negligible disturbances (Shepherd and Gunter, 2006; Moazzam et al., 2018; Wang and Huo, 2018).

***Purchasing and Supplier Management (PSM)***
The acquisition, storage, and supervision of products offered in a retail setting, as well as equipment, supplies, etc., are all covered by purchasing and supplier management (O'Byrne, 2020).

Though the published literature provides good insight into organized and unorganized retail supply chain management and their influencing factors, little concentration is acknowledged to investigate and model CSF to provide hierarchical relations to achieve more benefit by Indian UORSCM. In the present study, the identified CSF are utilized and the ISM approach is deployed to bridge this gap. In the present research

study, 13 CSF were recognized through the literature survey. The survey outcomes in the potential SCF related to common profitable concepts UORSC and the most significant factors prioritized through ISM methodology.

## 2.2 ISM Method

The ISM methodology was recommended by Warfield (1974) to investigate the comprehensive systems and applied as a logical idea to recognize contextual relations between considered essentials connected with the problem to be examined. ISM is a well-known method to identify and summarize the relationships between definite factors from many viewpoints. This method transforms vague and weakly articulated intellectual models into obvious hierarchal models. The ISM method analyzed qualitative as well as quantitative data. The present research study used qualitative data with quantitative measurement to develop the relationship among the CSFs of UORSCM. The decision impact of ISM methodology is very strong resolving a variety of complex problems based on decisions based on factors assessment (Faisal et al., 2007; Ahuja et al., 2009; Mishra et al., 2012; Jadhav et al., 2013).

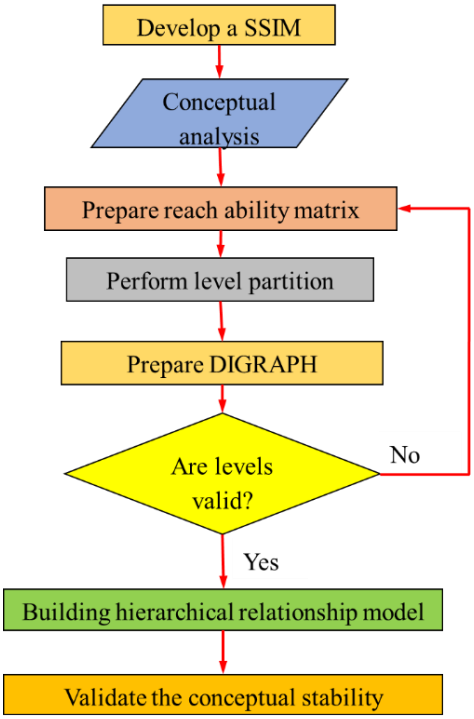


**Figure 3.** Flow diagram of ISM method used to analyze the CSFs for UORSCM.

The main steps used in this methodology are summarized as follows:

- First, the elements are to be organized for analysis. However, in the present study, the CSFs are recognized as elements based on the former research.
- The development of SSIM to discuss the contextual relations among the components of the system.
- Construction of IRM through operating SSIM and verification of observed transitivity to develop the FRM. The transitivity represents that if a system/component 'A' is connected to a system/component 'B' and 'B' is connected to 'C' then the 'A' is indirectly connected to 'C'.
- Leveling elements in a hierarchy and digraph development based on contextual relationships.

The major steps of the ISM methodology are summarized in Figure 3. It starts with the development of SSIM and completes the procedure by leveling elements.

## 3. ISM Execution

The major CSFs were identified from the literature and validated by industry experts. The performance of UORSCM depends on the effectiveness of the factors and the relationship among them. The good relationship between the factors, promotes strategic planning for effective use of factors which gives the drive to desired performance. According to Bolanos et al. (2005), different forms of contextual relationships can occur among pair-wise variables as follows:

- Conclusive (accessible from)
- Relative (comparatively important)
- Impact (effects on diverse activities)
- Progressive (must follow).

Experts who were involved in developing a reachability matrix to identify the relationships between the variables and factors in the unorganized retail supply chain in India could include: Supply chain experts, the one who has experience and knowledge in managing and optimizing supply chains (two persons in the manager post), a retail industry professional, was one expert with experience in the Indian retail sector that provided valuable insights. The inputs used in the study are taken from developing nation respondents.

