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INTERNATIONAL JOURNAL
OF INNOVATIVE AND APPLIED RESEARCH

RESEARCH ARTICLE

Article DOI: 10.58538/IJAR/2053

DOI URL: <http://dx.doi.org/10.58538/IJAR/2053>

PEST ANALYSIS ON THE VALUE CHAIN OF PRODUCE FROM GROWER TO MARKET: CHALLENGES AND OPPORTUNITIES

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Manuscript Info

Manuscript History

Received: 05 October 2023

Final Accepted: 08 November 2023

Published: November 2023

Keywords:

Agriculture, Pakistan, Market
Accessibility, Supply Chain
Management, Value Chain. Price
Volatility, PEST Analysis

Abstract

Agriculture serves as the primary means of subsistence for a significant portion of Pakistan's population, as well as in several other nations currently engaged in economic development. The process of establishing a marketing system in Pakistan entails various challenges as well as potential opportunities. The implementation of this solution holds the potential to enhance market accessibility, reduce post-harvest losses, and establish connections between rural farmers and a broader customer base. These various factors collectively contribute to enhancing the overall efficiency of agricultural supply chains. The comprehensive supply chain management (SCM) process encompasses a value chain that recognizes and addresses drawbacks, factors related to value addition, and liability factors. This empowers retailers to effectively manage their supply chain. The research encompasses the methodology employed to analyze both traditional markets and larger outlets. The analysis incorporates the Political, Economic, Social, and Technological dimensions to assess the various factors impacting both markets. The findings indicate that the traditional market offers competitive pricing with occasional price fluctuations. However, larger outlets exhibit various factors that contribute to increased price volatility within the system, necessitating a more robust value supply chain. Based on the research findings, it can be concluded that both markets have their own set of advantages and disadvantages.

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Introduction: -

As in many developing nations, agriculture is the main source of subsistence for a large portion of Pakistan's population. This dependency is most evident in rural areas, where most of the population lives. In rural areas, low-level producers are becoming more common in agriculture. Despite their limited resources and sometimes growing crops for food, small-scale farmers produce 90% of the nation's agricultural output. Even though most low-level farmers want to feed their families, many occasionally engage in commercial farming to increase their profits. These farmers' ability to meet their basic needs and contribute to Pakistan's agricultural industry is shown by their delicate balance between subsistence and commercial farming (Mau, 2002).

The predominance of low-level growers highlights Pakistan's agrarian economy and the challenges it faces in modernizing its agricultural industry. Although these small-scale farmers play an important part in the production of food and the maintenance of rural lifestyles, the fact that they have restricted access to resources, technology, and markets can be a barrier to the industry's overall development and productivity. It is essential, for the sake of alleviating poverty and maintaining food security in the nation, that efforts be made to assist and elevate these farmers through measures such as greater access to financing, better agricultural methods, and market connections. Addressing the requirements of Pakistan's rural agricultural communities is still of the utmost importance in terms of the country's efforts to achieve long-term economic growth and sustainable development, even though Pakistan is still struggling with the intricate dynamics at play between subsistence and commercial agriculture (Naseer et al., 2016). The conventional marketing architecture that was once the dominant form in Pakistan has been supplanted as the main form of marketing for agricultural goods that are grown in rural regions. This shift has taken place in the context of the country of Pakistan. This shift may be due to the extensive network of interactions between numerous stakeholders, such as commission agents and market intermediaries, who engage with farmers throughout the supply chain, from initial suppliers to end customers. This new system involves several intermediaries who source, transport, and distribute agricultural goods, unlike the traditional model in which farmers sold directly in local markets. Supply and consumer prices are among these duties. Commission agents connect producers and buyers, simplifying the transaction and ensuring smooth distribution. Pakistan's agricultural commerce is more complex and linked, and market actors work to improve rural agricultural goods distribution, changing marketing dynamics. Pakistani agricultural commerce is complex and interconnected (Oesterreich et al., 2016).

Internationally advanced practices must be implemented in F&V storage, packaging, handling, and transportation to improve the chain. The entire SCM process is a value chain that addresses drawbacks, value addition, and liability factors, empowering retailers to have an effective supply chain. The huge price differences of fresh fruits and vegetables in street side markets versus supermarkets cause many issues and raise many questions about the agriculture market's supply chain structure, so it's important to understand the F&V supply chain in Pakistan and the intermediaries involved.

