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Dynamics of Procurement of Modern Food Retail Chains: Evidences from Karnataka

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DYNAMICS OF PROCUREMENT OF MODERN FOOD RETAIL CHAINS: EVIDENCES FROM KARNATAKA

Kedar Vishnu[1] and Parmod Kumar[2]

Abstract

What criteria do supermarkets consider for selecting their Fruits and Vegetables (F&Vs) suppliers? How supermarkets changing the methods of procurement? What are the major procuring areas in Karnataka? This paper attempts to study these factors along with existing methods of sourcing fruits and vegetables by the Modern Food Retail Chains (MFRC). The paper is based on the primary data collected during 2017 in Karnataka. The research sample consists of forty procurement managers of the MFRC. The findings of the paper indicate that MFRC which procure F&Vs at farm field level apply four main assessment indicators for identifying the suppliers, namely scale efficiency, suppliers' capability and ability (minimum requirement), suppliers' quality of the product and safety requirements. Our evidence shows that MFRC managers give more weight for the safety requirement of F&Vs. Further, the study observed three major spots emerged in Karnataka where MFRC have established either collection centres or were procuring directly from farmers' fields. It is observed that MFRC procure 90 per cent of the F&Vs from collection centres and the remaining 10 per cent from farmers' fields.

Statement of the Problem

Economic growth in India is leading to improving living standards and mounting consumer income which eventually raises the demand for high quality F&Vs. For utilising this opportunity, supermarkets are expanding their business in the country. India's Modern Food Retail Chains (MFRC) have undergone rapid transformation since the early 2000s. The share of F&Vs in MFRC has been continuously increasing over time. The MFRC are becoming an important alternative market for the suppliers of F&Vs to enhance farmers' income. In the beginning, the MFRC used to procure F&Vs from traditional wholesalers[1]. Since the early 2000s, most of the MFRC started modernising the existing supply chains and enforcing strict quality standards (Trebbin, 2014). Such transformation of supply chains presents a greater challenge for farmers for producing better quality produce. The standards of F&Vs required by the MFRC from farmers have been prominently covered in the literature in two ways. On the one hand, the literature has focused on the application of safety standards by developed countries to developing countries' exports (e.g., Unnevehr, 2000). Similarly, the rise of private F&Vs safety standards, e.g., EUREP good agricultural practices (GAP) applied by European MFRC (Cordon *et al,* 2002). On the other hand, recent studies have also focused on how the consumer driven demand for high quality F&Vs has translated into a need for substantial modification in the MFRC supply chains (Joseph *et al,* 2008). Furthermore, a few studies have focused on company-specific standards and their effects on the quality of F&Vs in the United Kingdom and other developed countries (Dolan & Humphrey, 2000). Nevertheless, the issue of procurement methods adopted by MFRC, how do they compete with each other and how

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the emergence of these channels affect the quality and safety standards of fruits and vegetables have hardly been covered in the literature, which is a gap that this study tries to address in this paper in the context of Karnataka.

The change of procurement from APMC to farmers field brings huge opportunities and challenges for farmers (Naven & Reardon, 2005). A growing body of literature suggests that small producers can face substantial difficulties in meeting the standards required by MFRC. Another interesting research from Latin America revealed that MFRC generally benefited small farmers as labourers rather than as independent growers (Hope, 2012). Some more studies analysed the benefits of MFRC from producers' point of view but surprisingly, the question of how farmers were selected by MFRC was not considered (Reardon, 2011; Michelson *et al,* 2010; Lin & Wu, 2011; Skytte & Blunch, 2006). This paper focuses on answering the following questions: What criteria do the MFRC consider for selecting the suppliers of F&Vs? Do these criteria vary for different MFRC? How are they imposing quality standards on F&Vs suppliers? What is the impact on farmers? The paper is based on primary survey data collected during 2017 from Karnataka. The research sample consists of procurement managers from different MFRC operating in Bangalore Rural, Bangalore Urban, Belgaum**,** Chikkaballapur, Kolar, Mysore and Ramanagara districts in Karnataka.

The paper is organised in five sections. The second section presents existing literature while the third section discusses the methodology followed in data collection. The fourth section analyses the existing MFRC, criteria used for farmers' selection and the price mechanism for procuring F&Vs and the final section provides concluding remarks.

Review of Literature

The expansion of MFRC[2] in developing countries has important consequences for their economic development and poverty reduction. The literature on supermarket revolution can be mainly divided into three parts. In the first, we can include the studies which tried to capture the modernisation of the domestic food supply chains and increasing implications of private standards on product quality and safety (Reardon & Berdegue, 2002; Bahinipati, 2014). These studies focused on the application of safety standards by developed countries to developing country exports (e.g., Unnevehr, 2000); the rise in the implementation of private F&Vs safety standards such as EUREPGAP applied by European MFRC (Codron *et al,* 2002). These studies revealed that in order to increase product quality and consistency and differentiate their products from traditional retailers, the MFRC are imposing private standards on the producers of F&Vs. These changes have created new challenges for suppliers of F&Vs. Additional pressure is put on the producers who want to participate in MFRC. The suppliers were inspected and required to join certification. Thus, the new channels of MFRC imposed similar quality standards which exist in developed country supermarkets. The new question that arises is, what are the implications of the same on Indian farmers? What quality standards are expected from the producers of F&Vs? This issue by and large remains unexplored so far. More studies are required to see the consequences of this on the agri-food sector and producers in India.

The second part of academic literature has laid emphasis on identifying the determining factors of farmers' participation in the MFRC. The studies have revealed that the smallholders faced

considerable difficulties in meeting the required quality standards of supermarkets due to a lower level of education, lack of irrigation facility and small size of land (Neven & Reardon, 2005; Berdegue *et al,* 2005; Singh & Singla, 2010; Rao *et al,* 2017; Mangala & Chengappa, 2008). A number of studies (D'Haese & Van, 2005; Haantuba, 2003; Ghezan *et al,* 2002) have captured the inclusion factor looking at whether marginal and small farmers are included in the MFRC procurement system. The findings of these studies revealed that due to the availability of more labourers with smaller size holdings, they have been participating in the MFRC. However, the existing studies have given more attention to land size and very less attention to non-land assets. Participation in MFRC was found higher among those farmers who are already equipped with irrigation facility, are using advanced production technologies and have access to other agricultural equipment (Hope *et al,* 2010; Hernandez *et al,* 2007). In a recent study, Hope (2012) probed how geography and access to irrigation facility and roads and infrastructure may play an important role in influencing farmers' participation in MFRC. However, there is a dearth of literature on the importance of non-land assets for farmers' participation in MFRC in the context of developing countries.

The third part of the academic literature has stressed on the mechanism used by the supermarkets for selecting the suppliers of the F&Vs. These studies observed that supermarket retail chains are selecting those suppliers who are able to fulfill the quality standards and supply better quality F&Vs (Minten *et al,* 2010). How do the criteria vary for differing supermarket supply chains? Some such studies have been carried out in countries where the supermarket is a recent phenomenon, for example Taiwan (Lin & Wu, 2011), and Chinese supermarkets (Hansen, 2001). Surprisingly, such aspects have not been studied in India where supermarkets have become a recent phenomenon. A part of the reason for this neglect might be a change in selection of criteria by international and domestic supermarkets for their procurement methods during the last decade. The present study tries to fill this gap. The study concentrates on two important questions; what criteria do the MFRC use for selecting the suppliers of F&Vs? Do the criteria vary for different MFRC?

