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# Preferred Channel Choices in Vegetable Marketing: Role of Macro and Micro Environmental Factors in Odisha

***Abstract***

The globalization of agriculture has opened new opportunities, challenges and stiffer competition in India. This paper explores and evaluates various macro and micro factors influencing the marketing channel choices made by the vegetable farmers in Odisha. Responses were collected from 323 vegetable farmers and 110 commission agents, and 192 retailers across five districts of Odisha. Data were analyzed using SPSS to confirm reliability, validity and data reduction. AMOS was used to design the structural equation model. Access to market knowledge has a positive sign for both organized and unorganized market choices, which is consistent with the hypothesis. Hence, the value suggests that increasing market knowledge can increase market participation. The improvement in practices and expertise in grading also shows an increase in the involvement of both organized and unorganized markets. Given these marketing challenges, this study suggests improving emerging farmers' participation in the export markets.

***Keywords***: Market channel choice, agriculture, vegetable, macro factors, micro factors, SEM

# Elecciones de canales preferidos en la comercialización de vegetales: papel de los factores ambientales macro y micro en Odisha

***Resumen***

La globalización de la agricultura ha abierto nuevas oportunidades, desafíos y una competencia más dura en la India. Este documento explora y evalúa varios factores macro y micro que influyen en las elecciones de canales de comercialización realizadas por los agricultores de hortalizas en Odisha. Se recopilaron respuestas de 323 agricultores de vegetales y 110 comisionistas, y 192 minoristas en cinco distritos de Odisha. Los datos se analizaron con SPSS para confirmar la confiabilidad, la validez y la reducción de datos. AMOS se utilizó para diseñar el modelo de ecuación estructural. El acceso al conocimiento del mercado tiene un signo positivo tanto para las elecciones de mercado organizadas como para las no organizadas, lo cual es consistente con la hipótesis. Por lo tanto, el valor sugiere que aumentar el conocimiento del mercado puede aumentar la participación en el mercado. La mejora en las prácticas y la experiencia en la clasificación también muestra un aumento en la participación de los mercados organizados y no organizados. Dados estos desafíos de comercialización, este estudio sugiere mejorar la participación de los agricultores emergentes en los mercados de exportación.

***Palabras clave***: Elección del canal de mercado, agricultura, hortalizas, factores macro, factores micro, SEM

# Opcions de canal preferides en màrqueting de vegetals: paper dels factors ambientals macro i micro a Odisha

***Resum***

La globalització de l'agricultura ha obert noves oportunitats, reptes i una competència més dura a l'Índia. Aquest article explora i avalua diversos factors macro i micro que influeixen en les eleccions de canals de màrqueting fetes pels productors d'hortalisses d'Odisha. S'han recollit respostes de 323 agricultors d'hortalisses i 110 comissionistes i 192 minoristes de cinc districtes d'Odisha. Les dades s'han analitzat mitjançant SPSS per confirmar la fiabilitat, la validesa i la reducció de les dades. AMOS s'ha utilitzat per dissenyar el model d'equació estructural. L'accés al coneixement del mercat té un signe positiu per a les opcions de mercat tant organitzades com no organitzades, que és coherent amb la hipòtesi. Per tant, el valor suggereix que augmentar el coneixement del mercat pot augmentar-ne la participació. La millora de les pràctiques i l'experiència en la qualificació també mostra un augment de la implicació dels mercats organitzats i no organitzats. Tenint en compte aquests reptes de màrqueting, aquest estudi suggereix millorar la participació dels agricultors emergents als mercats d'exportació.

***Paraules clau***: Elecció del canal de mercat, agricultura, hortalisses, factors macro, microfactors, SEM

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## 1. Introduction

India's agriculture, the backbone of the economy, dictates the livelihood system of farmers and millions of people. India's economic development depends heavily on the agricultural sector (Agarwal and Agarwal 2017). At the same time, the globalization of agriculture has opened new opportunities, challenges and stiffer competition in India (Mandal et al. 2017). The Food Agricultural Organization of the United Nations (FAO) has predicted that India's population will overtake China's by 2030. In that scenario, where millions of people are malnourished and below the poverty line, there is a need to improve the quality of life through food and nutritional security (Kehoe et al. 2019). The challenge, thus, demands adjustment of the structure of the agricultural system to resonate with internal stipulations.

The significant development in horticulture practices is that farmers are now extending their business from self-consumption to commercial production, which has also attracted various private sector investments (Anesbury et al. 2020). Urbanization, enhanced income, and a growing health-conscious population have increased the demand for horticultural products, which has enthused the farmers to adopt horticultural crops for better returns (ICAR 2001). The sector has attracted educated youth since it is intellectually satisfying and economically rewarding. In the last decade, the agriculture sector has experienced a technological shift, such as e-agriculture, IoT implementation, and intelligent sensor-based farming, which led to the development of the agricultural industry, but such action has also caused various issues (Akhilesh and Sooda 2020, Nedumaran 2020, Singh et al. 2020). At the same time, though technology has introduced a positive impact, it is still less inclusive and quite far from the reach of the rural farming population of India (Akhilesh and Sooda 2020). The intermediaries retain most of the consumer's money, frustrating farmers. Many studies have identified the vegetable

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business as the most profitable and rewarding among other horticultural produce (Mohapatra, Mohapatra and Mishra 2017).

This study, "Preferred Channel Choices in Vegetable Marketing: Role of Macro and Micro Environmental Factors in Odisha," analyzes the dynamics of marketing practices of selected vegetables in Odisha. The study's main objective is to investigate various macro and micro factors and the extent to which such factors affect the marketing decision of farmers. Though many studies have discussed various macro and micro factors and their impact on marketing channel preference decisions (Panda and Sreekumar 2012, Sarkar et al. 2021, Singla, Chaturvedi and Sandhu 2020, yet few studies have taken a holistic approach in empirically testing all the elements in a single model (Kumar, Roy and Mukherjee 2018, Singh and Chauhan 2004). This research objective is to understand the overall impact of assured markets, market knowledge, grading and packaging, society, govt. aided education, personal property, storehouse facility, market infrastructure, road transport facility, market transport facility on the organized and unorganized market channels. In addition, very few studies have been done in Odisha. Odisha is one of the significant vegetables producing states blessed with a good climate, fertile soil and irrigation facility. This gives a huge opportunity to develop the technological and infrastructure aspect of the agricultural industry. But still, improper infrastructure, poor marketing practices, and no storehouse facility are hindrances for the vegetable growers to gain a quality return on their investment. The study identifies the issues related to the vegetable business and suggests measures to improve the system by optimizing the marketing efficiency of vegetables. The study addresses the issue by identifying the micro and macro factors through literature and Principal Components Analysis (PCA) and Confirmatory Factor Analysis (CFA) to prove the hypothesis of what are the important factors

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which helps to make a decision to choose organized vs an unorganized marketing channel as the preferred choices. The implications of these study is to help farmer to provide them the right channel, right price opportunity and right market rate for the vegetation they produce. Govt plocies can be formed taking into consideration of the findings and suggestion from this article. This article is produced from a field study in odisha which gives an overview of the real problem faced by farmers to sell their produce.

## 2. Literature review

As per the definition of the National Commission of Agriculture (1976), "Agricultural marketing is a process which starts with a decision to produce a saleable farm commodity, and it involves all aspects of market structure or system, both functional and institutional, based on technical and academic considerations and includes pre- and post-harvest operations, assembly, grading, storage, transportation, and distribution". The assessment of Agricultural marketing can be done by analyzing the farmers' marketing ecosystem, i.e., practices, channels, and structure (Aggarwal and Narayanan 2021, Yadava and Jayanna 2017; Yankson, Owusu and Frimpong 2016).

Studies have shown prices were comparatively favourable and remunerative when sold through society, as opposed to open markets and decided at a good time. Sen and Maurya (1998) organized a study on the working of cooperative marketing of veggies based in Bangalore, India. They concluded that the operative cost of the society was 85% of the net income, which is considerably high. Also, the organization fails to mobilize specific resources for expansion-related activities.

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**TABLE 1.** Breakthrough studies on vegetable marketing

| | Production issues | Marketing Costs | Price Behaviour / Fluctuations | Market conditions | Intermediaries/ Dist. Channels | Others |
|---|---|---|---|---|---|---|
| Mruthyunjaya and Subramanyam (1979) | + | + | - | + | + | Market imperfection |
| Mohandoss *et al*. (1979) | - | - | + | + | + | Storage/warehousing |
| Subramanyam (1982) | - | - | + | + | + | Credit facilities |
| Panda et al. (2012) | + | + | - | + | + | Risk management, crop insurance |
| Somashekhar *et al*. 2014) | - | - | + | + | + | |
| Sood (1988) | - | + | + | - | + | Involvement of cooperatives |
| Kiresur *et al*. (1989) | + | - | - | + | + | Regulatory system |
| Singla *et al*. (2017) | + | - | + | + | = | Credit facilities |
| Deogharia (2017) | + | + | + | + | + | Marketing efficiency |
| Devkota and Sharma (2014) | + | - | + | + | + | Quality assessment |
| Tilekar *et al*. (1987) | + | + | - | - | + | |
| Chatha and Kaul (1982) | + | - | + | + | - | Market fees |
| Ramamurthy and Rajgopalan (1984) | + | - | + | - | - | |
| Parthasarathy *et al*. (1988) | + | - | + | + | - | |
| Kumar *et al*. (2005) | - | - | + | + | + | |
| Gandhi and Namboodiri (2002) | - | + | + | + | - | Open auctions |
| Sarkar *et al*. (2021) | + | + | - | + | + | Marketing efficiency |
| Ali (2016) | + | + | - | + | + | Innovative farm practices |

*Source*: own elaboration.

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The literature discusses various relevant problems and suggestions from previous research on distribution channels. In their study, Kumar, Roy and Mukherjee (2018) assessed the marketing dynamics of several farm produce such as potatoes, onion, and rice in a regulated market in Bangalore. They contend that marketing efficiency largely depends on the intermediaries' performance. Such performance leads to the competitiveness of the market. Also, the study reveals that cooperative marketing agencies are absent from the marketing system. Due to the greater risk involved in managing the perishable items, their production is confined to only a few traders, particularly onion and potato. Singh and Chauhan (2004) examined the existing distribution channels for marketing g of vegetables, associated income and expenses, as well as the efficiency of different media. The study revealed that most of the vegetable produce was marketed through four-stage distribution channels. It involves producer to wholesaler/commission agents to the retailer and then to consumer, marketing channel. These distribution arrangements often lead to wastage of resources and increased marketing costs; such issues can be addressed by efficiently regulating the existing marketing facilities.

Additionally, they contend that vegetables being perishable items are problematic to store, primarily due to overproduction. As a result, farmers receive low prices for the perished vegetables, leading to huge losses and debts. Therefore, sufficient warehousing facilities should be developed nearby the production and marketing area.