The statement highlights Pakistan's lack of fresh fruit and vegetable supply chain management (SCM) research. Balaji and Arshinder's 2016 study shows that most F&V studies focus on production and marketing. This indicates that this field has traditionally studied fruit and vegetable cultivation and market distribution. The declaration emphasizes the need for fresh fruit and vegetable SCM research. Supply chain management controls product flow from producers to consumers. This flow of goods management includes distribution, storage, logistics, and transportation. Local customers are disadvantaged by the price difference between traditional marketplace and large outlet fruit and vegetable products. Middlemen and other intermediaries cause huge price differences. Pakistan's economy relies heavily on fruits and vegetables. All of Pakistan's F&V supply chain is plagued by post-harvest damages and waste from various factors. Meanwhile, the root causes of issues and challenges may guide supply chain planning and execution. Growers now sell directly to small retailers. Experienced growers are now using this method widely. They save a lot on transportation and get mandi prices at their doorsteps by doing this. Due to better prices, large farmland growers (zamindar) avoid giving their prized produce to local collectors. They also cut fruit and vegetable grading and packaging costs.

Background

Lara and Wassick (2023) predict supply chain management in different markets. This paper only discusses e-commerce but suggests new supply chain management trends, challenges, and opportunities. Most trending e-commerce processes in global supply chain industries face challenges. Therefore, supply chain management tools need machine intelligence to address new industry and market scalability and integrity issues. Integration and communication aid supply chain management decision-making and market price reduction. Dutta (2021) describes how one of the world's most important value chains was evaluated. Effective supply chain management and decision-making require system identification. Many industries prioritize global value chains. Assess supply chain management challenges and trends before adopting the value chain process. De Santana, V. F., Chebabi, R. Z., & Millen, D. (2023) examine the challenges and opportunities of equal wealth access for Brazilian small farmers. Major cost factors like bigger markets making more profit than Brazilian fruit and vegetable growers are highlighted. Authors noted that farmers need help increasing fruit and vegetable productivity, which lowers prices. The authors suggested improving banking-farmer interactions to boost Brazilian farmers' productivity and return. Alternative: give small farmers equitable rural credit for fruit and vegetable growth. M. Escobar-Anel and Y. Jiao examine the supply chain management sustainability-return tradeoff (2023). To attract investors without affecting

market prices, the analysis includes green supply chain management. Analysis meets investors' demand for higher returns and sustainable trade-offs.

Researchers (Nivievskiy, O., Iavorskyi, P., & Donchenko, O., 2023) suggested analyzing small farmers' roles in growing the market. Instead, address small farmer issues. Supporting farmers' development and starting multilevel programs for their sustainability is the solution. For sustainable small-scale farming development and price reduction across Ukraine, the authors focus on small farmers and rural economies. Bekolli, Guardiola, & Meca (2023) recommend analyzing supply chain profit allocation. Finally, it examines market-wide customer cooperation and compensation. It discusses market cooperation to improve price communication and stability. It will also aid agricultural supply chains in profit allocation.

Analysts (Nozari, H., Sadeghi, M. E., & Najafi, S. E., 2022) discussed IOT digital supply chain system challenges. In contrast, quantitative analysis of specific challenges identified digital supply chain factors. This paper examines IOT-based digital supply chain implementation issues. Modern technological infrastructure is emphasized. In light of market security concerns, authors recommend IOT-based digital security. D. Bagga, A. Joshi, and N. Subramanian (2023) describe transparent and traceable food supply chain management. Trackable food supply chains benefit customers. But then again it uses a product-based system from raw materials to finished goods from different markets. It shows how transparency reduces food supply chain fraud and benefits customers. It detects supply chain management fraud in different markets using blockchain. Researchers (Mungo, L., & Moran, J. 2023) found firm market networks. It shows market correlation. But market growth and production market communication happen. Thus, rates drop, benefiting customers. Scholars study market firm growth rates and networks to reduce market price differences. Next, it discusses how models can reconstruct supply chain network topology, firm structure, and relationships. To control supply chain prices, Li, J. A., Wang, L., Xie, W. J., & Zhou, W. X. (2023) define the economy. However, it identifies key supply chain management structures across markets. International supply chain and trade network structural strength depends on it. Markets and international trade networks dominate the paper. It enhances market price transparency. Trade network structural robustness and clustering coefficients are also covered. Supply chain management needs sustainability analysis, according to Aschenbruck, Esterhuizen, Padmanabha, and Streif (2020). The Barriers model links it to the food production system in the supply chain. It controls food and vegetable market factors throughout.