The research sample consists of procurement managers from supermarket chains in India. This study contributes to the literature in two ways. Firstly, it is a novel study to identify the attributes considered while selecting the suppliers of vegetables by the procurement managers of supermarkets.

Objectives

This paper attempts to study the existing methods of sourcing of fruits and vegetables by the MFRC and analyse the criteria used by the MFRC for the selection of fruits and vegetables suppliers.

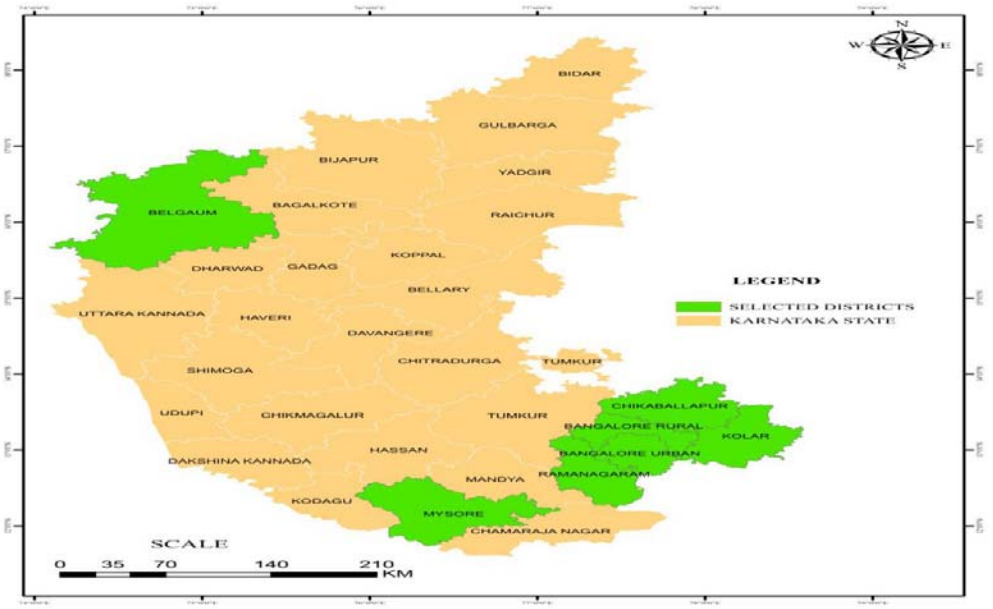
Methodology and Data Collection

Two types of supermarket supply chains for vegetables were identified in the selected area. Supermarket chains with production contracts[3] (PC) and supermarket chains with marketing contracts (MC) as they are systematically different for each other. PCs are characterised by fixed prices and provision of inputs supply to the farmers whereas MCs are characterised by provision of technical guidance on chemicals and fertilese usage and higher prices for the produce compared to the traditional market.

Primary survey data was used for identifying the criteria used by procurement managers of different MFRC for identifying the potential suppliers of F&Vs. Supermarket managers considered more than one criterion for selecting the suppliers. The primary survey was carried out during 2017 in seven districts of Karnataka, India. The interview took place in namely Bangalore Rural, Bangalore Urban, Belgaum**,** Chikkaballapur, Kolar, Mysore and Ramanagara districts in Karnataka. The paper focuses on two vegetables (chili and tomato) and two fruits (banana and grape). The details of the managers were obtained from the supermarket offices and 40 managers were randomly interviewed. We interviewed two managers each from 20 different supermarket chains (Reliance Fresh, TESCO, More, Leaf, Big Bazaar, Big Basket, Metro, Ninja cart, SPAR, Trent, Spencer's, Hyper City, Easy Day, Nilgiri's, D-Mart, Nature's Basket, HOPCOMS, Safal, Namdhari Fresh and Yasu & Co).

In this way, a total number of 40 managers belonging to PC and MC for two vegetables and two fruits were interviewed. The procurement managers were asked to specify the relative importance of various supplier selection criteria for two F&Vs. Besides, from the interview process, four main assessment criteria for supplier selection were identified, namely scale efficiency, supplier's capability and ability (minimum requirement), supplier's quality of the product and safety requirements. Furthermore, these were separated into various sub criteria. For supplier's ability and capability, five sub criteria were considered: Supplier experience, own land, labour availability, irrigation facility, geographical location of the suppliers and reliability. Likewise, we identified various sub criteria for all the four main assessment criteria. The procurement managers were at the same level of hierarchy. We interviewed those procurement managers who deal directly with the farmers and were having similar power in decision making.

Figure 1: Selected districts for the primary survey in Karnataka



Major Findings

The rise of different modern food retail chains in India and Karnataka

India has experienced trends in the expansion of supermarkets similar to other developing countries (Reardon & Gulati, 2008). The MFRC and operating states are presented in table 1. It is observed from the table that during the 1990s, many privately owned enterprises started entering into food retail chains that further expanded in the decade of 2000s. It is also observed from the table that the supermarkets' initial expansion started from southern India which later extended into northern states of India as well. MFRC chains mainly concentrated on Bangalore, Hyderabad, Mumbai, Delhi and Kolkata for establishing their business. In contrast, the leading private MFRCs concentrated more on expanding their business to small cities and small stores. It is also observed form the table that there are many small regional and city-specific chains. For example, due to the higher operation cost of running Food Bazaar, the Future Group decided to reduce many Food Bazaar stores which were not making a profit. Further, it continues to undergo restricting in neighbourhood stores (Financial Express, 2014).

Table 1: Major Modern Food Retail Chains in India

Name of the Retail Chain	Year of Eestablishment	Operating Area	Cities
Nilgiri's	1936	Karnataka, Tamil Nadu, Andhra Pradesh, Telangana and Kerala	Operating in 15 cities from south India
HOPCOMS	1965	Mainly operated in Bangalore & a few districts of Karnataka including Ramanagara and Mysore	Major operation in 5 districts of Karnataka
Safal	1974	Mainly operated in Delhi, Noida, Ghaziabad, Faridabad, Gurgaon and now in Bangalore	-
Spencer's	1996	Tamil Nadu, Telangana, Pondicherry, Haryana, UP, Karnataka and West Bengal	45 cities in India
Food World	1996	Mumbai, Chennai, Hyderabad and Bangalore	Major focus on south Indian states
Subhiksha [a]	1997	Delhi, UP, Punjab, Haryana, Gujarat, Karnataka, AP, Maharashtra and Tamil Nadu	110 cities in different format of 480 stores
Star Bazaar	1998	Mumbai, Chennai, Bangalore and Hyderabad but major operations in 8 cities	Spread to 38 cities
Food World [b]	1999	South India	Bangalore
Namdhari Fresh	2000	Operated in Karnataka, Andhra Pradesh, Telangana, Haryana and Punjab	Bangalore
Hyper City	2001		Mumbai, Navi Mumbai, Thane, Delhi NCR, Hyderabad, Bangalore, Bhopal, Amritsar, Pune, Ahmedabad and Vadodara
Big Bazaar	2001	Major stores in Bangalore and Hyderabad	In 234 cities
Food Bazaar	2002	Mumbai, Pune, Bangalore and Delhi	
D-Mart [c]	2002	Maharashtra, Gujarat, Andhra Pradesh, Madhya Pradesh, Karnataka, Telangana, Chhattisgarh, NCR, Tamil Nadu, Punjab and Rajasthan	