The literature also covers a few international case studies and researches about distribution channels and the problems and development across the globe. Cadilhon, Fearne and Moustier (2003) introduced a conceptual framework to analyze the vegetable market's supply chains and the South East Asian context; here, the role of wholesale markets and the collaboration among stakeholders were highlighted. It can help the policymakers to understand how the whole

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network of the vegetable market works in a coordinated way. Midmore and Jansen (2003), in their paper, analyzed the relationship between suburban farmers and their evolving production and marketing techniques in Asia by referring to the examples of Southeast conglomerates. Ricardo Hernández, Thomas Reardon and Julio Berdegué (2006), in their paper "Supermarkets, wholesalers, and tomato growers in Guatemala", analyze the factors affecting the asset procurement capacity of the small farmers and the influence of their participation in supermarkets as compared to the conventional distribution channels in Guatemala. They found that farmers dealing in supermarkets are more efficient, self-reliant, and skilled in producing commercial crops than selling through traditional distribution channels. Table I shows the important literature followed to deduce the crucial variables impacting the choices of organized and unorganized market channels. Organized retailers service customers differently than unstructured ones. Understanding these contrasts can help explain how they coexist in emerging countries. Unorganized retailing is characterized by family-run stores serving a small number of nearby families. Natural land, financing, and management know-how limit such stores' size. Due to their modest size and regular clientele, the shopkeepers of neighbourhood stores are aware of their customers' tastes and offer customized services (Child et al. 2015). Consumers buy regularly but in modest quantities for budget, storage, and waste control reasons (often multiple times a week, as the need arises for a product; Child et al. 2015). An organized retailing outlet serves many households over a vast area. Customers make a few shopping excursions per month, frequently drive significant distances, and buy large quantities of cheap products to store and consume over time. Buying is impersonal, and individual service is rare. Organized merchants operate fewer, larger stores that are further apart than uncontrolled retailers (typically in large shopping plazas). Buying from organized retailer stores requires time, gas, and other

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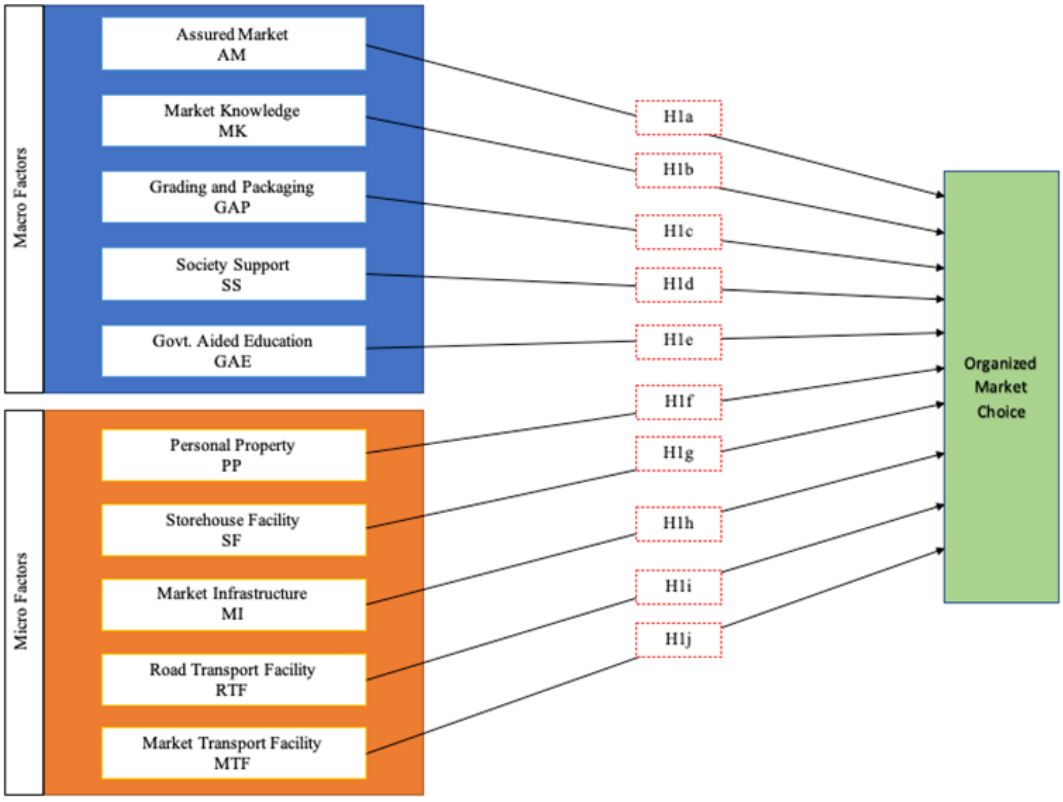
in-store costs (Child et al. 2015). Organized merchants offer reduced pricing due to their scale, logistical knowledge, and efficiency.

This section focused on previous research on the marketing of vegetables in the context of price behaviour, marketing cost and margin, market conditions etc. International research works on vegetable marketing were also referred to for a better understanding of the issue at the global level. This section also developed the conceptual framework based upon two markets, i.e., organized and unorganized markets. We identified the variables that impact the organized and unorganized market from the literature review. The variables are grouped as individual and micro factors. The paper proposes the following conceptual framework and hypothesis for factors affecting farmers' organized and unorganized marketing channel choices as follows:

**FIGURE 1.** Framework for Organized Market




*Source*: own elaboration.

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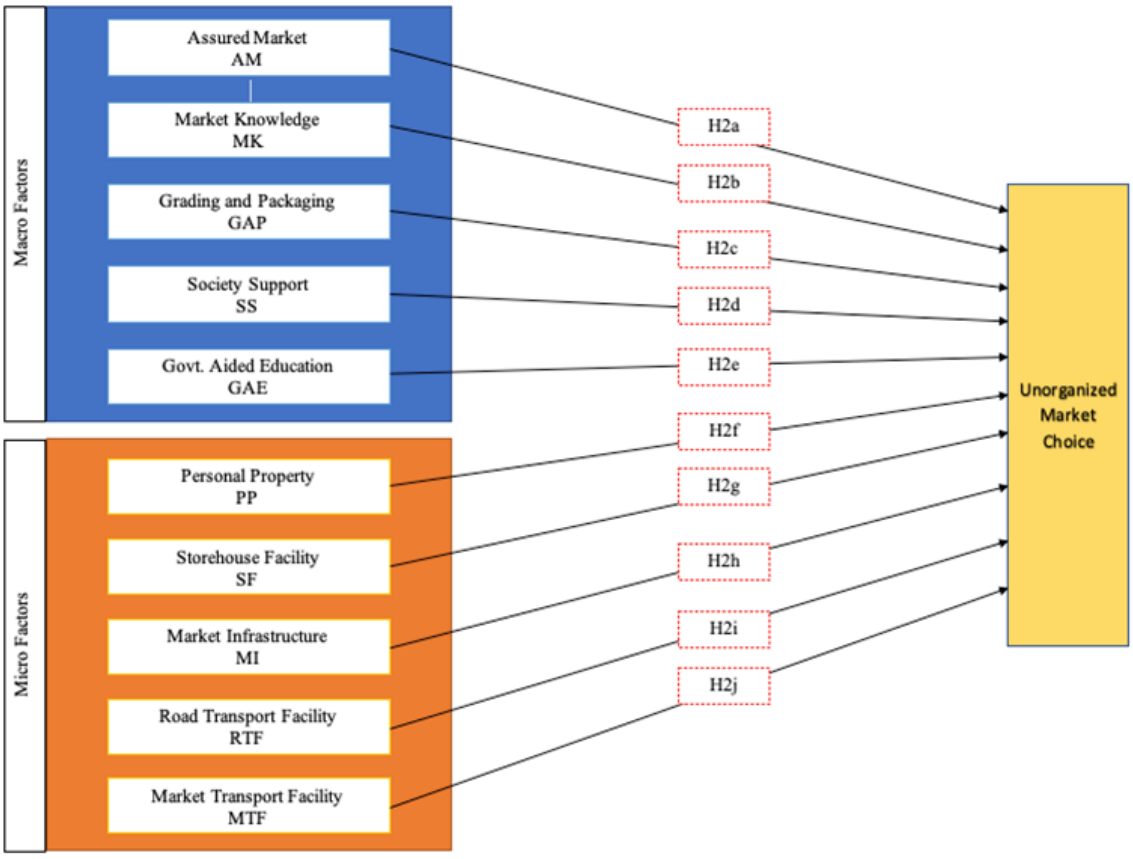
H1a: Assured markets directly and significantly affects organized marketing channel choice.
H1b: Market knowledge directly and significantly affects organized marketing channel choice.
H1c: Grading and packaging directly and significantly affect organized marketing channel choice.
H1d: Society support directly and significantly affects organized marketing channel choice.
H1e: Govt. aided education directly and significantly affects organized marketing channel choice.
H1f: Personal property directly and significantly affects organized marketing channel choice.
H1g: Storehouse facility directly and significantly affects organized marketing channel choice.
H1h: Market infrastructure directly and significantly affects organized marketing channel choice.
H1i: Road transport facility directly and significantly affects organized marketing channel choice.
H1j: Market transport facility directly and significantly affects organized marketing channel choice.

**FIGURE 2.** Framework for Unorganized Market




*Source*: own elaboration.

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H2a: Assured markets directly and significantly affects unorganized marketing channel choice.
H2b: Market knowledge directly and significantly affects unorganized marketing channel choice.
H2c: Grading and packaging directly and significantly affect unorganized marketing channel choice.
H2d: Society support directly and significantly affects unorganized marketing channel choice.
H2e: Govt. aided education directly and significantly affects unorganized marketing channel choice.
H2f: Personal property directly and significantly affects unorganized marketing channel choice.
H2g: Storehouse facility directly and significantly affects unorganized marketing channel choice.
H2h: Market infrastructure directly and significantly affects unorganized marketing channel choice.
H2i: Road transport facility directly and significantly affects unorganized marketing channel choice.
H2j: Market transport facility directly and significantly affects unorganized marketing channel choice.

## 3. Research Methodology

### *3.1. Sampling*

Leedy and Ormrod (2004) suggested in the sampling process; numerous units are selected from an intended and substantial group of populations that have particular relevance to the study. Through minute observations and analysis of the samples, we can categorize various sources: 'districts' were selected as primary entities, 'villages and gram panchayats' were included in secondary entities, and the 'vegetable farmers' were considered as tertiary entities. A three-stage stratified random sampling technique was exercised randomly to design the structure of such sampling sources further. In the case of selecting respondents from the above sample areas, simple random sampling was undertaken to determine the farmers or vegetable growers. To make the collection process convenient without hampering quality, a few factors such as resources, funds and manpower were utilized efficiently.

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The study region and directions were made on the state of Odisha due to numerous reasons; a few of them includes the volume of production, diversification regarding cultivation techniques, soil quality and fertility, favouring weather, varieties in output, presence of a large number of small and marginal group of growers, and significantly low amount of investment in infrastructures. Apart from all these parameters, farmers' adaption to new and innovative farming techniques was commendable and quite encouraging in the survey.