A survey is accompanied to setup the contextual relations among factors, and the SSIM matrix is constructed, as shown in Table 1.

**Table 1.** Relations of effectiveness interaction of CSFs (VAXO Table).

| CSFs No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | ‘X’ | ‘A' | ‘A' | ‘A’ | ‘A’ | ‘O’ | ‘A’ | ‘X’ | ‘A’ | ‘V’ | ‘O’ | ‘V’ | ‘V’ |
| 2. | | ‘X’ | ‘A’ | ‘V’ | ‘X’ | ‘V’ | ‘O’ | ‘V’ | ‘V’ | ‘V’ | ‘O’ | ‘V’ | ‘V’ |
| 3. | | | ‘X’ | ‘O’ | ‘O’ | ‘V’ | ‘X’ | ‘O’ | ‘O’ | ‘O’ | ‘V’ | ‘O’ | ‘O’ |
| 4. | | | | ‘X’ | ‘A’ | ‘O’ | ‘O’ | ‘V’ | ‘X’ | ‘V’ | ‘O’ | ‘O’ | ‘O’ |
| 5. | | | | | ‘X’ | ‘V’ | ‘X’ | ‘V’ | ‘O’ | ‘V’ | ‘A’ | ‘V’ | ‘V’ |
| 6. | | | | | | ‘X’ | ‘X’ | ‘V’ | ‘V’ | ‘O’ | ‘X’ | ‘V’ | ‘O’ |
| 7. | | | | | | | ‘X’ | ‘X’ | ‘O’ | ‘V’ | ‘V’ | ‘V’ | ‘V’ |
| 8. | | | | | | | | ‘X’ | ‘V’ | ‘O’ | ‘A’ | ‘V | ‘X’ |
| 9. | | | | | | | | | ‘X’ | ‘V’ | ‘V’ | ‘A’ | ‘X’ |
| 10. | | | | | | | | | | ‘X’ | ‘O’ | ‘O’ | ‘O’ |
| 11. | | | | | | | | | | | ‘X’ | ‘A’ | ‘A’ |
| 12. | | | | | | | | | | | | ‘X’ | ‘V’ |
| 13. | | | | | | | | | | | | | ‘X’ |

The structural self-interaction matrix (SSIM) indicates the contextual relationship between the parameters of the adapted system. The SSIM is further utilized to develop the initial reachability matrix (IRM) for the analysis. To analyze the CSFs, the “leads to” contextual relationships used to assess the relationship dynamics between each pair of factors (*i* and *j*). The symbols *i* and *j* denote columns and rows. The basic meaning of the “leads to” relationship is that one factor (*i*) leads to other factors (*j*). Four symbols (*Vi*, *Aj*, *Xij*, and *O*) are used to symbolize the influence and category of relationship that exist between any two CSFs.

a) $V_i$-value of factor ‘*i*’ leads to value of Factor ‘*j*’ unidirectional.
b) $A_j$-value of factor ‘*j*’ leads to value of Factor ‘*i*’ unidirectional.
c) $X_{ij}$- value of factors ‘*i*’ and Factors ‘*j*’ leads to the value of each other.

d) *O*-No relation between the value of factors '*i*' and '*j*'.

In the next step,the reachability matrix is constructed. It was achieved by converting SSIM into a binary matrix. The symbols *Vi*, *Aj*, *Xij* and *O* are replaced with 1 and 0. The rule followed is that relationship of *Vi* in SSIM (*i, j*) is replaced by 1 and (*j*, i) by 0. The relationship of *Ai* in SSIM (*j, i*) is replaced by 1 and (*i, j*) by 0. If '*Xij*' shows the relationship (*i, j*) in SSIM, then the corresponding association shows 1 in place of (*i, j*) and (*j, i*) whereas '*O*' shows the relationship (*i, j*) in SSIM, then the corresponding relationship is 0 replace to (*i, j*) and (*j, i*). The subsequent step is to get the final reachability matrix (FRM) based on the transitivity rule. The FRM is mentioned in Table 2 with consideration of the effect of transitivity.