Name of the Retail Chain	Year of Eestablishment	Operating Area	Cities
Metro #	2003	Operating in 9 states; major operation in Karnataka	13 cities
ITC Choupal Fresh	2004	Operates only in Pune, Hyderabad and Chandigarh	
Nature's Basket E [B]	2005		Mumbai, Bangalore and Pune
Reliance Fresh & Smart	2006	14 states	82 cities (60 rural cities)
Easy Day	2007	NCR, Punjab, Haryana, Uttar Pradesh and Karnataka	117 cities
More	2007	Andhra Pradesh, Karnataka, Tamil Nadu, Kerala, Gujarat, Maharashtra; Operating in 10 states	-
Fresh@	2007	Telangana, Karnataka and Tamil Nadu in South India	Bangalore, Chennai and Hyderabad
Wal-Mart stores #	2009	9 States across India: Punjab, UP, AP, MP, Maharashtra, Karnataka, Chhattisgarh, Jammu & Kashmir and Rajasthan	19 cities
Booker	2009	Maharashtra	Mumbai, Thane, Surat, Pune
Aadhaar #	2011	Punjab, Rajasthan, Gujarat and Andhra Pradesh	
6 Tons [b]	2013	Punjab and Haryana	Chandigarh, Mohali and Panchkula
SPAR	2014	-	Bangalore, Chennai, Hyderabad and Delhi NCR

Source: Authors' primary data (2017) and (Joseph, Soundararajan, Gupta, & Sahu, 2008)

[(a)] Not operating due to some financial problem; for more details, see Business Standard (2015).

[(b)] Singh. (2018). [(c)] https://www.dmartindia.com/about-us (2018).

[#] Wholesale cash "n" carry players

Methods of procurement by different modern retail chains

The entry of leading supermarkets into fresh F&Vs section in the beginning of 2000 created a third marketing option for F&Vs farmers. Earlier, only two alternative marketing systems were available for them: either they had to sell their produce in the APMC market or to the intermediaries who eventually sold to the companies who export F&Vs or process or dispose of it in the domestic retail market. However, in the mid-1990s, some of the domestic supermarkets started entering into F&Vs. In the beginning, supermarkets relied on traditional wholesale markets for F&Vs, hence the quality of fruits and vegetables offered was similar to that of traditional shops. The only advantage for customers to prefer supermarkets over traditional markets was cleanliness, safety and one-stop shopping.

During the early 2000s, MFRC in India started shifting away from traditional wholesalers towards directly procuring from farmers. The change in the method of procurement occurred for two reasons: First, the consumer driven demand for high quality F&Vs created the need for change in the methods of procurement of MFRC. It was difficult for the supermarkets to fulfill the consumer demand for high quality and safety F&Vs through traditional means of procurement (Kedar & Kumar, 2019). Also, the increased demand for quality produce created incentives for MFRC to invest in supply chains and expand their business. The supply chains integration is the major strategy used by the supermarkets for promising the reliable sourcing of F&Vs. The MFRC procurement requires stable

quality, high frequency and constant delivery. Second, a change in procurement mode was required in order to reduce the procurement costs and arrived at competitive prices.

To meet the dual objectives, i.e., procuring higher quality F&Vs and cutting the procurement costs, the MFRC have shifted from traditional wholesalers towards the use of three key pillars of the new procurement system: 1) Specialised wholesalers in place of traditional wholesalers 2) Centralised procurement through collection centres of assured and consistent suppliers 3) Procurement at farm field (farm-gate) from preferred suppliers for maintaining the product safety and high quality standards. The existing method of procurement by different supermarkets is presented in table 2.

Specialised wholesalers

There has been a substantial shift of the MFRC for procuring the F&Vs. The shift is away from traditional wholesalers towards specialised wholesalers. The traditional wholesalers lack consistency in quality standards, hence supermarkets were finding it difficult to fulfill the higher quality demands of the customers. In order to maintain the freshness and quality, the specialised wholesaler collects the produce directly from the farmers and supplies it to the MFRC. Hence, it was necessary for them to shift the procurement system. This shift has been observed for most of the MFRC in Karnataka. Similar findings have also been revealed by Minten *et al* (2010) from Delhi, Pritchard *et al* (2010) and Mangala & Chengappa (2008) from Karnataka and Singh & Singla (2010) from Gujarat. The managers of MFRC revealed that traditional wholesalers were presented with higher transaction costs and unable to deliver consistent quality produce. It was observed that the leading MFRC shift the procurement towards specialised wholesalers to reduce coordination cost and increase the F&Vs quality and consistency. The specialised wholesalers supply the commercial grade quality of F&Vs which is required by the MFRC. They directly procure F&Vs from farmers, and then cleaning, grading and packaging is done. The delivery of the F&Vs to the MFRC distribution centres were done on a regular basis. They assure quality and consistency in delivery of F&Vs year-round, due to a large network and spread over several agro-ecological zones. MFRC can reduce the intermediaries and coordination costs by dealing with very few specialised wholesalers rather than depending on many traditional wholesalers. The emergence of the specialised wholesalers has helped the MFRC in supplying quality F&Vs to the customers. The traditional wholesalers were supplying F&Vs at MFRC distribution centres. The inconsistent and irregular supply of the required quality F&Vs by the traditional wholesalers were the major reasons for the shift in procurement by MFRC towards specialised wholesalers.

Table 2: Methods of Procurement by Different Modern Retail Chains

Sl. No.	Methods of procurement	Model Specification	Characteristics
Model I	Collection centres	Farm to Fork Model	a. Private owned b. Procurements from preferred farmers c. Flexible price (Higher than traditional markets by 10-20 per cent) d. Provision of technical support e. No provision of inputs f. Grading is done by the suppliers before entering the collection centres g. F&Vs supplied by the farmers to the collection centres
Model II	Collection centres	Cooperative Model	a. Cooperative owned b. Procurement restricted to member farmers (having land in farmer's name is minimum requirement for membership) c. Flexible price d. Distress sales e. No technical support f. Grading is done by the suppliers before entering the collection centres g. F&Vs supplied by the farmers to the collection centres or distribution centres
Model III	Farm field	Contract Farming	a. Private owned b. Own production for a few F&Vs c. Prices fixed in advance d. Provision of technical support e. Inputs support to the farmers f. Grading is done by farmers before uploading the produce for delivery g. The companies procure product at the farm field

Centralised procurement through collection centres

MFRCs have opened their own collection centres to have centralised procurement of F&Vs. It is observed that this shift is possible only when MFRC have achieved a certain size in terms of number of stores in the city. We identified seven main reasons for establishing the collection centres as follows: 1) For reducing the coordination costs incurred in ordering the product 2) For saving the inventory management costs, as the chains can implement the best logistics 3) For reducing the supervision cost, centralisations creates economies of scale 4) To deal in large volume without depending on many specialised wholesalers 5) To purchase in bulk at one place from farmers with better bargaining power 6) For reducing the wastage in the supply chains 7) For washing and grading the product if required so that MFRC can directly supply F&Vs to their own store for sale. It is observed that many MFRCs have established their own collection centres. The details of assistance and guidance are provided by MFRC. There are 16 MFRC who procure F&Vs at their collection centres and the characteristics of each MFRC is presented in table 3.