During the initial sampling process, five districts, based on the maximum cultivation acreage for vegetables, were deemed suitable for inclusion in the study: Bolangir, Ganjam, Keonjhar, Mayurbhanj and Subarnapur. In subsequent stages, ten blocks, ten gram panchayats, and thirty villages were picked from the above districts to diversify the sampling based on vegetable productivity. Regarding the selection of vegetables that must be included in the study, five commonly grown products (vegetables) were chosen: cauliflower, cabbage, tomato, ladyfinger, and brinjal. Apart from individual farmers, middlemen (intermediaries like commission agents, wholesalers, and retailers) were networked and included in the study from the five districts above. For the collection of relevant data from intermediaries and other affairs, separate questionnaires were formatted and distributed among the appropriate respondents, including significant events of a survey like a customer satisfaction rating, transactional values of vegetables, availability and accessing of markets, daily commutes to urban and rural routes etc.; all above data were collected by employing a Likert scale (5 points).

### *3.2. Data collection and questionnaire development*

Designing a questionnaire in the survey context is tricky and is key to accessing all relevant primary information in qualitative and quantitative data. There are numerous ways a questionnaire can be imposed on the respondents, such as the telephonic method, self-designed

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questionnaires (Leedy and Ormod 2004), and face-to-face interviews. The latter approach (face-to-face interviews) can have multiple beneficial attributes over other methods of enquiry; hence it is more suitable for the survey. An interview is a better mode of data collection because it does not allow the respondents to skip or omit a question, and they can always ask the interviewer to clarify their understanding. Additionally, most of the respondents involved in the study are farmers by profession; in such occupations, literacy level can burden data collection and interpretation of information. People unable to read or write cannot be expected to answer a questionnaire independently; no matter how simple the preface, an interviewer must devote their time and presence to accumulate the data without altering the quality. Also, the presence of a person improves the efficiency of data collection and is more effective than self-administered methods.

While dealing with farmer families, heads of the households were selected for the role of prime respondents and were interviewed respectively. If leaders failed to represent the household, the concerned spouse or any other member directly related to vegetable farming was chosen as a replacement for the household head. Most of the answers and discussions were projected towards the head respondent because of the richness of experience and farming information. In case of doubts or discrepancies, other members were allowed to brainstorm to arrive at a particular conclusion

The collection of secondary data regarding prices, cost, production, and marketing of vegetables were collected from multiple government repositories, including the district-level Agriculture and Horticulture department; Ministry of Agriculture, Govt. of India, New Delhi; Ministry of Statistics and Programme Implementation, Govt. of India; Directorate of Horticulture, Govt. of Odisha, Bhubaneswar, Directorate of Agriculture and Food Production, Govt. of Odisha;

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Directorate of Economics and Statistics, Govt. of Odisha, Bhubaneswar; District Agriculture Offices of districts mentioned above; and few websites such as www.indiastat.com and www.orissastat.com. Also, the same departments provided a detailed list of respondents based on the cultivation area, and from that list, a few respondents were chosen randomly. Significantly, the frequent and regular farmers dealing with vegetable and product marketing (roughly for the past five years) were considered suitable for listing.

## 4. Data analysis and findings

This section aims at several macro and technological dimensions identified in the study that affect the farmers' market choice decisions in Odisha. The present area focused on providing the dynamic results of the modelled constructs presented in section 3, conforming to the study objectives. The independent factors were analyzed, and results were given based on the findings. The section offers the farmers' comprehensive model for market choice based on the variables of each factor's conclusions. A total of ten independent factors were identified in the study, and their respective variables were assessed based on their characteristics and how the farmers perceived them. The study presents insightful results by developing a comprehensive model, discussing the significance of each factor incorporated in the model.

### *4.1. Socio-economic characteristics of the respondents*

#### 4.1.1. Statistics Samples

Three hundred twenty-three vegetable farmers, 110 commission agents/ wholesalers and 192 retailers were included in the socio-economic study. The section focuses on agricultural cultivation, marketing and various factors affecting the distribution process. Varieties of descriptive statistics were equipped to represent the data distribution pattern, such as mean, standard deviation, ranges, and frequencies: five regulated markets, namely Bolangir, Ganjam,

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Keonjhar, Mayurbhanj and Subarnapur from the total Odisha. Samples were collected from different marketplaces and different vendors selling within those markets.

4.1.2. Demographic characteristics of sample households

Seventy-nine per cent of the farmers questioned were male, while the rest were female. Eighty-two per cent of the wholesalers were male, and the rest were female. Similarly, 73.4 per cent of the retailers were male, making an average of 78% male and 22 % female respondents for the whole study.

In the study, age is used to determine a person's experience in a particular farming type; conversely, such incidents benefit household members' farming processes since they constantly gain guidance from the head's orchestration. The farmers in the sample were classified into various groups, and a chi-square test was adopted to analyze the dispersion among the age of different vegetable farmers.

A significant portion of the vegetable farmers has an age count of more than 50 years, while the majority of the wholesalers have their age between 30 and 40 years, and most of the retailers fall under the age category of 40 to 50 years. In a nutshell, the production formats of vegetables witness an older and more experienced type of farmers. Still, the fields of distribution and marketing require comparatively young individuals in terms of mobility.

4.1.3. Literacy/ Education Level of Respondents

The section elucidates the extent of literacy of a household head that determines their ability to evaluate, interpret, and understand the applicability of the information in relevant activities; also, it enhances the worth of human capital in different households. Hence, the literacy level

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or education level clearly impacts the farmers' understanding and interpreting nature and stimulates them for effective market participation.

According to Mather and Adelzadeh (1998), the interpretive capacity of people with a higher literacy quotient is more than those with less or no education. The illiteracy quotient is higher in cases of farmers (30.03%), which indicates most of the farmers have expertise in cultivation methods and may have issues accumulating Market knowledge or participation. Further, it can be seen that approximately 15.5% of commission agents have received education beyond the higher secondary level; and this statistic shows a visible concentration of educated individuals in the wholesaling format. If we divide our sample based on the education we receive, the increasing literacy mandate will be Farmers, vendors, and commission agents.

*4.2. Descriptive analysis of the dataset*

The dataset considered for final analysis exhibits satisfactory psychometric properties with skewness and kurtosis well within the acceptable limits. The present study attempts to analyze two different models to identify the antecedents that affect the farmers' decisions to opt for a) an organized market channel and b) an unorganized market channel. Barlett's test and Kaiser-Meyer-Olkin (KMO) tests of sample adequacy were conducted to assess the research data appropriateness for conducting exploratory factor analysis. Also, the KMO procedure was carried out to ensure variable groupings' suitability effectively. The KMO value for the organized market channel choice was computed to be 0.895. Further, The KMO value for the unorganized market channel choice was calculated to be 0.892. According to Kaiser (1974), the KMO value greater than 0.80 is within the acceptable limits. However, Field (2009) suggests that 0.50 can still be considered. The KMO value >0.80 indicates that the items were interrelated and explained by common factors. Also, Barlett's test of sphericity for the organized market

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channel choice $x^2$=22102.677, df= 1225 and unorganized market channel choice $x^2$=22269.216, df= 1225 and p<.001 shows that correlations between items were adequate for serving the purpose of principal component analysis. Specifically, these two tests ensured the feasibility and suitability of the data for factor analysis (Hair 2009).

The assessment of inter-item reliability was calculated using the alpha coefficient (Cronbach 1951). Nunnally (1978) recommends coefficient alpha values should exceed 0.70. For the present research, Cronbach's alpha(α) was 0.896, establishing internal consistency among the measurement items.

### *4.3. Principal Components Analysis (PCA) – Organized and unorganized market channel choice*

Employing the principal component analysis (PCA) with varimax rotation, for model I, 50 out of the total 64 variables in the questionnaire were clubbed into eleven factors, which depicts 72.224 % of the total variance. The variables of each of these factors indicate a loading value greater than 0.5, which meets the recommended criteria (Hair, Ringle and Sarsted 2013). Apart from showing high loading values, the factors also depicted sufficient internal consistency. Factor reliability was tested using Cronbach's alpha method. The results exhibited that factor reliability scores based on alpha coefficients ranged between 0.77 and 0.86, significantly higher than the threshold level. Nunnally and Bernstein (1994) recommended a 0.7 reliability coefficient in the context of social science and management research. According to Gorsuch (1990), retaining and classifying factors depends on eigenvalue, which should be equal to or higher than one. Subsequently, all the elements in this study followed the suggested guidelines in terms of eigenvalue. The factors having eigenvalues less than one were not taken into account.

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The eleven factors explain 72.2% of the total variance in the farmers' organized market choice model dataset. Further, for model II, 50 out of the total 60 variables in the questionnaire were clubbed into eleven factors, which depicts 72.543% of the total variance. The variables of each of these factors indicate a loading value greater than 0.5, which meets the recommended criteria (Hair, Ringle and Sarstedt 2013). Apart from showing high loading values, the factors also depicted sufficient internal consistency.

Larose (2015) delineates that the commonality coefficient reflects the variance shared by a particular variable with other variables. According to Nunnally (1978), communality values less than 0.5 are considered significantly low, implying that one specific variable shares less than 50% of the variance with other variables. Communality values for all the variables conformed to the cut-off level of 0.5, which means they duly explain more than 50% variance in every factor and don't require to be dropped. In the generic sense, factor loadings represent the extent to which a factor explains the respective variable. Generally, per the recommended limits, a factor loading score >0.5 lends empirical support towards a high impact on the variables. With PCA model results, all the factor loadings meet the cut-off threshold level of 0.5, suggesting the appropriateness and reliability of the determining factors.

### *4.4. Confirmatory factor analysis (CFA) for organized and unorganized marketing channel choice*

#### 4.4.1. Construct validity for Organized and Unorganized Marketing Channel Choice

Construct validity can be established through empirical assessment of uni-dimensionality, convergent validity, discriminant validity (O'Leary-Kelly and Vokurka 1998) and nomological validity (Sureshchandar, Rajendran and Anantharaman 2002). According to Hair 2009, construct validity is the extent to which a set of measured variables represents the latent

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theoretical construct designed to be measured. In the context of the present study, we have demonstrated reliability and validity by effectively measuring face validity, convergent validity, composite reliability, and discriminant validity. The aspect of face validity was supported by adapting and introducing modifications in the existing scales (Panda et al. 2012) used by prior researchers to suit the objectives and context of the research. Cronbach's alpha value of the research instrument equals 0.897, which exceeds the threshold level of greater than 0.7; therefore, exhibiting the reliability of the questionnaire. The CFA procedure was conducted to calculate reliability, convergent and discriminant validity, and model-fit statistics. Convergent validity comprises standardized factor loadings, composite reliability (CR), average variance extracted (AVE) etc. Table II exhibits the reliability and validity assessment results for Organized Marketing Channel Choice. The standardized factor loading of the research constructs ranges from 0.632 to 0.938 and shows statistical significance (p-values).