Soares, N., Braga, R., David, J. M., Siqueira, K., & Stroele, V. (2022) identify supply chain management process market factors using social networks. Later, systematic mapping investigates market social networks and supports agricultural growers. Social media monitoring and data analysis categorize agriculture business solutions in the system. The authors emphasize networks to implement traditional decision-making methods in supply chain management systems. Supply chain management re-engineering requires business processes (Belkhatir, M., Bala, S., & Belkhatir, N., 2020). A case study on expanding the Halal market without price differences is also examined. However, the Halal industry supply chain management processes are limited and difficult, making it easier to produce low-cost fake Halal products. The author emphasizes structural and formal supply chain networks for market monitoring to determine product quality. This paper then discusses business process support and their network with industry standards to improve market communication. Sharma et al. (2022) suggest multi-modal data technology to improve crop production and market stability. The paper emphasizes AI-based market and supply chain transparency. The best AI-based crop production method models DNA as natural language. Integrating multiple factors, AI-based models can predict market demand and price better than traditional models, according to the study. Supply chain integration and flexibility improve market-wide supply chain management, according to Khanuja and Jain (2022). One of the best market business practices. The model also suggests more research on supply chain integration and flexibility to improve market performance and customer satisfaction. This model may improve global competitive market performance, according to the authors.

Methodology: -

This section discusses each objective's research methodology. The price volatility of two Hyderabad markets—wholesale and traditional, where fruits and vegetables were sold for a long time—is the basis of this research. The second and most popular among Hyderabad's middle- and upper-class residents is the Premium market, which includes the National Market, Dawood Mart, and Marhaba Mart. Price, influenced by different factors, distinguishes the two markets. The survey designed to collect market data analyzes these factors. In the survey, participants were asked their name, age, experience, role/position, how they process items, how they set prices, challenges during product sales or purchases, middlemen involvement, price-setting factors, market differences, and participant strategies. However, market participants and a maximum of 25 samples were interviewed for analysis. The data was

analyzed using MS Excel to create a framework for Supply Chain Management System implementation in traditional markets to reduce price volatility. The study analyses the PEST analysis of both markets after supply chain management, which may reduce price volatility.

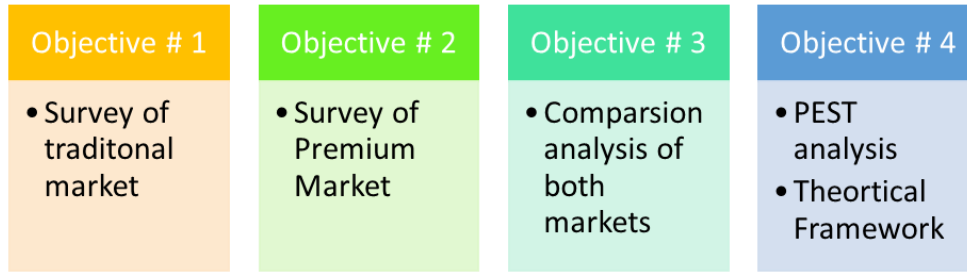


Figure 1:- Research Methodology.

Results and Analysis: -

Traditional Market Analysis

The survey has illustrated that most of the participants in the traditional marketplace are vendors who tend to have direct relations with the farms to purchase and sell in the market. After that, the vendors often tend to purchase from wholesalers, then local farmers and wholesalers. While the percentage of vendors purchasing from local farmers is only 8%.