Procurement at farm field from preferred suppliers

A few MFRC have started directly procuring from the farmers' fields. MFRC have established a written contract with the farmer which includes the fixation of prices in advance and details of input provisions to the farmers. In some cases, there is only an oral contract between farmers and MFRC. The reasons for shifting to preferred suppliers are as follows: 1) For procuring high quality F&Vs and maintaining the safety standards 2) Screen the farmers in the beginning who can supply F&Vs consistently for a longer time so that the supermarkets can save information cost in future 3) Providing the proper information

on the required quality so that the supervision and product rejection costs can be minimised 4) For developing an active relationship with farmers so that the preferred farmers can overcome some of the problems of market failure i.e., providing inputs at lower prices, supply of chemicals and other input provisions 5) For helping farmers in establishing the crop calendars 6) Grading at the farm field for reducing transportation costs. In addition to this, table 2 provides details of other benefits associated with participation in these MFRC who procure from farmers' field. In addition, MFRC have started procuring from the fields for reducing the risk of shortage of F&Vs, although some MFRC started procuring directly from the farmers' fields.

Table 3: Methods of Procurement by Different Modern Retail Chains and Existing Companies

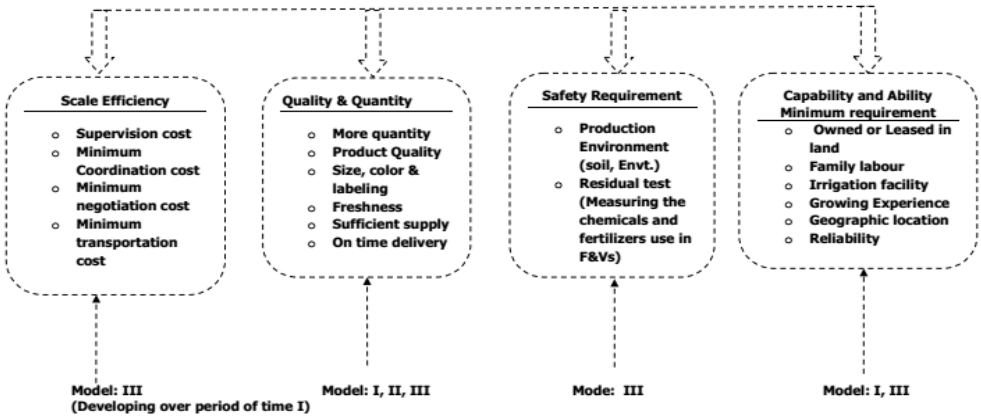
Sl. No.	Methods of procurement	Model Specification	Existing Players
Model I	Collection centres	Farm to Fork Model	Reliance Fresh, TESCO, More, Leaf, Big Bazaar, Big Basket, Metro, , Ninja Cart, SPAR, Trent, Spencer's, Hyper City, Easy Day, Nilgiri's, D-Mart, Nature's Basket
Model II	Collection centres	Cooperative Model	HOPCOMS and Safal
Model III	Farm field	Contract Farming	Namdhari Fresh and Yasu & Co [iv]

Source: Author's Primary Survey

Selection of the Farmers by Different Modern Retail Chains

An attempt is made here to describe the criteria used by different MFRC for selecting farmers for procuring F&Vs. The details of the criteria used by different MFRC were collected from procurement managers of F&Vs. Four main assessment criteria for supplier selection were identified as scale efficiency, suppliers' capability and ability (minimum requirement), suppliers' quality of the product and safety requirements. For each criterion, the sub-criteria were identified, e.g., for suppliers' ability and capability, five sub-criteria were considered: supplier experience, owned land, labour availability, irrigation facility, geographical location of the supplier's and reliability. Likewise, various sub- criteria for the entire four main assessment criteria were identified. The details of each main and sub criterion of each model are presented in figure 2.

Figure 2: Emphasis of MORC for Procuring of Fruits and Vegetables from Farmers



Source: Authors' primary survey (2017)

Criteria used by those MFRC who procure at collection centres

We have identified two main factors identified by the MFRC for selecting farmers. The first factor gives more importance to land size and other assets of the farmers. MFRC mainly look into farmers' ability, skills and capability and irrigation facility for producing better quality of F&Vs. The first scanning is done before starting the planting/sowing of the crop by farmers. MFRC evaluates whether the minimum requirement is fulfilled by farmers or not. Figure 3 shows the details of the variables viewed by the MFRC while selecting the farmers. Second, MFRC look into the quality of the product produced by the farmers, this factor is applicable when the product is ready for sale. The managers mostly focus on crop condition, size, length, colour, maturity and pest damage. The quality is generally judged on visual inspection as food safety tests were not done at collection centres by the MFRC for measuring the quality standards of F&Vs.

The mechanism used by the MFRC for identifying potential farmers is presented in table 4. The MFRC who procure at collection centres without any input support and fixed prices mostly go for an oral contract. Hence it was difficult to get better quality produce. The procurement managers pointed out that for Model II companies, emphasis was only on the product quality. The supermarkets procured the product at collection centres without going into farmers' field for supervision. Farmers need to have land in their own names for becoming members of the Model-II MFRC. MFRC emphasisse on both Model-I & II on the quality of the product; however, Model I may face difficulty to get better quality product due to lack of technical support and guidance to farmers.

Table 4: Identification of Farmers by Different Modern Retail Chains

Sl. No.	Model Specification	How they select farmers
Model I	Farm to Fork Model	a. Field visits by company manager to surrounding villages within 15-25 km radius and search for F&V farmers. b. During the field visits, manager's focus on irrigation facility, land size and farmers' experience. c. Once the managers are satisfied with the above conditions, they inform farmers to open an account in the collection centre and decide the crop to be grown by the farmers.
Model II	Cooperative Model	a. Farmers should have agriculture land in their name to become members. Membership fee is less for selected district farmers (Bengaluru Urban, Bengaluru Rural, Kolar, Ramanagara, and Chikkaballapur). b. The company does not consider farmers' ability and capability for becoming members.
Model III	Contract Farming	a. Field visits by the company officers to identify the capable farmers or sometimes farmers also visit collection centres to approach the company b. Minimum requirement for contract farming is irrigation facility, fruits and vegetable growing experience, minimum 1 acre of plot, road connectivity, land quality, iirrigation equipment and water quality

Source: Author's Primary Survey (2017)

Criteria used by the MFRC who procure at farm field

As indicated above, MFRC (Model-III) apply four main assessment criteria for identifying the supplier of F&Vs, namely scale efficiency, suppliers' capability and ability (minimum requirement), suppliers' quality of the product and safety requirements. It is evident from the study that MFRC give a little higher

weight for the safety requirement of F&Vs. Equal weight is given for other three criteria by the MFRC managers. The study results revealed that the most important selection attributes were product safety, product quality, product consistency and ability to produce better quality, having irrigation facility and connectivity of the roads. Further, it was revealed that supermarkets are procuring directly from farmers and shifting away from the traditional wholesalers. This shift is occurring for the reason of reducing cost of operation and procuring better quality produce directly from farmers. After MFRC identify the potential farmers who can satisfy the minimum requirement of producing better quality, the contract takes place between MFRC and farmers. It is noticed that the company signs the contract with farmers for fixing the prices in advance and provision of inputs (seeds, chemical, fertilizers etc.) support to the farmers. The parameters used by the MFRC while procuring the F&Vs from farmers are given in table 5. It can be seen from the table that the MFRC apply the residual test for measuring the quality standards of F&Vs. In addition to the residual test, the MFRC also judge the quality of F&Vs through visual inspection.