**TABLE 2.** Reliability and Validity assessment for Organized Market Channel

| Constructs and items | Standardized factor loadings | | Composite reliability | | Average variance extracted | |
|---|---|---|---|---|---|---|
| | Organized Market | Unorganized Market | Organized Market | Unorganized Market | Organized Market | Unorganized Market |
| **Assured Market** | | | 0.812 | 0.859 | 0.523 | 0.608 |
| AM1 | .888 | .886 | | | | |
| AM2 | .886 | .885 | | | | |
| AM3 | .883 | .883 | | | | |
| AM4 | .871 | .869 | | | | |
| AM5 | .868 | .868 | | | | |
| **Market knowledge** | | | 0.966 | 0.966 | 0.849 | 0.849 |
| MK1 | .858 | .862 | | | | |
| MK2 | .802 | .807 | | | | |
| MK3 | .790 | .794 | | | | |
| MK4 | .756 | .761 | | | | |
| MK5 | .756 | .758 | | | | |
| **Grading and Packaging** | | | 0.902 | 0.902 | 0.649 | 0.648 |

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| Constructs and items | Standardized factor loadings | | Composite reliability | | Average variance extracted | |
|---|---|---|---|---|---|---|
| | Organized Market | Unorganized Market | Organized Market | Unorganized Market | Organized Market | Unorganized Market |
| GAP1 | .820 | .820 | | | | |
| GAP2 | .783 | .785 | | | | |
| GAP3 | .780 | .781 | | | | |
| GAP4 | .730 | .731 | | | | |
| GAP5 | .720 | .718 | | | | |
| **Society Support** | | | 0.874 | 0.874 | 0.582 | 0.582 |
| SS1 | .778 | .802 | | | | |
| SS2 | .767 | .773 | | | | |
| SS3 | .761 | .771 | | | | |
| SS4 | .715 | .720 | | | | |
| SS5 | .701 | .712 | | | | |
| **Govt. Aided Education** | | | 0.888 | 0.889 | 0.615 | 0.616 |
| GAE1 | .796 | .794 | | | | |
| GAE2 | .745 | .754 | | | | |
| GAE3 | .736 | .738 | | | | |
| GAE4 | .735 | .738 | | | | |
| GAE5 | .728 | .726 | | | | |
| **Personal property** | | | 0.852 | 0.855 | 0.536 | 0.544 |
| PP1 | .770 | .773 | | | | |
| PP2 | .754 | .754 | | | | |
| PP3 | .754 | .753 | | | | |
| PP4 | .715 | .721 | | | | |
| PP5 | .688 | .690 | | | | |
| **Storehouse facility** | | | 0.861 | 0.861 | 0.556 | 0.555 |
| SF1 | .832 | .807 | | | | |
| SF2 | .811 | .799 | | | | |
| SF3 | .717 | .727 | | | | |
| SF4 | .711 | .713 | | | | |
| SF5 | .703 | .695 | | | | |
| **Market Infrastructure** | | | 0.846 | 0.845 | 0.525 | 0.524 |
| MI1 | .856 | .859 | | | | |
| MI2 | .819 | .824 | | | | |
| MI3 | .765 | .770 | | | | |
| MI4 | .739 | .738 | | | | |

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| Constructs and items | Standardized factor loadings | | Composite reliability | | Average variance extracted | |
|---|---|---|---|---|---|---|
| | Organized Market | Unorganized Market | Organized Market | Unorganized Market | Organized Market | Unorganized Market |
| **Road transport facility** | | | 0.895 | 0.895 | 0.681 | 0.680 |
| RTF1 | .864 | .756 | | | | |
| RTF2 | .862 | .676 | | | | |
| RTF3 | .795 | .671 | | | | |
| RTF4 | .683 | .667 | | | | |
| **Market transport facility** | | | 0.853 | 0.805 | 0.597 | 0.513 |
| MTF1 | .755 | .832 | | | | |
| MTF2 | .676 | .822 | | | | |
| MTF3 | .672 | .764 | | | | |
| MTF4 | .667 | .518 | | | | |
| **Organized/ Unorganized Market Choice** | | | 0.853 | 0.831 | 0.660 | 0.623 |
| OMC1/ UOMC1 | .803 | .853 | | | | |
| OMC2/ UOMC2 | .775 | .821 | | | | |
| OMC3/ UOMC3 | .758 | .726 | | | | |

*Source*: own elaboration.

Further, CR for all the research constructs meets recommended levels of 0.7 or above and the average variance extracted exceed the cut-off grade of 0.5 (Fornell and Larcker 1981). Hair et al. (2010) suggest that the research construct should exhibit std. Factor loadings greater than 0.5 have statistical significance; AVE values higher than the proposed values of 0.5 determine sufficient convergence, and composite reliability scores of 0.7 or more indicate good reliability. According to the results provided in this study, the standardized estimates, AVE and CR meet the threshold cut-offs implying adequate validity and reliability.

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Discriminant validity becomes of utmost importance to show that the factors are distinct from each other. The discriminant validity assessment depends on the AVE values and the matrix that indicates the square root of AVE values for the constructs. Table III and Table IV shows that the square root of AVE values for all the constructs are more significant than the inter-construct correlations, which lend adequate support for the discriminant validity.

**TABLE 3.** Discriminant Validity for Organized market channel choice

| Constructs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AM | **0.723** | | | | | | | | | | |
| MK | 0.617 | **0.922** | | | | | | | | | |
| GAP | 0.376 | -0.010 | **0.805** | | | | | | | | |
| SS | 0.517 | 0.652 | -0.062 | **0.763** | | | | | | | |
| GAE | 0.286 | 0.017 | 0.554 | -0.037 | **0.784** | | | | | | |
| PP | 0.142 | 0.000 | 0.299 | -0.032 | 0.507 | **0.732** | | | | | |
| SF | 0.193 | 0.047 | 0.439 | -0.053 | 0.499 | 0.676 | **0.745** | | | | |
| MI | 0.129 | 0.104 | -0.068 | 0.048 | -0.014 | -0.041 | -0.029 | **0.724** | | | |
| RTF | 0.298 | 0.019 | 0.567 | -0.029 | 0.564 | 0.433 | 0.488 | -0.110 | **0.825** | | |
| OMC | 0.079 | -0.014 | -0.025 | -0.013 | 0.011 | -0.029 | -0.030 | 0.564 | -0.090 | **0.773** | |
| MTF | 0.276 | 0.036 | 0.504 | 0.031 | 0.615 | 0.449 | 0.466 | 0.008 | 0.500 | 0.040 | 0.813 |

*Source*: Author's calculation.

**TABLE 4.** Discriminant Validity for unorganized market channel choice

| Constructs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AM | **0.780** | | | | | | | | | | |
| MK | 0.009 | **0.921** | | | | | | | | | |
| GAP | -0.030 | -0.010 | **0.805** | | | | | | | | |
| SS | -0.006 | 0.652 | -0.062 | **0.763** | | | | | | | |
| GAE | -0.013 | 0.017 | 0.554 | -0.037 | **0.785** | | | | | | |
| PP | -0.009 | 0.004 | 0.306 | -0.027 | 0.508 | **0.737** | | | | | |
| SF | -0.018 | 0.047 | 0.440 | -0.053 | 0.499 | 0.668 | **0.745** | | | | |
| MI | 0.555 | 0.100 | -0.067 | 0.046 | -0.013 | -0.042 | -0.027 | **0.724** | | | |
| RTF | -0.082 | 0.019 | 0.567 | -0.029 | 0.565 | 0.434 | 0.488 | -0.110 | **0.825** | | |
| OMC | 0.779 | 0.024 | -0.037 | 0.045 | 0.019 | 0.025 | -0.020 | 0.599 | -0.107 | **0.789** | |
| MTF | 0.082 | 0.619 | 0.383 | 0.516 | 0.281 | 0.146 | 0.188 | 0.126 | 0.299 | 0.101 | **0.716** |

*Source*: Author's calculation.

After the convergent and discriminant validity was established, the measurement model fit was assessed. The measurement model for factors affecting organized market channel choice

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affirms adequate model fit with $\chi 2/df=2.398$, GFI= .856, AGFI=0.834, CFI=0.928, NFI=0.883, SRMR=0.0420, and RMSEA=0.047. Further, the measurement model for factors affecting unorganized market channel choice affirms adequate model fit with $\chi 2/df=2.374$, GFI= .857, AGFI=0.836, CFI=0.930, NFI=0.885, SRMR=0.0424, and RMSEA=0.047 respectively, therefore, indicating the uni-dimensionality of factor model. Model-fit indices of the measurement model considerably fall within the recommended level, evidencing its appropriateness and robustness.

*4.5. Structural model evaluation and hypothesis-testing results*

A structural equation modelling procedure was carried out to examine and validate the impact of the potent antecedents of organized market channel choice. The predictive power of individual antecedents was analyzed using a combination of structural models testing the direct relationships. The structural indices show a satisfactory degree of model fitness to data against the combination of fitness parameters such as $\chi 2$, GFI, AGFI, CFI, NFI, SRMR etc. The structural model for factors affecting organized market channel choice affirms adequate model fit with $\chi 2/df=2.442$, GFI= .853, AGFI=0.832, CFI=0.926, NFI=0.881, SRMR=0.0427, and RMSEA=0.048. Additionally, the structural model for factors affecting unorganized market channel choice shows a satisfactory model fit with $\chi 2/df=2.470$, GFI= .853, AGFI=0.832, CFI=0.925, NFI=0.880, SRMR=0.0435, and RMSEA=0.049. Hence, the goodness-of-fit indices for the structural model provide empirical support that the model fits the data well. Figure 4.1 and 4.2 shows the structural model depicting the hypotheses, while Table V and Table VI exhibits the test results for organized market channel choice and unorganized market channel choice, respectively.

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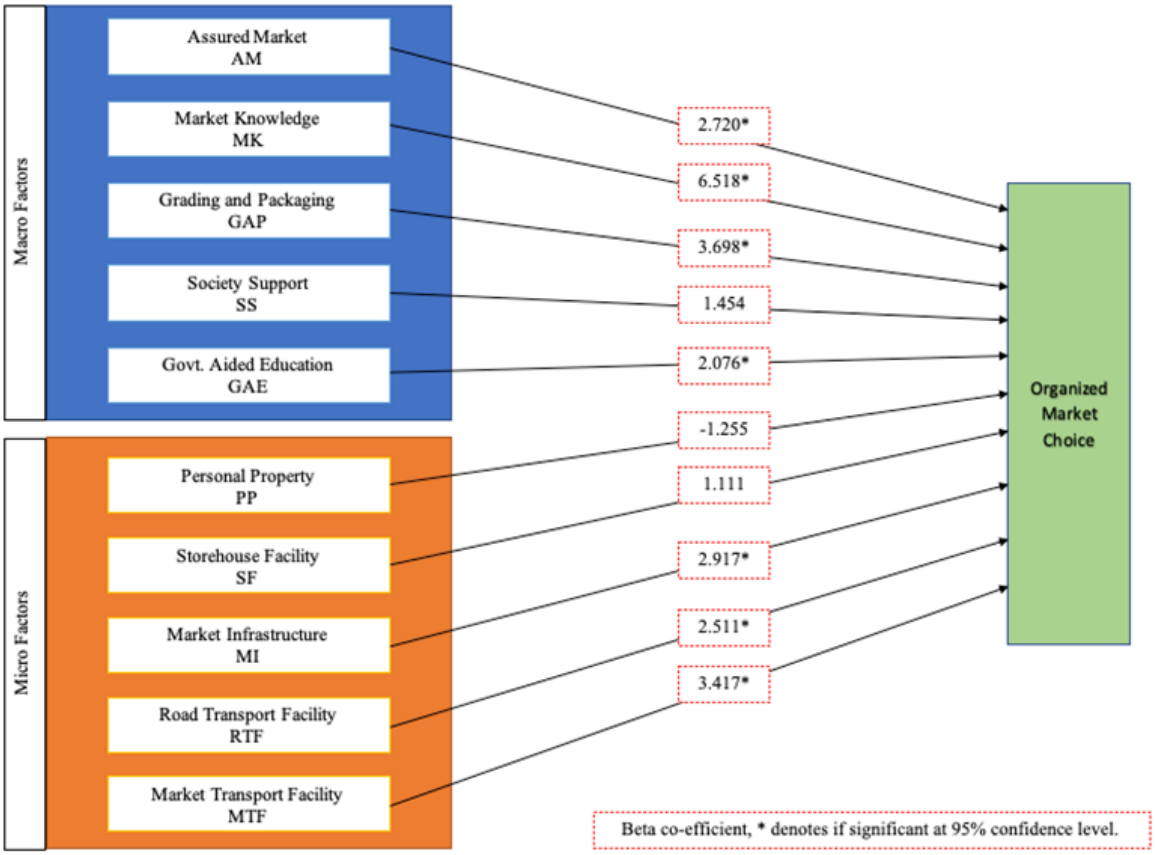
**FIGURE 3.** Structural Model for Organized Market




*Source*: Own elaboration.