**Table 2.** Final reachability matrix for Factors.

| CSFs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | DP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 11 |
| 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 13 |
| 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 13 |
| 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 13 |
| 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 13 |
| 6 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 12 |
| 7 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 13 |
| 8 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 13 |
| 9 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 13 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 11 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 13 |
| 12 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 13 |
| 13 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 13 |
| DP | 12 | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 13 | 12 | 12 | 12 | |

The FRM provided the driving power and dependence power for all selected factors. The driving power is the positive strength factor that helps to improve the performance of UORSCM. The ranking of CSFs defined is based on values of driving power and dependence power as shown in Table 3.

**Table 3.** Driving and dependence power of CSFs.

| Variable | Dependence | Driver Power |
|---|---|---|
| 1 | 12 | 11 |
| 2 | 10 | 13 |
| 3 | 11 | 13 |
| 4 | 12 | 13 |
| 5 | 12 | 13 |
| 6 | 12 | 12 |
| 7 | 12 | 13 |
| 8 | 12 | 13 |
| 9 | 12 | 13 |
| 10 | 13 | 1 |
| 11 | 12 | 13 |
| 12 | 12 | 13 |
| 13 | 12 | 13 |

The data of the FRM is further utilized to calculate the set of reachability, antecedent, and intersection as shown in Tables 4, 5, and 6. The leveling of CSFs is started based on the equal importance of reachability and intersection. First, factor 10 has equal importance of reachability and intersection, therefore, it is specified as level 1 and was given as the highest location in the hierarchical structure of factors (Luthra et al., 2014). The same procedure was iterated till the hierarchical height of every factor was obtained.

**Table 4.** Iteration 1 of analysis to find the levels of CSFs.

| Enabler | Reachability | Antecedent | Intersection | Level |
|---|---|---|---|---|
| 1 | 1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13 | 1, 4, 5, 6, 7, 8, 9, 11, 12, 13 | -- |
| 2 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 | 2, 3, 4, 5, 7, 8, 9, 11, 12, 13 | 2, 3, 4, 5, 7, 8, 9, 11, 12, 13, | -- |
| 3 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 | 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13 | 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13 | -- |
| 4 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | -- |
| 5 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13 | -- |
| 6 | 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13 | 1, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | -- |
| 7 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13 | -- |
| 8 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | -- |
| 9 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13 | -- |
| 10 | 10 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 | 10 | 1 |
| 11 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13 | -- |
| 12 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13 | -- |
| 13 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13 | -- |

**Table 5.** Iteration 2 of analysis to find the levels of CSFs.

| Enabler | Reachability | Antecedent | Intersection | Level |
|---|---|---|---|---|
| 1 | 1, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 1, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 2 |
| 2 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 2, 3, 4, 5, 7, 8, 9, 11, 12, 13, | 2, 3, 4, 5, 7, 8, 9, 11, 12, 13, | -- |
| 3 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | -- |
| 4 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 2 |
| 5 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 2 |
| 6 | 1, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 1, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 2 |
| 7 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | **2** |
| 8 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 2 |
| 9 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 2 |
| 11 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 2 |
| 12 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 2 |
| 13 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, | 2 |

**Table 6.** Iteration 3 of analysis to find the levels of CSFs.

| Enabler | Reachability | Antecedent | Intersection | Level |
|---|---|---|---|---|
| 2 | 2, 3 | 2, 3, 4, 5, 7, 8, 9, 11, 12, 13 | 2, 3 | 3 |
| 3 | 2, 3 | 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13 | 2, 3 | 3 |
| 4 | 2, 3 | -- | -- | 2 |
| 5 | 2, 3 | -- | -- | 2 |
| 6 | 3 | -- | -- | 2 |
| 7 | 2, 3 | -- | -- | 2 |
| 8 | 2, 3 | -- | -- | 2 |
| 9 | 2, 3 | -- | -- | 2 |
| 11 | 2, 3 | -- | -- | 2 |
| 12 | 2, 3 | -- | -- | 2 |
| 13 | 2, 3, | -- | -- | 2 |

## 3.1 Development of ISM-based Model

The final hierarchical positions for factors in executing the desired performance of UORSCM are shown in Table 7. The majority of factors are at level II with maximum driving power and dependence power. Level I consists of only one CSF, whereas level III has only two factors. The remaining CSFs are dwelling at level II.