Table 5: Parameters Used by Different MFRC for Procurement

Sl. No.	Model Specification	Details of parameters
Model I	Farm to Fork Model	a. size, length, colour, maturity, and pest and insect damage, and ability to supply F&Vs on time. b. F&Vs quality is checked at the collection centre.
Model II	Cooperative Model	a. Size, colour, maturity, pest and insect damage b. Fruits and vegetables quality is checked at the collection centres.
Model III	Contract Farming	a. F&Vs judged before procurement at the farm/ field b. Residual test done for measuring the chemicals and fertilizers residues on F&Vs c. Grading is done at the firm field only

Source: Author's Primary Survey (2017)

How the Modern Retail Chains Judge the Quality of the Product

This section looks into the MFRC mechanism to judge the quality standards under different models which are imposed on suppliers. The product quality is important for MFRC as the same enables them to compete with traditional markets. MFRC who procure directly from farmers' field have been able to maintain higher quality standards as they carry out residual tests and they provide desired inputs to farmers to maintain quality standards. In addition, the supervision and monitoring is done by the company managers at farmers' field to ensure that farmers use the recommended doses of fertilizers and chemicals. MFRC give a checklist of dos and don'ts to the farmers, educating them about recommended doses of chemicals to be used and chemicals not to be used by the farmers. The employees of MFRC inspect each farmer's field for quality standards of F&Vs.

Table 6: How the Modern Players Judge the Quality of F&Vs

Sl. No.	Model Specification	How do they judge the quality of F&Vs
Model I	Farm to Fork Model	a. Done by visual inspection at collection centres b. More or less the quality standards are almost similar for all the MFRC c. Tomato is rejected if there is boron crack, rot, insect hole, press mark, solar yellowing, shoulder cracking and small size. d. Banana is rejected if over-ripened, has crown rot, skin abrasions, natural crack, ruptured skin, mechanical damage, and infestation e. Chilli rejected if rotten, without stalk, dried, over-matured, infested, over-ripened and small sized. f. Grape: Small size and shape, over-matured, damage during cutting, light colour and lack of flavour.
Model II	Cooperative Model	a. Done by visual inspection b. Since quality inspection was not done by the supermarkets at farmers' field the rejection rate is found to be quite high for F&Vs
Model IV	Contract Farming	a. Visual inspection+ residual test b. Before procurement, MFRC go for residual test c. If MFRC find low chemical and fertilizer residue in F&Vs then only the transaction takes place d. Due to continuous monitoring of the farm field by the managers, the problem of high chemicals and fertilizer residue may not arise

Source: Author's Primary Survey (2017)

Further, it is observed that MFRC who procure at collection centres face difficulties for maintaining quality standards. The quality standards are mainly judged by visual inspection in terms of appearance (i.e., spotless, uniform in terms of shape, size, colour, etc). The mechanism MFRC use to judge the quality standards and quality of F&Vs is presented in tables 6 & 7. It is observed that quality standards maintained at MFRC are not comparable with export quality and safety standards. This is due to the unwillingness of customers in India to pay higher prices for F&Vs as compared to export quality. Hence, it is difficult for supermarkets to maintain safety standards such as EUREPGAP applied by supermarket chains in other developed countries. Recently, some of the MFRC started procuring organic produce from farmers. As compared with normal F&Vs, the MFRC have been able to organise F&Vs which contain less chemicals and fertilizer. It was observed that the companies pay around 20% extra price premium for farmers who produce organically. When compared with the international standards, still MFRC in India lack quality and safety standards in F&Vs even for organic products.

Though the quality and safety standards of F&Vs are good for customers, however, maintaining these higher quality standards have become a challenge for F&V suppliers who need to make more investment to follow up the same. The comparisons of quality of F&Vs preferred by the different MFRC were studied. Model III companies have selected preferred suppliers of F&Vs for whom the managers supply inputs and technical guidance. They have imposed tougher and effectively enforced quality standards. These companies have been able to maintain higher safety and quality standards while using the residual test. The specification of these standards is presented in table 7. The quality standards in Model I&II are still ad hoc in nature; the companies procure produce without imposing any standardised test. The Model-I MFRC procure the produce without monitoring the usage of chemicals and fertilizers at farm field. Model-I is different from Model-II only in terms of the technical assistance and training programme it offers to the suppliers in making the transition to higher quality and safety standards.

Table 7: Preferred Quality by Different MFRC

Sl. No.	Model Specification	What quality do they prefer
Model I	Farm to Fork Model	a. Banana – minimum length 250 mm to max length 350 mm, fresh, clean, firm, straight shape with minimum spots on surface b. Chilli- Length min 60 mm to max 100 mm, fresh, clean, tender, shiny, long and light yellow-green c. Tomato min 45 mm diameter to max 70 mm diameter, semi-ripe, hard, smooth and shiny surface, matured and well-formed d. Grape: 16 mm to 20 mm berry diameter, fresh, dark colour and oblong in shape
Model II	Cooperative Model	- Almost similar to the above model
Model III	Contract Farming	e. Similar to above model I + size and length is very important here f. Chilli- Length Min 80 mm to max 120 mm g. Tomato min 45 mm diameter to max 75 mm diameter h. Residual test for measuring the safety of F&Vs

Source: Author's Primary Survey (2017)

Table 8: Average Quantum of Rejection by Different Modern Retail Chains

Sl. No.	Model Specification	Existing Players	How much they reject
Model I	Farm to Fork Model	Reliance Fresh, TESCO, More, Leaf, Big Bazaar, Big Basket, Metro, Ninja Cart, SPAR, Trent, Spencer's, Hyper City, Easy Day, Nilgiri's, D-Mart, Nature's Basket	a. It varies from farmer to farmer b. The rejection rate is around 5-10% for vegetables.
Model II	Cooperative Model	HOPCOMS and Safal	a. The rejection rate is between 10-20 per cent b. As compared with Model I, cooperative members have lower investment in agricultural equipment like drip irrigation+ mulching paper etc. Hence the rejection rate is higher for this model as compared with Model 1.
Model III	Contract Farming	Namdhari Fresh and Yasu & Co	a. Varies from farmer to farmer b. It is observed that the rejection rate is around on an average 20%.

Source: Author's Primary Survey (2017)

Existing Modern Retail Chains in Karnataka

It is observed from table 1 that supermarket outlets have increased tremendously from the last decade. More than 25 MFRC are operating in Karnataka. There has been a substantial shift in the procurement of F&Vs by MFRC in the study regions moving away from traditional wholesalers. The main characteristics of MFRC procurement methods have been discussed in the previous section. This section further examines some of the related questions, like how operations of MFRC expanded in Karnataka; the major procuring areas of MFRC in Karnataka; how much and which commodities they procure directly from farmers; and why the MFRC are expanding their business.