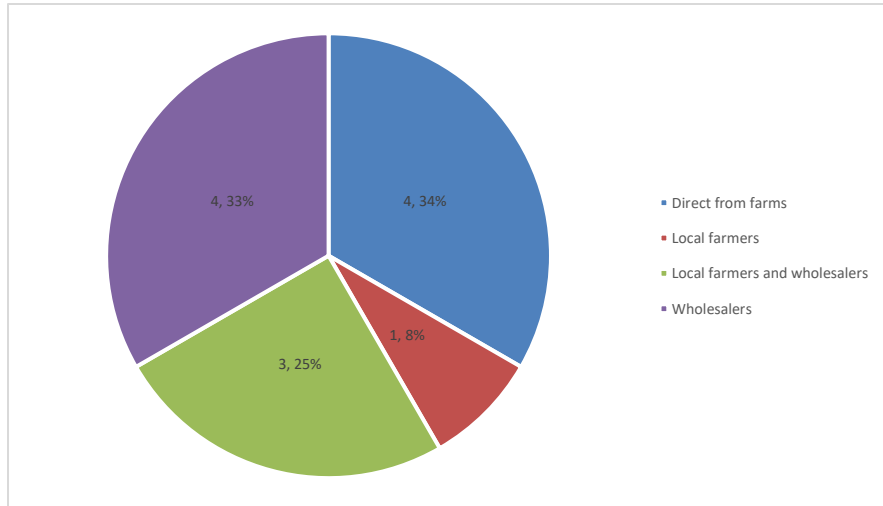


Figure 2: - Sourcing processes of traditional marketplaces.

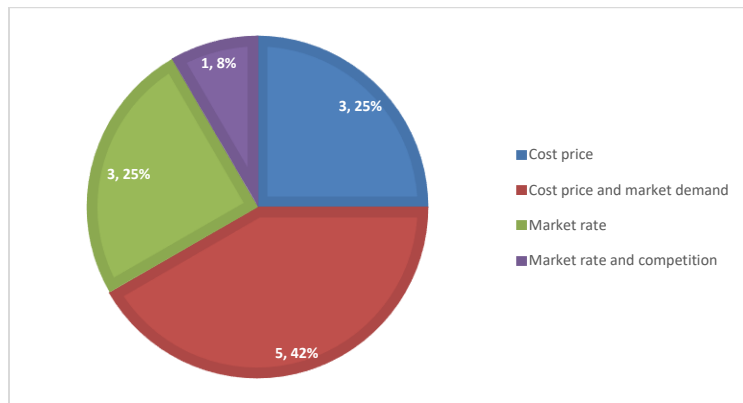


Figure 3: - Pricing Determination Methods.

Figure 3 shows that there are several methods to determine and estimate the price of goods and items in the traditional market. It is evident from the above figure that one of the most used methods to determine the retail price

of the goods is market rate and competition because it tends to give stability in the price in the market and profit as well for vendors and sellers. After that, cost price, cost price, and market demand hold the same percentage while market rate and competition are only 8%.

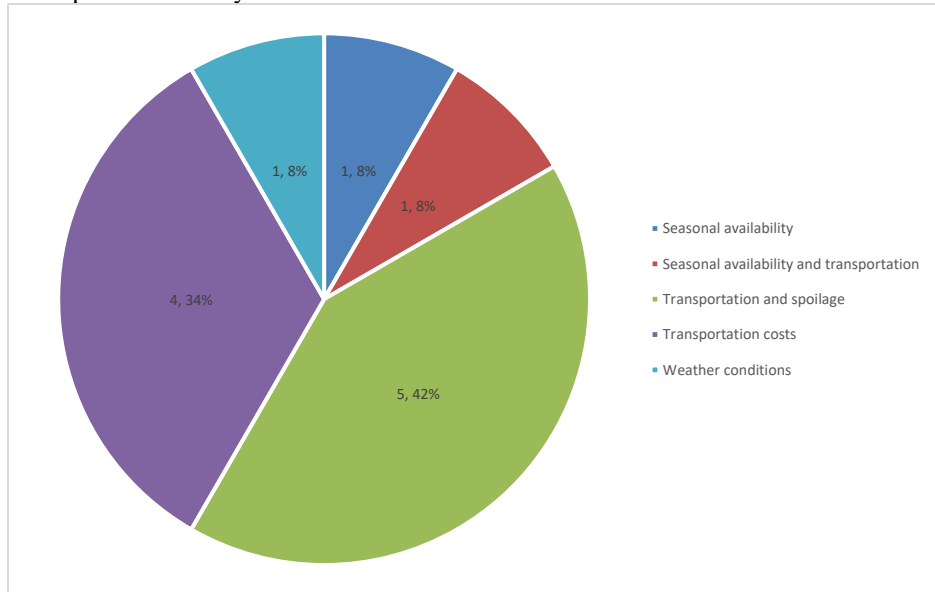


Figure 4: - Challenges faced by participants during supply chain processes.

Figure 4. shows the number of challenges faced during the supply chain management process in a traditional marketplace. It can be observed that transportation and spoilage are some of the greatest challenges in the traditional marketplace. And after that, the second great challenge is transportation costs. Seasonal availability and weather conditions each account for 8% of the overall challenges, and neither pose significant obstacles.