The FRM is further utilized to develop the hierarchical structural model of CSFs. Figure 4 shows the hierarchical structural model of CSFs, which is developed based on their driving and dependence powers. In this model, the levels are counted from the top. The bottom factors are at the third level, which shows the highest importance.

**Table 7.** The levels of CSFs.

| CSF | Level | CSF No. | Dependence Power | Driving Power |
|---|---|---|---|---|
| *Societal Culture and Environment* | 1 | [10] | 13 | 1 |
| *Customer Satisfaction in FMCG* | 2 | [1] | 12 | 11 |
| *FMCG Product quality* | | [4] | 12 | 13 |
| *Spoilage adjustment of retail* | | [5] | 12 | 13 |
| *Transportation system* | | [6] | 12 | 12 |
| *Perfect order system* | | [7] | 12 | 13 |
| *Service levels in retail store* | | [8] | 12 | 13 |
| *Capital equipment availability and utilization* | | [9] | 12 | 13 |
| *Incorrect product quality* | | [11] | 12 | 13 |
| *Volume flexibility* | | [12] | 12 | 13 |
| *Purchasing and supplier management* | | [13] | 12 | 13 |
| *Service quality of FMCG retail* | 3 | [2] | 10 | 13 |
| *Time management at FMCG store* | | [3] | 11 | 13 |

## 4. MICMAC Analysis

MICMAC analysis is used to examine the driving and dependency powers of CSFs. The results of the ISM analysis are taken into account as input for the MICMAC analysis, which identifies the CSFs' driving and dependent forces. Four clusters have been discovered among the CSFs in this study (see Figure 5). Factors with a higher degree of independence and a lower driving and reliance power are seen in the first cluster.

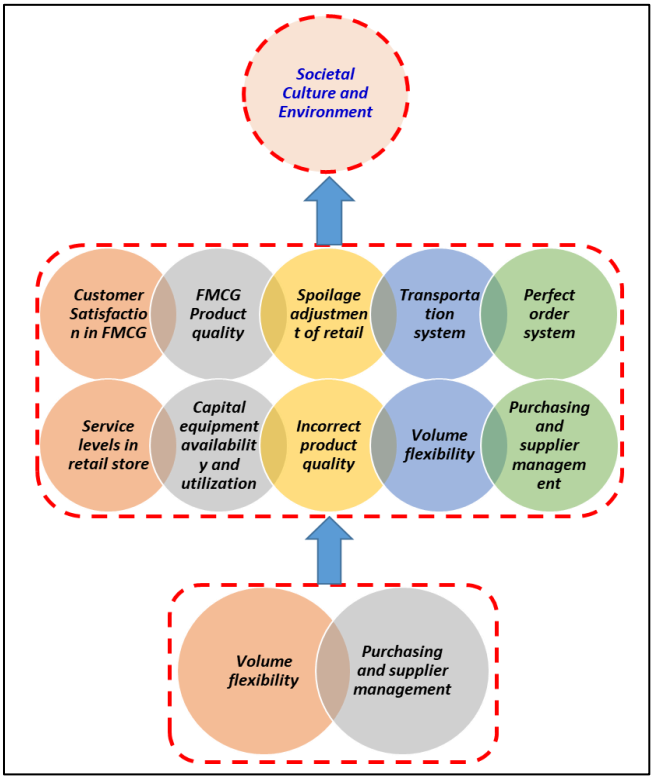


**Figure 4.** ISM-based hierarchical model for CSFs.

The second cluster consists of elements with more reliance power but less driving power. Linkage factors with significant driving and dependency power make up the third grouping. The variables in the fourth cluster have high driving power but little dependency. The driving and reliance powers of the CSFs are

given in Table 1, with the driving power along the rows and the dependence power along the columns. All CSFs are positioned in their respective clusters in the driving-dependency power diagram according to their driving and dependence powers (Figure 5).