Operation of different MFRC in Karnataka (Major hub of operation)

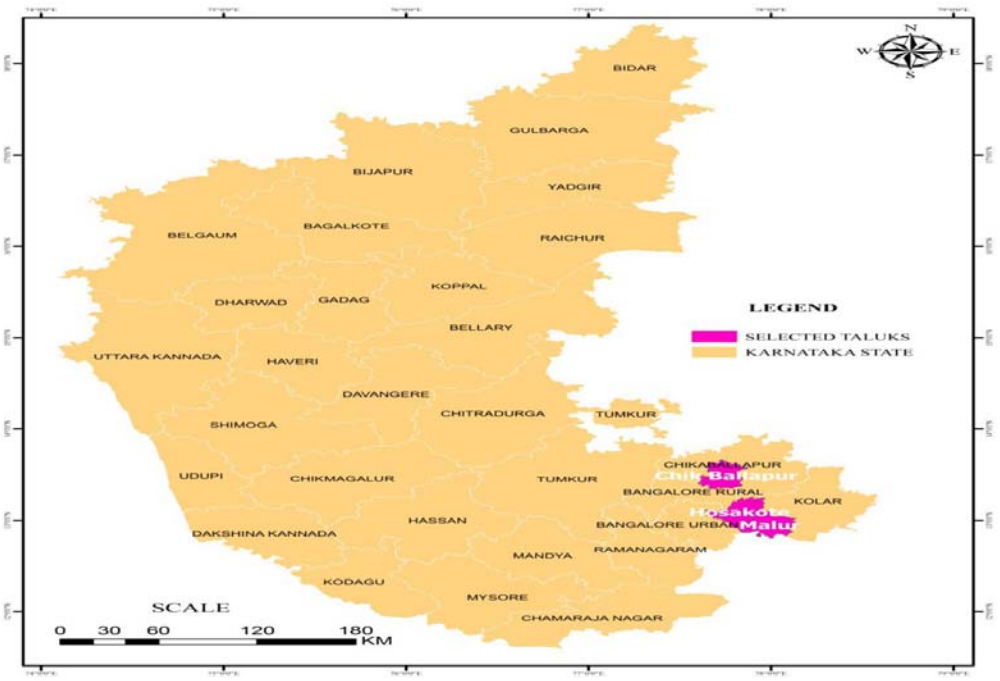
Interviews with the supermarket managers revealed that three spots have emerged in Karnataka where MFRC procure from farmers. These spots are highlighted in figure 4. First, a majority of the MFRC operating in Bangalore have established their collection centres at Hoskote district of Karnataka in the beginning of last decade to directly procure F&Vs from farmers instead of depending on the wholesalers or traditional market. They concentrated on Hoskote as a collection centre due to: 1) availability of

better quality produce 2) less distance from Bangalore 3) availability of road connectivity 4) availability of experienced growers of F&Vs.

Three main spots available

1. Started from Hoskote
2. Expanded in Chikkaballapur (highest turnover)
3. Emerging in Malur (lower compared with Chikkaballapur)
4. Other operation areas of MFRC

Figure 4: Major spots for procuring F&Vs by the MFRC in Karnataka



The shift in the procurement methods of MFRC occurred because of insufficient availability of good quality F&Vs in traditional markets and with wholesalers. There was a tendency to shift the procurement towards collection centres in the hub of horticultural production areas away from traditional markets as the number of stores in the given supermarkets grew. Table 11 shows the supermarkets which are operating at Hoskote in Karnataka. More than seven supermarket chains have established their collection centres in Hoskote. These supermarket chains distinguish themselves from the traditional marketing channels in terms of specialised logistics and transportation facilities, preferred suppliers and more focus on value addition activities. In addition to this, F&Vs are graded, washed, packaged and labelled at collection centres. These activities were done by all the seven MFRC at Hoskote. Since the beginning of 1990s, Hoskote has been the most important collection centre for procuring F&Vs for supermarkets in Karnataka. Supermarkets started directly purchasing F&Vs from farmers. All MFRC provide producers with technical assistance on chemical and pesticide usage and they

give advice related to production practices and identify emerging problems. It is observed that all MFRC had oral contracts with F&Vs farmers. For improving the suppliers' performance and reducing costs, they preferred suppliers who were able to satisfy the increasing demands of supermarket buyers. As an example, Reliance Fresh is having 1,000 preferred suppliers from Hoskote taluk. All MFRC procure through F&Vs collection centres and not at the farm field.

Due to the increase in competition, scarcity of better quality suppliers, seasonality of F&Vs, lack of time, higher price fluctuation in the APMC markets and due to growth in supermarket outlets, MFRC started establishing their collection centres at Chikkaballapur district in Karnataka. The district comes under the major horticultural producing areas in the state near Bangalore where most of the F&Vs are available for three seasons. This district has emerged as one of the important spots for expanding the supermarket operations. It was also revealed that the supermarkets preferred to procure from the supplier at Chikkaballapur due to good cooperation and coordination. Currently, there are around seven supermarket chains procuring an average of 150 tons of F&Vs daily. More is the leading supermarket chain, followed by Reliance Fresh and Big Bazaar at Chikkaballapur. Recently, medium-sized chains such as Nanjakat and Big Basket have established F&Vs collection centres. It can be observed from table 9 that Chikkaballapur district has accounted for the highest number of MFRC collection centres. The daily procurement turnover was also higher at this spot compared to any other spot by MFRC in Karnataka.

Malur is becoming the third major spot for procuring F&Vs by MFRC. It was observed that most of the companies had already established their collection centres at Malur. The expansion towards Malur was started in the late 2010s decade. As compared to other spots, Malur is unique due to the availability of three different procurement methods used by MFRC. First, as described in the above section, most of the existing MFRC procure F&Vs at collection centres. Procurement managers expect constant delivery and stable quality. Procurement arrangements between growers and supermarkets are usually based on easily observable output characteristics (i.e. volume, size, colour). Supermarkets try to reduce their uncertainties regarding desired product attributes (safety, quality, and freshness). They provide information and other technological help to farmers. Supermarkets who procure at collection centres generally have verbal agreements specifying quantities of F&Vs produce of specified quality to be purchased from suppliers at a future date.

Further, the prices at the date of transaction are set with respect to the reference price in traditional markets near the particular district. MFRC set the price which on an average is higher by Rs 2 to 3 per kg than traditional markets. They consider Chikkaballapur, Malur, Kolar, Bangalore and a few other APMC market prices for fixing the price of a particular produce at a particular date. Minimum prices are also often set, so that farmers know the lowest possible price that they will receive for the quantity sold.

It was revealed that the farmers initially had difficulty to produce the higher quality produce. However, over a period of time, they were able to produce better quality. While interacting with the MFRC procurement managers, it was also observed that small producers were at a disadvantage in their interaction with MFRC due to lower level of education, lower capacity of investment and lower irrigation facility. The MFRC impose strict requirements related to volume, consistency, year-round supply and

fresh produce which makes it difficult for small and marginal farmers to supply. In addition, small and marginal farmers have to incur significant costs to ensure product homogeneity, coordination of harvest, proper grading, sorting and packaging and delivering in time. Consequently, farmers have to incur higher transaction costs than at a traditional market.