**TABLE 5.** Hypothesis-testing results (Organized market channel choice)

| Structural linkage | Std.Beta estimate | Standard error | Significance | Decision |
|---|---|---|---|---|
| H1: AM→ FMC | 2.720 | 1.312 | 0.038* | Supported |
| H2: MK→FMC | 6.518 | 1.414 | 0.000* | Supported |
| H3: GAP→FMC | 3.698 | 1.050 | 0.000* | Supported |
| H4: SS→ FMC | 1.454 | 1.020 | 0.154 | Supported |
| H5: GAE→ FMC | 2.076 | 1.022 | 0.042* | Supported |
| H6: PP→ FMC | -1.255 | 0.944 | 0.183 | Supported |
| H7: SF→ FMC | 1.111 | 0.965 | 0.250 | Unsupported |
| H8: MI→ FMC | 2.917 | 0.954 | 0.002* | Unsupported |
| H9: RTF→ FMC | 2.511 | 1.007 | 0.013* | Supported |
| H10:MTF→ FMC | 3.417 | 1.045 | 0.001* | Unsupported |

*Source*: Own elaboration.

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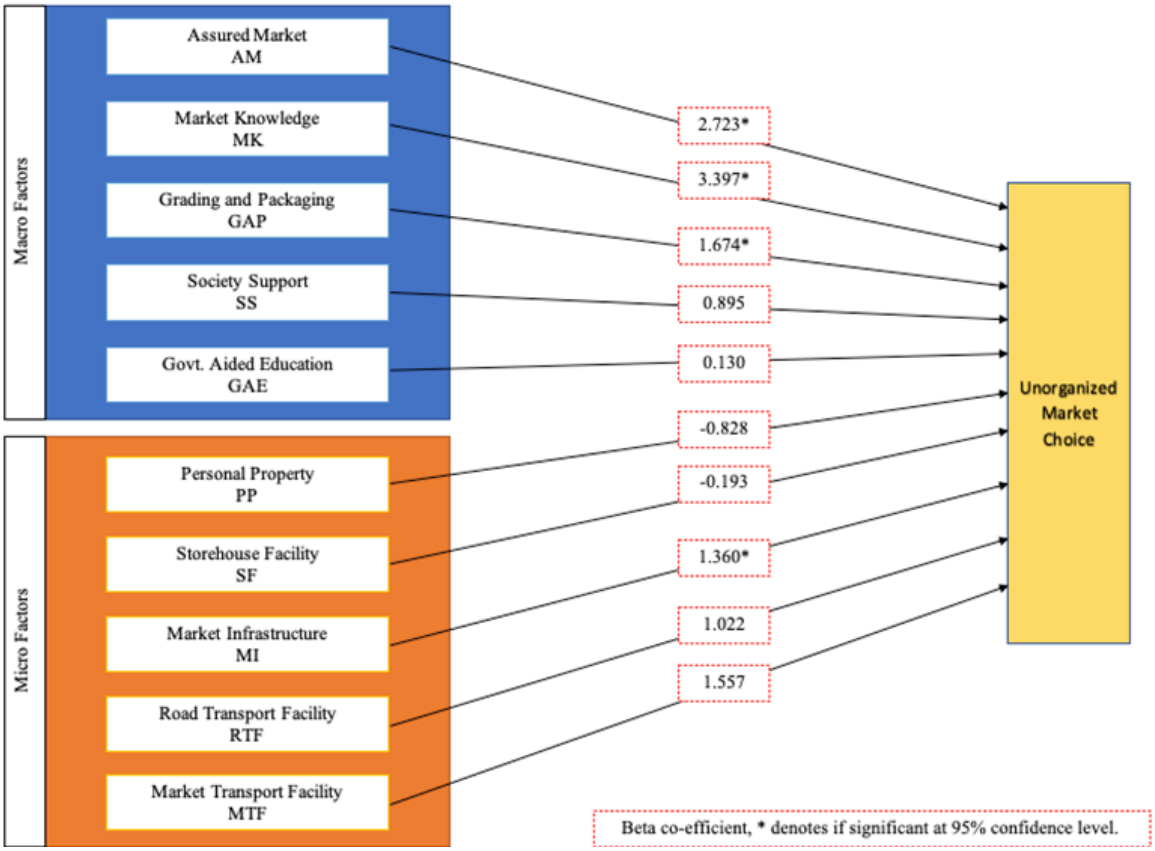
**FIGURE 4.** Structural Model for Unorganized Market




*Source*: Own elaboration.

**TABLE 6.** Hypothesis-testing results (Organized market channel choice)

| Structural linkage | Std.Beta estimate | Standard error | Significance | Decision |
|---|---|---|---|---|
| H1: AM→ IFMC | 2.723 | 1.152 | 0.018* | Supported |
| H2: MK→IFMC | 3.397 | 1.214 | 0.005* | Unsupported |
| H3: GAP→IFMC | 1.674 | 0.749 | 0.025* | Unsupported |
| H4: SS → IFMC | 0.895 | 0.816 | 0.273 | Unsupported |
| H5: GAE→ IFMC | 0.130 | 0.806 | 0.872 | Supported |
| H6: PP→ IFMC | -0.828 | 0.727 | 0.254 | Supported |
| H7: SF→ IFMC | -0.193 | 0.747 | 0.797 | Unsupported |
| H8: MI→ IFMC | 1.360 | 0715 | 0.050* | Unsupported |
| H9: RTF→ IFMC | 1.022 | 0.801 | 0.202 | Supported |
| H10:MTF→ IFMC | 1.557 | 0.823 | 0.058 | Unsupported |

*Source*: Own elaboration.

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The covariance-based structural equation modelling (CB-SEM) results identify the prominent factors that affect the market choice decision of the farmers in the state of Odisha. The hypothesis testing results of organized and unorganized market choices are presented in Table V and Table VI, respectively. Findings highlight several factors that significantly influence farmers' decisions regarding selecting effective markets to sell their produce. Out of ten identified antecedents, seven factors substantially impact the farmers' decision-making criteria for selecting organized market choice at $p<0.05$. Further, four out of ten factors affecting unorganized market choice significantly affect ($p<0.05$) farmers' decision to opt for a cluttered market.

Market knowledge has emerged as a crucial factor for organized and unorganized market channel choice, as the significant unorganized market choice at the significance level of $p<0.005$ and for unorganized market choice at the $p<0.000$ level. A plausible reason for such findings can be that proper Market knowledge like pricing supply and demand to the farmers can educate them about the market trends. This can further enhance their confidence in the market operations, thereby providing them opportunities to either select the organized or unorganized market to sell their products.

Value addition by the farmers to their products is also found to be significant in both organized and unorganized market choices at the significance level of $p<0.000$ and $p<0.025$, respectively. Consist value addition practices like grading, sorting and standardizing enhance product quality, further providing avenues for farmers to participate in organized and unorganized markets. Assured market positively influences organized and unorganized market choice at $p<0.05$. Finding implies that if the farmers are assured about the customers and market demand for their produce, their likelihood of participating in both markets increases.

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As hypothesized in H8, the availability of efficient market infrastructure positively impacts the farmers' choice of a different form of market. The present study suggests that a reasonable market infrastructure is a prerequisite to selling agricultural produce swiftly in both organized and unorganized market settings. The statistically significant relationship among constructs reveals that an overall improved market infrastructure like warehousing facilities, cold storage, and efficient channel members could facilitate farmers in realizing more profits by minimizing the crop losses arising due to the perishability of the produce.

The impact of Road transport facilities is statistically significant in organized market choice, thereby supporting hypothesis 9 for the methodical market choice model. Such a finding indicates that the farmers could engage in organized market settings far off their production centre only if they get adequate Road transport facilities. Good road conditions can minimize the farmers' time, cost, and effort to reach the market. Also, it will reduce spoilage of the products, which generally occurs due to loss in transit. On the contrary, the relationship between good Road transport facilities and unorganized market choice is unsupported. The plausible reason for such finding is that messy markets are situated nearby the production point of the produce. Thus, farmers often don't require to travel to distant places to sell their farm products. Therefore, improved Road transport facility is not crucial for farmers when selecting unorganized markets.

The impact of own transport on organized market choice is found statistically significant. This positive relationship suggests that farmers' vehicles can facilitate the free, timely, and cost-effective movement of the produce from the agricultural Field to the marketplace. As owning a car reduces the time taken to reach the organized market, it reduces the spoilage of vegetables due to their perishability. In contrast, the relationship between own

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transport and unorganized market choice stands insignificant. Farmers do not have to travel far to sell their produce because the unorganized market is located near the farm area. Therefore, they do not require owning a vehicle as they can easily reach the market with a bicycle or bullock cart. Hence, own transport does not act as a driver for the cultivators to select unorganized markets.

## 5. Conclusion and Implications

To improve the vegetable sector as a whole, we need to work on every aspect of the business, from planting and harvesting to advertising and shipping (Tilman 2001, Khanal and Shrestha 2019; Chalise et al. 2017). There is real potential for Odisha's vegetable growers to influence economic growth through their contributions to rural development, poverty reduction, and income inequality. Many flaws in the system prevented each farmer from realising his or her full potential. In order to address issues and boost market efficiency, this research looked into several facets of vegetable marketing. According to the results of the research, it has become necessary to overcome the challenge of recognising marketing information and issues. Issues including poor access to potential markets, cheap prices for the business, severe driving conditions, and a lack of communication are explored. As a corollary, the low levels of literacy among farmers make it difficult for them to access the plethora of data they would need to effectively address the issues at hand.