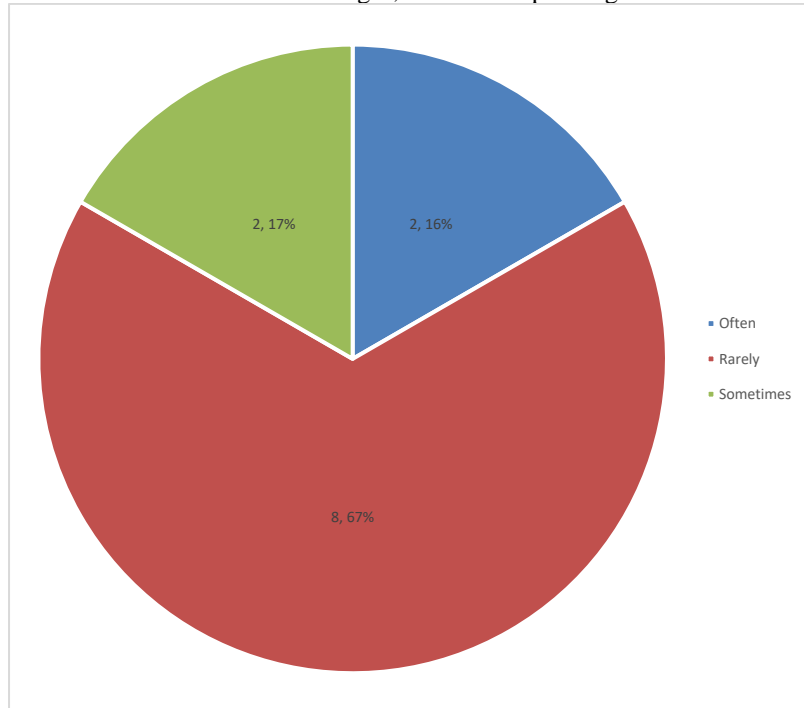


Figure 5: - Price Volatility Frequency.

The above figure shows that the frequency of violation in price stability across the traditional marketplace is rare. So, it can suggest that the traditional marketplace contains stability in prices and people have more faith compared to the other market.

Larger Outlets

This section deals with the larger outlets of Hyderabad city.

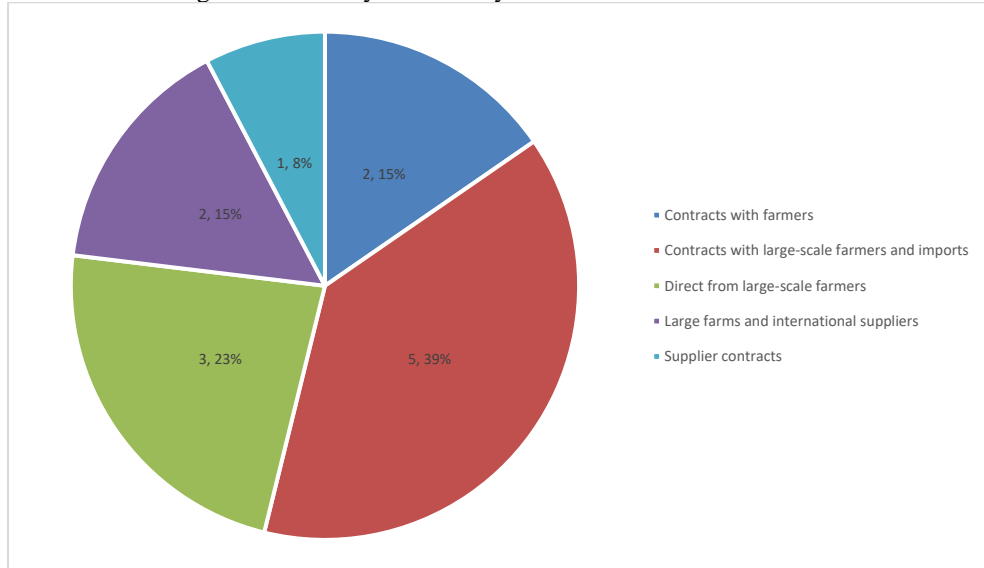


Figure 6: - Sourcing Process.

The above pie-chart in Figure 6 shows the different methods of sourcing process which are used by participants to supply chain fruits and vegetables at their desired place in larger outlets in Hyderabad city. It describes that there are methods that are very commonly used by the larger outlets such as contracts with large-scale farmers and imports and it is because sellers used to have more profit by using this method.