MFRC procure from those farmers who are having irrigation facility, irrigation equipment, experience, transportation facility and ability to produce better quality. It was also revealed that the farmers' land size is not an important criterion used by MFRC for selecting the farmers. Currently, seven supermarkets are operating at Malur. It is observed that most of the supermarkets procured F&Vs from selected farmers with technical guidance and provided slightly higher prices compared to traditional markets. However, the cooperative model did not offer technical assistance to farmers. It can be observed from table 10 that around 2,800 farmers supplied fruits and vegetables to MFRC for the year 2017. Surprisingly, it was observed that around 10,000 farmers were members of the MFRC chains but most of them were not producing F&Vs during that year. More, NF and RF were the major leading supermarkets operating at Malur collection centres. Interestingly, it was learnt that some of the new supermarket chains are planning to establish their collection centres at Malur.

We also found that Namdharis Fresh procures F&Vs directly from the farmers' fields for a few crops while contract farming as an alternative to the spot market has been used to support their global sourcing. The written contract is done between farmers and the NF specifying quantities of F&Vs and produce of specified quality to be supplied by the suppliers at a future date on fixed prices. The prices were fixed before starting the cultural operations of F&Vs. The contract also includes the provision of chemical, fertilizer and seedling supply to the farmers. This method of procurement is different from that of procurement at collection centres due to additional benefits and provision of input supply and fixed prices in advance. It is revealed that More, RF, Metro, Big Bazaar, Nanjacart, Big Basket, Trent etc., used to procure at collection centres whereas NF procures at farm field. The contract exists in a range of modalities: From "oral" for More, RF, Metro, Big Bazaar, Nanjacart and Big Basket to "written contract with fixed prices" for NF.

The NF farmers were inspected weekly or were required to go for residual test for measuring the residues of chemicals and fertilizer. As compared with other companies, information costs and risks were often lower for NF farmers because they generally communicated clearly regarding quality grades and standards with which farmers must comply. It is observed that NF was the only supermarket which imposed private standards on their fresh produce suppliers. They tried to enforce the quality standards on growers to reduce uncertainties regarding desired product attributes (quality, safety, and freshness). Despite strict requirement, there was a waiting list of small farmers willing to be adopted in NF. They are considered to be reliable with respect to their terms of payment and other inputs support on time, although normally there is a period of time between delivery and payment, with the norms of traditional markets.

Conclusion

The main objective of this paper is to explore procurement methods adopted by MFRC (supermarkets) and how the emergence of these channels affected the quality and safety standards of fruits and vegetables in the context of Karnataka. This study finds that in the early 2000s, MFRC have shifted the procurement of F&Vs towards collection centres away from the traditional wholesalers. For procuring better quality produce and plummeting the procurement costs, the MFRC have shifted procurement from APMC and traditional wholesalers towards use of three different kinds of procurement systems 1) Specialised wholesalers other than traditional wholesalers & APMC 2) Centralised procurement through collection centres for assured and consistent supply from the preferred suppliers 3) Procurement at farm field from the preferred suppliers for maintaining the product safety and higher quality standards.

The details of norms used by different MFRC were collected from 40 procurement managers of F&Vs. This study has identified four main assessment criteria used by MFRC for supplier selection, namely scale efficiency, suppliers' capability and ability (minimum requirement), suppliers' quality of the product and safety requirements. It is observed that MFRC who procure F&Vs at collection centres used two indicators for selecting farmers. The first indicator gives more emphasis on land size and non-land assets of farmers. MFRC mainly look into farmers' ability, skills, capability, and irrigation facility for producing better quality F&Vs. This first scanning of the suppliers is done before starting the planting and sowing of the crops. The second indicator gives more emphasis on F&Vs product quality standards, size, colour, freshness, sufficient and on time supply of the product.

Our study has indicated that MFRC who procure F&Vs at farm field apply four main assessment indicators for identifying the supplier of F&Vs, namely scale efficiency, suppliers' capability and ability (minimum requirement), suppliers' quality of the product and safety requirements. It is evident from the study that MFRC give higher weight for the safety requirement of F&Vs. Equal weight is given to the other three indicators by the MFRC managers. Furthermore, the study identified three major spots in Karnataka where MFRC have established either collection centres or started procuring directly from farmers' fields. It is observed that 90 per cent of the F&Vs come through procurement from collection centres and remaining 10 per cent through farmers' fields. Hence, policy makers may give more emphasis for promoting more MFRC who have production contract with the farmers. Except Namdhari Fresh and Yasu & Co, other supermarkets were only having oral contracts with the farmers which might not provide more incentive to the farmers. There is an urgent need to have a proper institutional mechanism which will help to integrate more small and marginal farmers in F&Vs' supply chain. A study from other countries (Hobbs, 2015) finds that a proper institutional arrangement has helped to significantly reduce transaction costs and increase benefits. The article argues that policy makers should not leave the control on MFRC just for promoting the modernisation of the food system. The study has suggested promoting more MFRC which bring more vertical integration and more focus on scientific product qualities.

Table 9: Details of Major Modern Retail Chains at Chikkaballapur

Sl. No.	Model Type	Name	Year of establishment	Major F& Vs procured	F & Vs Daily procurement (In Tons)	F & Vs Weekend procurement (In Tons)	Tomato Daily Procurement (In Tons)	Chilli Daily Procurement (kg/tons)	No of registered farmers (nos)
01	Farm to fork Model-I	Reliance Fresh	2008	Tomato, Beans, Cabbage, Cauliflower, Cucumber, Banana, Grape, Brinjal and Beet root.	20-22	22	3-4	300 Kg	500
02		More	2009		70-80	100	10-15	3000-4000 Kg*	500
03		Big Bazaar	2009		15-18	20-25	2-3	300 kg	400
04		TESCO	2013		7-8	10	2-3	400 Kg	250
05		Big Basket	2015		5-6	13	2-3	200 Kg	200
06		Metro	2016		6-7	10	1-2	500 Kg	200
07		Nanjakat	2015		5-6	8-9	2-3	200 Kg	300
		Total	-	-	128-147	183-189	22-33	4.9 -5.9 Tons	2350

Source: Author's Primary Survey

Table 10: Details of Major Modern Retail Chains at Malur

Sl. No.	Model Type	Name	Establishment Year	Major F & Vs procured	Daily procurement (In Tons)	Weekend procurement (In Tons)	Tomato Daily procurement (In Tons)	Chilli Daily procurement	No of registered farmers
01	Contract Farming-I	NF	2001	Tomato, Cabbage, Capsicum, Chilli, Leaf Vegetables, Carrot, Radish	7-9	8-9	2-3	3000 kg	500
02	Farm to fork model-II	More	2010		15-18	20-25	2-3	300 kg	400
03		RF	2010		12-15	22	2-3	300 Kg	500
04		Metro	2011		6-7	10	1.2	500 Kg	200
05		Big Bazaar	2013		5-6	7-8	2	200 Kg	200
06		Ninjacart	2015		5-6	7-8	1-2	200 kg	300
07		Big Basket	2016		5-6	12-13	1-2	300 kg	200
08	Cooperative Model-III	HOPCOMS	2015		5-6	7	1.5	300 kg	500
		Total			**60-73**	**93-102**	**12.5-18.5**	**5.1 Tons**	**2800**