Vegetables are problematic to market and distribute due to their rapid loss of freshness and usefulness after harvest, in addition to the difficulty inherent in their production. It is also worth noting that farmers now have less farmable land, fewer sales outlets, and lower product prices. As a result, it is crucial that market mechanisms and product distributions operate well and swiftly (Singh 2019, Devaraja 2000). A crucial microscopic function was found to contribute

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to the expansion of Odisha's vegetable industry. Vegetable crop planting patterns are increasingly a major factor on the farm. Vegetable farming has become a viable commercial enterprise as a result of increased crop yields brought about by the cultivation of multiple vegetable crops. The foregoing discussion leads us to the conclusion that the farmers' and producers' cut of the consumer price decreases as the number of market intermediaries rises, and that the situation shifts decisively in favour of profit when a manufacturer sells the product directly to consumers (Deogharia 2017).

New farmers have a tough time breaking into the market. To be successful, smallholder farmers not only require substantial assistance, but also substantial earnings. Vegetable growers who want to make a profit should stay abreast of market developments and develop a strategy for targeting the most lucrative market niches (Mohandoss and Subramanian 1979, Sood and Singh1993). Since marketing requires a certain level of textual fluency, interpretability, and logical delineation with the market dynamics, many farmers lack these talents yet excel at more conventional agricultural operations. It has been proposed that the government increase vegetable production through the implementation of sound policies and the funding of rigorous scientific study (Azad et al. 2014). It is advised that substantial resources be allocated to enhancing marketing strategies, and that a corresponding infrastructure be put in place, so that the marketing and trading of vegetables may proceed more smoothly. The distribution and promotion of vegetables can undergo a revolutionary change if the public and commercial sectors work together (Panda et al. 2012, Gandhi and Namboodiri 2002). Even yet, a lot of pieces, like a well-functioning market, collaborative public-private research, a growth-minded approach in organisational leadership, and solid technological chops, are required to make this a reality.

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The primary purpose of this research was to identify and assess the micro and macro characteristics that influence the behaviour of Odisha's farmers in the agricultural market. The identified micro and macro factors helps further theoretical development in understand the other factors which might influence farmers selling decisions. In addition, the poll looked at what prompted farmers to adopt market-driven choices that ended up being useful to their operations. A farmer's decisions to sell and target market selection are constants. A farmer's ability to successfully transport a product to market depends on several factors, not the least of which is the selection of an appropriate market channel. The research indicates that deciding on a successful marketing channel presents various difficulties for farmers. They have to settle for reduced profits from an unorganised market channel due to the short shelf life of their items. Taking into account the foregoing concerns, the study has presented recommendations for enhancing channel alternatives and farmer participation to capitalise on favourable conditions in emerging and export markets.

The survey's focus was on the myriad of microscopic elements that influenced the marketing decisions of farmers in Odisha (Panda et al. 2012). For farmers, the choices boil down to doing nothing, doing something organised, or doing something disorganised. This study has the potential to alter household dynamics by encouraging hitherto market-averse individuals to engage in informal market channels and, in some situations, gain access to the market in its entirety (Mruthyunjaya abd Subramanyam 1979, Deogharia 2017). Value addition, product positioning, access to excellent market infrastructure, and Assured market spaces are all factors that push households to transition from the informal to the formal market (Mohandoss and Subramanian 1979, Azad et al. 2014). Farmers may benefit economically if they are encouraged to take a more active role in the market and adopt a more productive agricultural system.

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The research suggests setting up the right kinds of institutions to help farmers turn their disadvantages into advantages (Sood and Singh 1993, Kiresur et al. 1989, Gandhi and Namboodiri 2022, Negi and Anand 2015). Opportunities for farmers to earn more money can improve thanks to recent developments like contract farming, future contracts, cooperatives, and the establishment of groups. The accompanying risks of uncertainty will be mitigated, and solid ties between production and promotion will be established. That is why, to create long-term strategies that contribute to the growth of all parties involved in the vegetable sector, dishonesty in the dissemination of information about institutional, economic, and micro policies is an absolute must.

### *5.1. Limitations of the study*

Although the executed survey method is broad, it has few limitations. For example, at an intermediate level, data is not collected at once. The most pronounced restriction of the survey is that vegetable farmers barely account for their packaging systems and practices and rely on their memories to recollect the information about their products. The research is based on critical data; therefore, the limitations are applicable. An open-ended questionnaire would help get more insights, and sentiment analysis may be implemented for better and faster analysis (Mishra and Panda 2021). It excludes the arrival of a market for vegetables from outside the particular region. The study does not consider kitchen garden vegetable productions or the exchange program in this business. The study uses cross-sectional data, which is limited by the time frame. Longitudinal research can help understand the real problems in detail by considering a longer time frame and repeated surveys from the same respondents.

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*5.2. Future research scope*

The CFA was used to determine which factors were the most essential. Additional research could rank the factors using techniques such as the analytic hierarchy process (AHP) and fuzzy logic. Additional research can be conducted by taking into account other influential aspects, such as economic and political considerations, which influence the channel decision that farmers make when marketing their veggies. It is possible that one of the outcomes of the forthcoming research will be a risk management plan that will assist farmers with vegetable production and marketing. It is possible to experiment with an integrative model, which will assist in lowering the level of risk and increasing the effectiveness of the marketing channel.

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## References

Agarwal, Bina, and Ankush Agrawal. 2017. "Do Farmers Really like Farming? Indian Farmers in Transition." *Oxford Development Studies* 45(4):460–78. doi:10.1080/13600818.2017.1283010.

Aggarwal, Nidhi, and Sudha Narayanan. 2021. "Impact of India's Demonetization on Domestic Agricultural Markets." Available at SSRN:10.2139/ssrn.3066042.

Akhilesh, K. B., and Kavitha Sooda. 2020. "A Study on Impact of Technology Intervention in the Field of Agriculture in India." In *Smart Technologies: Scope and Applications*, edited by K.B. Akhilesh and Dietmar P.F. Möller, 373–85. Singapore: Springer. doi:10.1007/978-981-13-7139-4_28.

Ali, Jabir. 2016. "Adoption of Innovative Agricultural Practices across the Vegetable Supply Chain." *International Journal of Vegetable Science* 22(1):14–23. doi:10.1080/19315260.2014.916773.

Volume 8, Number 2, 168-212, July-December 2023 https://doi.org/ 10.1344/jesb2023.8.2.39830

Anesbury, Zachary William, Danielle Talbot, Chanel Andrea Day, Tim Bogomolov, and Svetlana Bogomolova. 2020. "The Fallacy of the Heavy Buyer: Exploring Purchasing Frequencies of Fresh Fruit and Vegetable Categories." *Journal of Retailing and Consumer Services* 53:101976. doi:10.1016/j.jretconser.2019.101976.

Azad, M. J., M. S. Ali, M. R. Islam, M. Yeasmin, and K. H. Pk. 2014. "Problem Perceived by the Farmers in Vegetable Cultivation." *Journal of Experimental Bioscience* 5(2):63–68.

Cadilhon, Jean-Joseph, Andrew P. Fearne, Paule Moustier, and Nigel D. Poole. 2003. "Modelling Vegetable Marketing Systems in South East Asia: Phenomenological Insights from Vietnam." *Supply Chain Management: An International Journal* 8(5):427-441. doi:10.1108/13598540310500268.

Chalise, Sudarshan, Athula Naranpanawa, Jayatilleke S. Bandara, and Tapan Sarker. 2017. "A General Equilibrium Assessment of Climate Change–Induced Loss of Agricultural Productivity in Nepal." *Economic Modelling* 62:43–50. doi:10.1108/13598540310500268.

Chatha, I. S., and J. L. Kaul. 1982. "Study into the Price Behaviour and Marketing Margins of Potato in Punjab." *Agricultural Marketing* 20(1):21-24. https://agris.fao.org/agris-search/search.do?recordID=US201302526931.

Child, John. 2015. *Organization: Contemporary Principles and Practice*. Chichester : John Wiley & Sons.

Cronbach, Lee J. 1951. "Coefficient Alpha and the Internal Structure of Tests." *Psychometrika* 16(3):297-334. doi:10.1007/BF02310555.

Deogharia, Prakash Chandra. 2017. "Vegetable Marketing in Jharkhand: A Micro Study of Marketable and Marketed Surplus of Selected Vegetables." *Jharkhand Journal of Development and Management Studies* 15(4):7493–7505.

Devaraja, T. S. 2000. "Producer vs Consumer Price Parity for Vegetables in Rural and Urban Markets of Southern Karnataka." *Agriculture Today (India)*.

Devkota, R., and K. D. Sharma. 2014. "Conduct and Performance of Vegetable Marketing System in Kangra District of Himachal Pradesh in India." *International Journal of Agricultural Innovation and Research* 3:737–44.

Fornell, Claes, and David F. Larcker. 1981. "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error." *Journal of Marketing Research* 18(1):39–50. doi:10.1177/002224378101800104.

Gandhi, Vasant P., and N. V. Namboodiri. 2002. "Fruit and Vegetable Marketing and Its Efficiency in India: A Study of Wholesale Markets in the Ahmedabad." *Indian Institute of Management Ahmedabad, Research and Publication Department*. IIMA Working Papers WP2002-12-05

Volume 8, Number 2, 168-212, July-December 2023 https://doi.org/ 10.1344/jesb2023.8.2.39830

https://ideas.repec.org/p/iim/iimawp/wp00056.html.

Gorsuch, Richard L. 1990. "Common Factor Analysis versus Component Analysis: Some Well and Little Known Facts." *Multivariate Behavioral Research* 25(1):33–39. doi:10.1207/s15327906mbr2501_3.

Hair, Joseph F. 2009. "Multivariate Data Analysis." https://digitalcommons.kennesaw.edu/facpubs/2925/

Hair, Joseph F., Christian M. Ringle, and Marko Sarstedt. 2013. "Partial Least Squares Structural Equation Modeling: Rigorous Applications, Better Results and Higher Acceptance." *Long Range Planning* 46(1-2): 1-12. https://ssrn.com/abstract=2233795.

Hernández, Ricardo, Thomas Reardon, and Julio Berdegué. 2007. "Supermarkets, Wholesalers, and Tomato Growers in Guatemala." *Agricultural Economics* 36(3):281–90. doi:10.1111/j.1574-0862.2007.00206.x.

ICAR, Indian Council of Agricultural Research. 2001. *Report. 2001*. Accessed 19 May 2023. https://icar.org.in/files/icar2001.pdf,

Kehoe, Sarah H., Varsha Dhurde, Shilpa Bhaise, Rashmi Kale, Kalyanaraman Kumaran, Aulo Gelli, R. Rengalakshmi, Sirazul A. Sahariah, Ramesh D. Potdar, and Caroline HD Fall. 2019. "How Do Fruit and Vegetable Markets Operate in Rural India? A Qualitative Study of the Impact of Supply and Demand on Nutrition Security." *Food and Nutrition Bulletin* 40(3):369-82. doi:10.1177/0379572119846809.