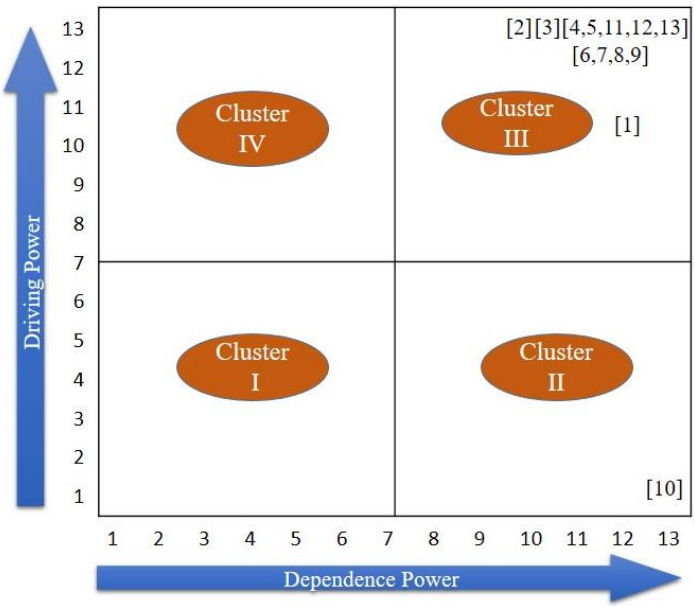


**Figure 5.** MICMAC analysis of CSFs.

The CSF 10 (*Societal Culture and Environment*) with 13 and 1 dependence and driving powers is located in cluster II. The CSFs 2 (*Service quality of FMCG retail)*, 3 (*Time management at FMCG stores)*, 4 (*FMCG Product quality)*, 5 (*Spoilage adjustment of retail)*, 6 (*Transportation system)*, 7 (*Perfect order system)*, 8 (*Service levels in a retail store)*, 9 (*Capital equipment availability and utilization)*, 11 (*Incorrect product quality)*, 12 (*Volume flexibility)*, and 13 (*Purchasing and supplier management)* are located in cluster III corresponding to their driving and dependence powers. These CSFs are placed at the second level of the hierarchical structure. Clusters I and IV do not have any CSF residences. It demonstrates that the majority of CSFs possess potent drive and dependency capabilities. The Driving power and dependence power of all CSFs are represented in Figure 6. The graph shows that factor 10 has the lowest driving power with the highest dependence power, which is the least significant for the performance of UORSCM. Except CSF 1 and 10, all other variables are strong motivators of the unorganized retail supply chain management performance sought in the Indian setting.

Unorganized retail supply chains in developing countries confront several difficulties that may prevent them from being successful. To assure their success, though, several actions can be performed.

Building up the infrastructure of the supply chain, like building better roadways, transportation networks, and storage facilities, is the first step in strengthening the infrastructure of the supply chain. This will guarantee that items can be carried from the source to the market quickly and effectively.

Adoption of Technology: The modernization of unorganized retail supply chains can greatly benefit from the use of technology. Digital tools like inventory management programs, GPS tracking, and online markets can boost efficiency, transparency, and waste reduction.