Source: Author's Primary Survey

Table 11: Company wise location of other collection centres in Karnataka

Sl. No.	Model Type	Name	Location
01	Farm to fork model-I	RF	Doddaballapur, Hoskote, Devanahalli, Kolar, Nelamangala, Nagamangala, Hosur, Mysore and Tekal
02		Big Basket	Mysore and Hoskote
03		More	Mysore, Doddaballapur and Hoskote
04		Metro	Hoskote
05		Ninjacart	Hoskote
06		SPAR	Hoskote, Kalasipalya
07		Trent	Hoskote

Source: Author's Primary Survey

Notes

[1] Similar finding (Berdegue, Balsevich, Flores, & Reardon, 2005)

[2] Sometimes referred to as the supermarket

[3] In other word Contract farming

References

Bahinipati, Bikram, K (2014). The Procurement Perspectives of Fruits and Vegetables Supply Chain Planning. *International Journal of Supply Chain Management,* 3 (2): 111-31. Retrieved (http://www.ojs.excelingtech.co.uk/index.php/IJSCM/article/viewFile/933/pdf).

Berdegue, Julio A, Fernando Balsevich, Luis Flores and Thomas Reardon (2005). Central American Supermarkets' Private Standards of Quality and Safety in Procurement of Fresh Fruits and Vegetables. *Food Policy,* 30 (3): 254-69.

Business Standard (2015). *From Subhiksha to Viswapriya: Subramanian's Fall from Grace*. September 19, 2015

Cordon, J M, J Sterns and X Vernin (2002). Grande Distribution et Agriculture Raisonnee Dans La Filiere Fruits et Legummes Fairs. Working paper, INRA, Montpellier, France.

Marijke D'Haese and Guido Van Huylenbroeck (2002). The Rise of Supermarkets and Changing Expenditure Patterns of Poor Rural Households: A Case Study in the Transkei Area, South Africa. *Food Policy*, 30 (1): 97-113.

Dolan, C and J Humphrey (2000). Governance and Trade in Fresh Vegetables: The Impact of UK Supermarkets on the African Horticulture Industry. *Journal of Development Studies*, 37: 147-76.

Financial Express (2014). *Chasing Profits, Kishore Biyani's Future Group Shut 40% of Food Bazaar Stores in 2013*. April 5, 2014.

Ghezan, G, M Mateos and L Viteri (2002). Impact of Supermarkets and Fast-Food Chains on Horticulture Supply Chains in Argentina. *Development Policy Review*, 20 (4): 389-408.

Hansen, K (2001). Purchasing Decision Behaviour by Chinese Supermarkets. *The International Review of Retail Distribution and Consumer Research*, 11 (2): 159-75.

Haantuba, H (2003). Linkages between Smallholder Farm Producers and Supermarkets in Zambia. Consultant report to Food and Agriculture Organisation, Draft 3, October.

Hernandez, R, T Reardon and J Berdegue (2007). Supermarkets, Wholesalers, and Tomato Growers in Guatemala. *Agricultural Economics*, 36: 281-90.

Hobbs, J E (2015). Transaction Costs. *American Journal of Agricultural Economics*, 79 (4): 1083-95.

Hope, Michelson, Francisco Perez and Thomas Reardon (2010). *Small Farmers and Big Retail: Trade-Offs of Supplying Supermarkets in Nicaragua*. Michigan.

Joseph, M *et al* (2008). Impact of Organised Retailing on the Unorganised Sector. P 222. Available at: http://dipp.nic.in/english/publications/reports/icrier_report_27052008.pdf.

Kedar, Vishnu and Parmod Kumar (2019). Structure and Strategies of Retailing in Karnataka: Gain for Whom? *ISEC Working Paper No. 438*. Bangalore: ISEC.

Lin, Pei-chun and Liang-shan Wu (2011). How Supermarket Chains in Taiwan Select Suppliers of Fresh Fruit and Vegetables via Direct Purchasing. *The Service Industries Journal,* 31 (8).

Mangala, K P and P G Chengappa (2008). A Novel Agribusiness Model for Backward Linkages with Farmers: A Case of Food Retail Chain. *Agricultural Economics Research Review*, 21: 363-70.

Michelson Hope, Thomas Reardon and Francisco Perz (2010). *Small Farmers and Big Retail: Trade-Offs of Supplying Supermarkets in Nicaragua*. East Lansing, Michigan.

Michelson, Hope (2012). Small Farmers and Big Retail: Trade-Offs and Dynamics of Supplying Supermarkets in Nicaragua. PhD Dissertation, Cornell University. Honorable Mention, *American Journal of Agricultural Economics*, 94 (2): 592, January 1,2012.

Minten, Bart, Thomas Reardon and Rajib Sutradhar (2010). Food Prices and Modern Retail: The Case of Delhi. *World Development,* 38 (12): 1775-87.

Neven, D and T Reardon (2005). The Rise of the Kenya Supermarkets and the Evolution of their Horticulture Product Procurement System MSU paper.

Pritchard, B, C P Gracy and M Godwin (2010). The Impacts of Supermarket Procurement on Farming Communities in India: Evidence from Rural Karnataka. *Development Policy Review*, 28 (4): 435-56.

Rao, C N, R Sutradhar and T Reardon (2017). Disruptive Innovations in Food Value Chains and Small Farmers in India. *Indian Journal of Agricultural Economics*, 72 (1): 24–48.

Reardon, T and J A Berdegué (2002). The Rapid Rise of Supermarkets in Latin America: Challenges and Opportunities for Development. *Development Policy Review* 20 (4): 371-88. Retrieved (http://doi.wiley.com/10.1111/1467-7679.00178%5Cnhttp://doi.wiley.com/10.1111/1467-7679.00183).

Reardon, Thomas and Ashok Gulati (2008). *The Rise of Supermarkets and Their Development Implications: International Experience Relevant for India*. New Delhi.

Reardon, Thomas (2011). The Quiet Revolution in India' s Food Supply Chains.

Singh, S and N Singla (2010). Fresh Food Retail Chains in India: Organisation and Impacts. *Centre for Management in Agriculture, IIMA*, 238: 1-20.

Sukhpal, S (2018). Food Value Chain Investments and the Small Farmer Linkage: Indian Experience, Potential and Policy. *World Food Policy,* 4 (2) Spring 2018.

Skytte, H and N J Blunch (2006). Buying Behavior of Western European Food Retailers. *Journal of Marketing Channels*, 13 (2): 99-129.

The Hindu (2017). *ITC Division Eyes Fruits, Vegetables for Growth*. November 11, 2017.

Thrupp, L A (1995). *Bittersweet Harvests for Global Supermarkets: Challenges in Latin America's Agricultural Export Boom*. Washington, DC: World Resources Institute.

Trebbin, Anika (2014). Linking Small Farmers to Modern Retail through Producer Organisations - Experiences with Producer Companies in India. *Food Policy,* 45: 35-44.

Unnevehr, L J (2000). Food Safety Issues and Fresh Product Exports from LDCs. *Agricultural Economics,* 23: 231-240.

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