Khanal, Saugat, and Mamata Shrestha. 2019. "Agro-Tourism: Prospects, Importance, Destinations and Challenges in Nepal." *Archives of Agriculture and Environmental Science* 4(4):464-71. doi:10.26832/24566632.2019.0404013.

Kiresur, V. R., K. C. Hiremath, and Sharda Kiresur. 1989. "Economics of Production and Marketing of Vegetables in Karnataka-A Comparison Between Organised and Unorganised Sectors of Marketing." *Indian Journal of Agricultural Marketing* 3(3):98.

Kumar, Shailesh, M. L. Roy, and Anirban Mukherjee. 2018. "Marketing Behaviour of Vegetable Growers in Uttarakhand Hills." *Journal of Community Mobilization and Sustainable Development* 13(1):68-74. http://krishi.icar.gov.in/jspui/handle/123456789/59133.

Larose, Daniel T. 2015. *Data Mining and Predictive Analytics*. Hoboken: John Wiley & Sons.

Leedy, Paul D., Jeanne Ellis Ormrod, and Laura Ruth Johnson. 2014. *Practical Research: Planning and Design*. Harlow: Pearson Education.

Mandal, Subhasis, D. Burman, U. K. Mandal, T. D. Lama, B. Maji, and P. C. Sharma. 2017. "Challenges, Options and Strategies for Doubling Farmers' Income in West Bengal–Reflections from Coastal Region." *Agricultural Economics Research Review* 30(conf):89-100.

doi:10.5958/0974-0279.2017.00024.6.

Mather, Charles, and Asghar Adelzadeh. 1998. "Macroeconomic Strategies, Agriculture and Rural Poverty in Post-Apartheid South Africa." *Africa Insight* 28(1–2):25-35. https://www.africabib.org/rec.php?RID=19166832X.

Midmore, David J., and Hans GP Jansen. 2003. "Supplying Vegetables to Asian Cities: Is There a Case for Peri-Urban Production?" *Food Policy* 28(1):13–27. doi:10.1016/S0306-9192(02)00067-2.

Mishra, Dibya, and Rajeev Kumar Panda. 2021. "How Delightful Is Indian Wellness Tourism? A Netnographic Study." *Advances in Hospitality and Tourism Research (AHTR)* 9(1):132-156. doi:10.30519/ahtr.784232.

Mohandoss, V., and K. V. Subrahmanyam. 1979. "Study of Fruits and Vegetables' Cold Store Units: A Comparative Performance of Different Agencies." *Indian Journal of Agricultural Economics* 34(4):179–185.

Mohapatra, Shruti, Upasana Mohapatra, and Raj Kishore Mishra. 2017. "Diversification towards Vegetable Crops: A Good Option for Doubling the Farmer's Income." *Journal of Experimental Agriculture International*, 18(4): 1-7. doi:10.9734/JEAI/2017/37379.

Mukherjee, Anirban, Premlata Singh, Rajarshi Roy Burman, Kumari Shubha, and Manik Lal Roy. 2018. "Development of Test to Measure Knowledge Level of Farmers Producer Organization Members about Improved Hill Agricultural Practices." *Journal of Community Mobilization and Sustainable Development* 14(1):57-64. https://www.indianjournals.com/ijor.aspx?target=ijor:jcmsd&volume=14&issue=1&article=011 .

Mysore, Sudha. n.d. "Estimating Marketing Efficiency Of Selected Horticultural Commodities along Different Supply Chains." *Estimation of Marketing Efficiency of Horticultural Commodities under Different Supply Chains in India*, 120-167. https://krishi.icar.gov.in/jspui/bitstream/123456789/806/1/new.pdf#page=120.

"Report of the National Commission on Agriculture, 1976." n.d. INDIAN CULTURE. Accessed May 19, 2023. http://indianculture.gov.in/reports-proceedings/report-national-commission-agriculture-1976-5.

Nedumaran, G. 2020. "E-Agriculture and Rural Development in India." Available at SSRN. doi: https://dx.doi.org/10.2139/ssrn.3551994.

Negi, Saurav, and Neeraj Anand. 2015. "Cold Chain: A Weak Link in the Fruits and Vegetables Supply Chain in India." *IUP Journal of Supply Chain Management* 12(1):48.

Volume 8, Number 2, 168-212, July-December 2023 https://doi.org/ 10.1344/jesb2023.8.2.39830

Nunnally, Bernstein, and I. R. Bernstein. 1994. *Psychometric Theory*. New York: Oxford University Press.

Nunnally, Jum C. 1978. "An Overview of Psychological Measurement." In *Clinical Diagnosis of Mental Disorders: A Handbook*, edited bya B.B. Wolman, 97–146. doi:10.1007/978-1-4684-2490-4_4.

O'Leary-Kelly, Scott W., and Robert J. Vokurka. 1998. "The Empirical Assessment of Construct Validity." *Journal of Operations Management* 16(4):387–405. doi:10.1016/S0272-6963(98)00020-5.

Panda, Rajeev Kumar and Sreekumar. 2012. "Marketing Channel Choice and Marketing Efficiency Assessment in Agribusiness." *Journal of International Food & Agribusiness Marketing* 24(3):213–30. doi:10.1080/08974438.2012.691812.

Parthasarathy, P. B., V. Rammohan, and P. K. Hemachandra. 1988. "Price Behavior of Vegetables in Hyderabad Markets." *Indian Journal of Agricultural Marketing* 2(1):124–85.

Ramamurthy, K., V. Rajagopalan, and S. Varadarajan. 1984. "Structure, Conduct and Performance of Tomato Marketing in Coimbatore." *Indian Journal of Marketing* 14(5).

Sarkar, Barsha, Debabrata Basu, Hiralal Jana, and Aditya Sinha. 2021. "Analysis of Marketing Efficiency of Prominent Vegetable Marketing Channels in Nadia District of West Bengal." *Journal of Community Mobilization and Sustainablity Development* 16(1):88-96. https://www.indianjournals.com/ijor.aspx?target=ijor:jcmsd&volume=16&issue=1&article=014 .

Sen, C., and R. P. Maurya. 1998. "Marketing of Vegetables in Sewapuri Block." *Agricultural Marketing Delhi* 41:29–31.

Singh, Ritesh Kumar, Michiel Aernouts, Mats De Meyer, Maarten Weyn, and Rafael Berkvens. 2020. "Leveraging LoRaWAN Technology for Precision Agriculture in Greenhouses." *Sensors* 20(7):1827. doi:10.3390/s20071827.

Singh, Samsher, and S. K. Chauhan. 2004. "Marketing of Vegetables in Himachal Pradesh." *Agricultural Marketing-Delhi* 47(3):5.

Singh, Sukhpal. 2019. "Re-Organising Agricultural Markets for Doubling Farmer Incomes in India: Relevance, Mechanisms and Role of Policy." *Indian Journal of Agricultural Economics* 74(3):390–407. https://isaeindia.org/wp-content/uploads/2020/11/07-Article-Sukhpal-Singh.pdf.

Singla, Gisha, Kartikey Chaturvedi, and Pankaj Preet Sandhu. 2020. "Status and Recent Trends in Fresh-Cut Fruits and Vegetables." In *Fresh-Cut Fruits and Vegetables*, edited by Mohammed Wasim Siddiqui, 17–49. London: Elsevier.

Volume 8, Number 2, 168-212, July-December 2023 https://doi.org/ 10.1344/jesb2023.8.2.39830

Singla, Naresh. 2017. "Innovations in Agricultural Marketing in India: A Case Study of Supermarket in Punjab." In *Financing Agriculture Value Chains in India: Challenges and Opportunities*, edited by Gyanendra Mani, P.K. Joshi and M.V. Ashok, 109–23. doi:10.1007/978-981-10-5957-5_6.

Somashekhar, I. C., J. K. Raju, and H. Patil. 2014. "Agriculture Supply Chain Management: A Scenario in India." *Research Journal of Social Science and Management* 4(07):89–99.

Sood, A. K., and B. M. Singh. 1993. "Prevalence of Bacterial Wilt of Solanaceous Vegetables in the Mid-Hill Subhumid Zone of Himachal Pradesh, India." In *Aciar Proceedings*, 358–358. Australian Centre For International Agricultural Research.

Subrahmanyam, K. V. 1982. "Economics of Production and Marketing of Important Vegetable in Karnataka." *The Lal-Baugh* 27(2):7–16. https://agris.fao.org/agris-search/search.do?recordID=IN8203473.

Subrahmanyam, KV. n.d. "Marketing of Horticultural Crops in India." *Encyclopaedia of Agricultural Marketing* 8: 1.

Sureshchandar, G. S., Chandrasekharan Rajendran, and R. N. Anantharaman. 2002. "The Relationship between Service Quality and Customer Satisfaction–a Factor Specific Approach." *Journal of Services Marketing* 16(4):363-379. doi:10.1108/08876040210433248.

Tilman, David. 2001. "Functional Diversity." *Encyclopedia of Biodiversity* 3 (1): 109–20. https://www.cedarcreek.umn.edu/sites/default/files/public/t1797.pdf

Yadava, Thimmaraja G., and Haradagere Siddaramaiah Jayanna. 2017. "A Spoken Query System for the Agricultural Commodity Prices and Weather Information Access in Kannada Language." *International Journal of Speech Technology* 20:635–44. doi:10.1007/s10772-017-9428-y.

Yankson, Paul WK, Alex Barimah Owusu, and Stephen Frimpong. 2016. "Challenges and Strategies for Improving the Agricultural Marketing Environment in Developing Countries: Evidence from Ghana." *Journal of Agricultural & Food Information* 17(1):49–61. doi:10.1080/10496505.2015.1110030.

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## Appendix

### Questionnaires

**Background Information:**

Name of respondent ……

Name of village…….....

Name of Gram Panchayat & Block…….

Contact Phone Number……

**A. Demographic Details** (Fill in the relevant information or where required mark with an ✓)

| Family Information (Name) | A1. Gender | A2. Age | A3. Marital status | A4. Education | A5. Income per month | A6. Any Other Occupation |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

A7. Household Size (No. of family members)……

A8. Assets Information …….