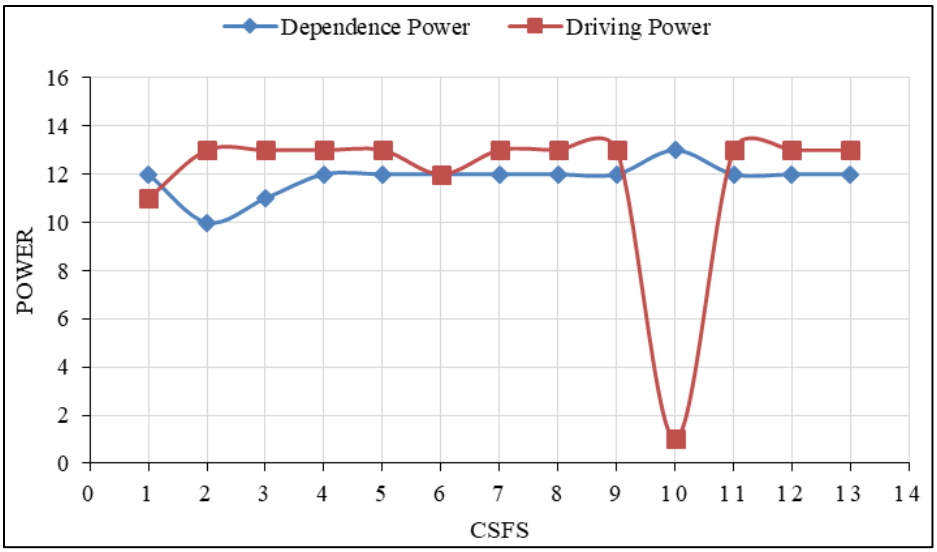


**Figure 6.** Driving power and dependence power of CSFs.

Collaboration: Small retailers and suppliers working together can help make unorganized retail supply chains successful. They can pool their resources, exchange knowledge, and strengthen their bargaining position with more powerful suppliers by cooperating.

Training and Education: Training and education can also help unorganized retail supply chains operate more efficiently. Retailers and suppliers can learn about inventory management, quality control, and other facets of supply chain management through training programmes.

Government Support: Through financial assistance, the development of small business-friendly laws, and the provision of training and educational opportunities, governments may play a significant part in guaranteeing the success of unorganized retail supply chains.

Market Connections: Unorganized retailers frequently find it difficult to reach out to broader markets. Links between small shops and larger marketplaces can be facilitated by governments and non-governmental organisations (NGOs).

A comprehensive strategy that takes into account the difficulties faced by small retailers and suppliers is necessary to ensure the success of unorganized retail supply chains in developing countries. The success of unorganized retail supply chains can be guaranteed by enhancing supply chain infrastructure, implementing technology, fostering collaboration, delivering training and education, granting government support, and facilitating market linkages.

## 5. Conclusions

The challenges of an unorganized retail supply chain can have significant economic and social impacts. They can result in higher costs for consumers, reduced competitiveness, and limited access to markets for small-scale producers. Furthermore, they can also contribute to social inequalities, as small-scale producers and retailers often operate in low-income areas and may lack access to resources and support. The performance of unorganized retail supply chain management in the Indian context is affected by many success factors. In the present research, 13 CSFs that can improve the performance of unorganized retail

supply chain management are identified. These factors have a direct impact on the performance of UORSCM. To obtain a better performance of UORSCM the primary requirement would be to identify and investigate the CSFs. The findings of the present study show that Societal Culture and Environment CSF10 emerged with the strong dependence power of CSF13, whereas CSF1 had poor driving power. The factors with the highest positive impacts to achieve the goal are Service quality of FMCG retail CSF2, Time management at FMCG stores CSF3, FMCG Product quality CSF4, Spoilage adjustment of retail CSF5. In the present study, the ISM-based hierarchical structural model is developed to explain the relationship between all CSFs of UORSCM. The MICMAC analysis validates the results on the impact of the interlinking of factors based on driving and dependence power. The CSF Service quality of FMCG retail, Time management at FMCG stores and FMCG Product quality resulted in the highest driving and lowest dependence power to attain the desired performance of UORSCM in the Indian scenario.

The findings reveal that decision-makers must articulate strategies focusing on such areas. Further, research can proceed for the cross-validation of methodology in other industrial sectors and empirical investigations. The identification and analysis of CSFs can also be subjected to different tools such as confirmatory factor analysis (CFA), structural equation modeling (SEM), etc. Multi-criteria decision-making (MCDM) approaches, other than ISM, such as, techniques for order preference by similarity to an ideal solution (TOPSIS), analytic herarchy process (AHP), etc., can also be adopted for the similar analysis. The unorganized retail supply chain is a complex system that involves multiple stakeholders and processes. It is characterized by a lack of centralization, standardization, and control over the flow of goods and services. To address the challenges of the unorganized retail supply chain, it is necessary to develop a range of initiatives that promote transparency, efficiency, and ethical practices throughout the supply chain.

**Conflict of Interest**

There is no conflict of interest to declare for this study.

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