A.9. Since how long have you been engaged in farming of vegetables? ……

A.10 Indicate the number of employees who engage in vegetable farming work in your firm

| Full-time employees | Part-time employees | Unpaid family members | Others | Total |
|---|---|---|---|---|
| | | | | |

A. 11. Where do you get money (capital) to invest in vegetable farming?

| Source | Amount per season |
|---|---|
| Borrowing from bank/Cooperatives | |
| Borrowing from friends | |
| Borrowing from your family | |
| Your own saving | |
| State aid/ Farmers Schemes | |
| Other (such as:) | |

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**B. Land and Farming**

B. 1. Mention the type of vegetable farming you do and the amount of land in use?

| Total Land holding: | |
|---|---|
| Vegetables *(List the vegetables you grow)* | Amount of land for a particular crop |
| 1. | |
| 2. | |
| 3. | |
| 4. | |
| 5. | |

B. 2. Please tick the land tenure system on the land in use and how you acquired it? Tick..

| Land tenure system: | | |
|---|---|---|
| Owned | Rent | Lease |
| If you own the land, how did you acquire it? | | |
| Bought | Inherited | Other. Specify |

B. 3. If you do not own land, are you satisfied with the arrangement on the land that you are using? Explain

……
……

B. 4. Where do you get the production inputs that you use?

| List input | Place you get it | Distance (km) | Reason for using the market |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

B. 5. How do you cultivate your land? (Tick as appropriate)

| | Own | Borrowed | Hired | Cost per Harvesting |
|---|---|---|---|---|
| Tractor | | | | |
| Animal drawn | | | | |
| Manual | | | | |
| Other (Specify) | | | | |

B. 6. Indicate the average production inputs that you use per harvesting.

| Input | Amount Per Acre | Cost Per Acre |
|---|---|---|
| Treated Seeds | | |
| Fertilizer | | |
| Pesticides | | |
| Insecticides | | |
| Other (*Specify)* | | |

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B.9. How have you acquired the knowledge of farming for vegetables business? Tick…

| | |
|---|---|
| Experience | |
| Education | |
| Observation | |

B. 10. Have you attended any training programs to learn about farming practices?

| | |
|---|---|
| Many | |
| Few | |
| Never | |

B. 11. What specific training do you need at your farm?

| Areas | Tick | Reason why you think it is important |
|---|---|---|
| Marketing Related | | |
| Production Related | | |
| Finance & Budgeting Related | | |
| Record Keeping Related | | |
| Others. Please specify | | |

B. 12. Do you keep any Vegetable business related information? If Yes. Which type tick?

| | Tick | |
|---|---|---|
| Sales Related | | |
| Cost Related | | |
| Market price Related | | |
| Profit Related | | |
| Others. Specify | | |

B.13 Mention the average profit per harvesting from the vegetable farming business.

| Crop | Amount of Land | Human Labour cost | Other Labour cost | Total cost of cultivation | Gross Return in quantity |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

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B.14 Mention the total vegetables available as marketable surplus after various stages.

| Vegetables | Total Production in quintals | Quantity used for family and self consumption | Quantity given as wage payment, gift etc | Loss of produce during handling |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

B.15 Mention the average production cost, marketing cost and margin in vegetables.

| Vegetables | Production cost in Rs/ quintals | Marketing Cost in Rs./Qtl | Marketing Margin in Rs/Qtl |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

B.16. What are the shares of other costs in marketing cost of the vegetables you grow with.

| Vegetables | Farmer's Marketing Cost per quintal | | |
|---|---|---|---|
| | Transport/Loading/ Unloading | Commission | Total |
| | | | |
| | | | |
| | | | |
| | | | |

## C. Marketing related information

Rate the market related information based on the following questions

| | | | | | |
|---|---|---|---|---|---|
| How will you rate the overall Market infrastructure? | Not Satisfactory | Satisfactory | OK | Good | *Excellent* |
| How will you rate the storage facility provided at the market place to sell your produce? | Not Satisfactory | Satisfactory | OK | Good | *Excellent* |
| How will you rate the cold storage facilities provided to you? | Not Satisfactory | Satisfactory | OK | Good | *Excellent* |

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| | | | | | |
|---|---|---|---|---|---|
| How will you rate the dry storage facilities provided to you? | Not Satisfactory | Satisfactory | OK | Good | *Excellent* |
| How is the grading or standardizing facilities in the market? | Not Satisfactory | Satisfactory | OK | Good | *Excellent* |
| How will you rate the overall road quality? | Not Satisfactory | Satisfactory | OK | Good | *Excellent* |
| Do you feel safe while driving/ riding? | Very dangerous | Not safe | OK | Safe | *Very safe* |
| How will you rate the traffic control measures? | Not Satisfactory | Satisfactory | OK | Good | *Excellent* |
| Do you agree that the road reduces your transportations time? | Not at all | Sometimes | Its situational | Often | *Every time* |
| How will you rate the transportation facilities provided to you? | Not Satisfactory | Satisfactory | OK | Good | *Excellent* |
| How will you rate the road condition specially during rainy seasons? | Not Satisfactory | Satisfactory | OK | Good | *Excellent* |
| Do you get market information about your product in time? | Not at all | Sometimes | Its situational | Often | *Every time* |
| Do you get to know how much of your product will be in demand before going to sell it? | Not at all | Sometimes | Its situational | Often | *Every time* |
| Do you get to know where to sell it your product for better price and return? | Not at all | Sometimes | Its situational | Often | *Every time* |
| Do you get to know at what price to sell your product for more profit? | Not at all | Sometimes | Its situational | Often | *Every time* |
| How will you rate the grading process of fresh vegetables? | Not Satisfactory | Satisfactory | OK | Good | *Excellent* |
| How will you rate the sorting process of fresh vegetables? | Not Satisfactory | Satisfactory | OK | Good | *Excellent* |

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| | | | | | |
|---|---|---|---|---|---|
| How will you rate the cutting process of fresh vegetables? | Not Satisfactory | Satisfactory | OK | Good | *Excellent* |
| How will you rate the packing process of fresh vegetables? | Not Satisfactory | Satisfactory | OK | Good | *Excellent* |
| How will you rate the overall processing and grading technology used on your produce? | Not Satisfactory | Satisfactory | OK | Good | *Excellent* |
| How will you rate the training programs provided to you? | Not Satisfactory | Satisfactory | OK | Good | *Excellent* |
| How far is the training workshop located from your home? | Very far | Far | Not that far | Queit near | *Very near* |
| Do you get information on the training programs organized by the Government? | Not at all | Sometimes | Its situational | Often | *Every time* |
| How do you evaluate yourself in the agricultural technology know-how? | Very poor | Poor | OK | Good | *Excellent* |
| How much has technology helped you in increasing your produce quality and quantity? | Not at all | Sometimes | Its situational | Often | *Every time* |
| How would you rate the storage facilities provided in your region? | Not Satisfactory | Satisfactory | OK | Good | *Excellent* |
| Do storage facilities help you in increasing your vegetables lifespan? | Not at all | Sometimes | Its situational | Often | *Every time* |
| How often do you participate in group activities? | Not at all | Sometimes | Its situational | Often | *Every time* |
| How helpful is group participation? | Not at all | Sometimes | Its situational | Often | *Every time* |
| Do you prefer group participation to sell your products? | Not at all | Sometimes | Its situational | Often | *Every time* |

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| | | | | | |
|---|---|---|---|---|---|
| Does group participation help in getting better price for your produce? | Not at all | Sometimes | Its situational | Often | *Every time* |
| How often do you get a guaranteed market to sell your products? | Not at all | Sometimes | Its situational | Often | *Every time* |
| Does guaranteed market offer you better price? | Not at all | Sometimes | Its situational | Often | *Every time* |
| Does guaranteed market helps in quick selling of your product? | Not at all | Sometimes | Its situational | Often | *Every time* |
| Does guaranteed market reduce extra cost such as transportation, storage etc.? | Not at all | Sometimes | Its situational | Often | *Every time* |
| Does guaranteed market help you in reducing wastage of produce? | Not at all | Sometimes | Its situational | Often | *Every time* |
| Does your own land help you in better produce? | Not at all | Sometimes | Its situational | Often | *Every time* |
| *Does your own land help in getting you better price?* | *Not at all* | *Sometimes* | *Its situational* | *Often* | *Every time* |

**D. Risk in vegetable business**

Rankthe risk in vegetable business a scale of 1 to 5 ( 5- most important/1-least imp.)

| | **5** | **4** | **3** | **2** | **1** |
|---|---|---|---|---|---|
| Costly fuels (Petrol/ Diesel) | | | | | |
| Lack of/ poor electricity supply | | | | | |
| Water-scarcity/ Inadequate water supply | | | | | |
| Lack of irrigation facilities | | | | | |
| Lack of new varieties/ HVY seeds | | | | | |
| Timely unavailability- fertilizer/pesticide/seed | | | | | |
| Insufficient/shortage of seed | | | | | |
| Poor/Little education | | | | | |
| Insufficient/lack of training | | | | | |
| Lack of storage facilities (cold chain) | | | | | |

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| | | | | | |
|---|---|---|---|---|---|
| High post-harvest losses | | | | | |
| Lack of capital | | | | | |
| Lack of farm credit/financial institution | | | | | |
| Land shortages | | | | | |
| Land fragmentation | | | | | |
| Weak research and extension linkages | | | | | |
| Inadequate/ unavailability labour | | | | | |
| Family conflict & violence | | | | | |
| Poor healthcare | | | | | |
| Fallen underground water | | | | | |
| Seasonality/ weather dependency | | | | | |
| Insufficient rainfall/drought/delayed rainfall | | | | | |
| Flood/high rainfall | | | | | |
| Lack of canal/tube-wells | | | | | |
| Deterioration of water quality | | | | | |
| Infertile land /poor soil quality | | | | | |
| Climate changes | | | | | |
| Low yield or productivity | | | | | |
| High cost of production | | | | | |
| Expensive inputs | | | | | |
| Low quality seed | | | | | |
| Damage by pests and disease | | | | | |
| Lack of technical knowledge in production etc. | | | | | |
| High post-harvest losses | | | | | |
| Lack of processing techniques | | | | | |
| Infrastructural bottlenecks | | | | | |
| Traditional methods of farming | | | | | |
| Over-cultivation | | | | | |
| High perishability of horticultural produce | | | | | |
| Low price for the products | | | | | |
| High marketing costs | | | | | |
| Lack of proper pricing system | | | | | |
| Lack of coordination among producers | | | | | |
| Lack of marketing centres/ institutions | | | | | |
| Exploitation by middlemen | | | | | |
| Lack of transparency in marketing system | | | | | |
| High processing costs | | | | | |
| Poor product handling& packaging | | | | | |
| Lack of market information | | | | | |
| Lack of marketing infrastructures | | | | | |
| *Lack of markets to absorb the production* | | | | | |

E. Problems & Issues in vegetable business

Rank the following issues in vegetable business in a scale- 1 to 5 (5-most imp/1-least imp)

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| **E.1. PRODUCTION RELATED:** | **5** | **4** | **3** | **2** | **1** |
|---|---|---|---|---|---|
| Lack of information regarding horticultural varieties and package of practices | | | | | |
| Non-availability of manpower (mechanical or manual) | | | | | |
| Non-availability of finance/credit | | | | | |
| Non-availability of timely inputs (seeds, fertilizer, pesticides etc) | | | | | |
| Low level of crop production | | | | | |
| Non-availability of irrigation from government sources | | | | | |
| Problems of insect, pests and diseases | | | | | |
| Lack of synchronous maturity in horticultural crops | | | | | |
| Problems of theft of produce | | | | | |
| **E.2. MARKETING RELATED:** | | | | | |
| Non-availability of cheap transportation | | | | | |
| Lack of information regarding standardization and grading at grower level | | | | | |
| Poor infrastructure at market place | | | | | |
| Unfair deductions by marketing agents | | | | | |
| Non-availability of storage facilities at village/producer level | | | | | |
| Non-availability of market-related information regarding prices of produce & their trends at producer level | | | | | |
| Too much bargaining regarding prices of produce | | | | | |

E.3. Suggest ways in which such problems/issues can be addressed!

……

……

……

**Thank You**