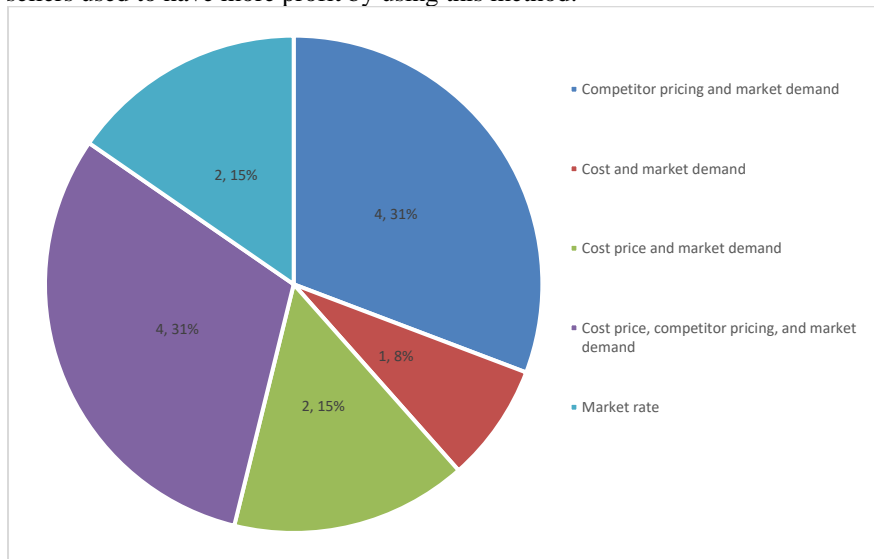


Figure 7: - Price determination factors of larger outlets.

Figure 7. shows that there are several methods to determine and estimate the price of goods and items in the larger outlets of Hyderabad city. It is evident from the above figure that one of the most used methods to determine the retail price of the goods is competitor pricing, and market demand because it tends to give stability in the price in the market and profit.

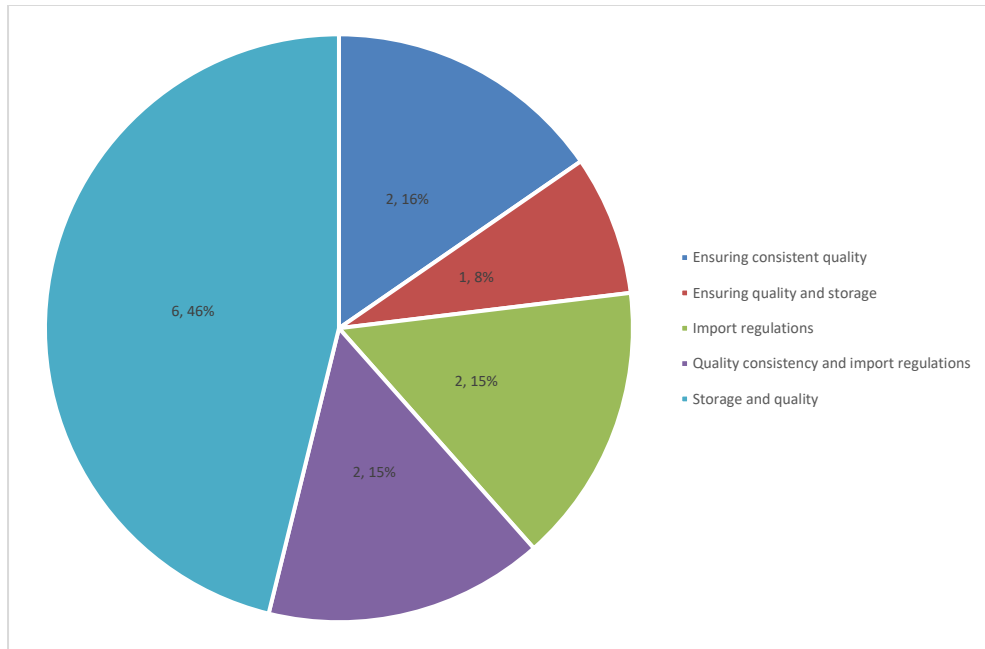


Figure 8: - Challenges faced by the larger outlets.

The above figure shows the number of challenges faced during the supply chain management process in larger outlets in Hyderabad city. Storage and quality is one of the main issues in larger outlets. Then ensuring consistent quality, and import regulations are two main challenges faced by the larger outlets.

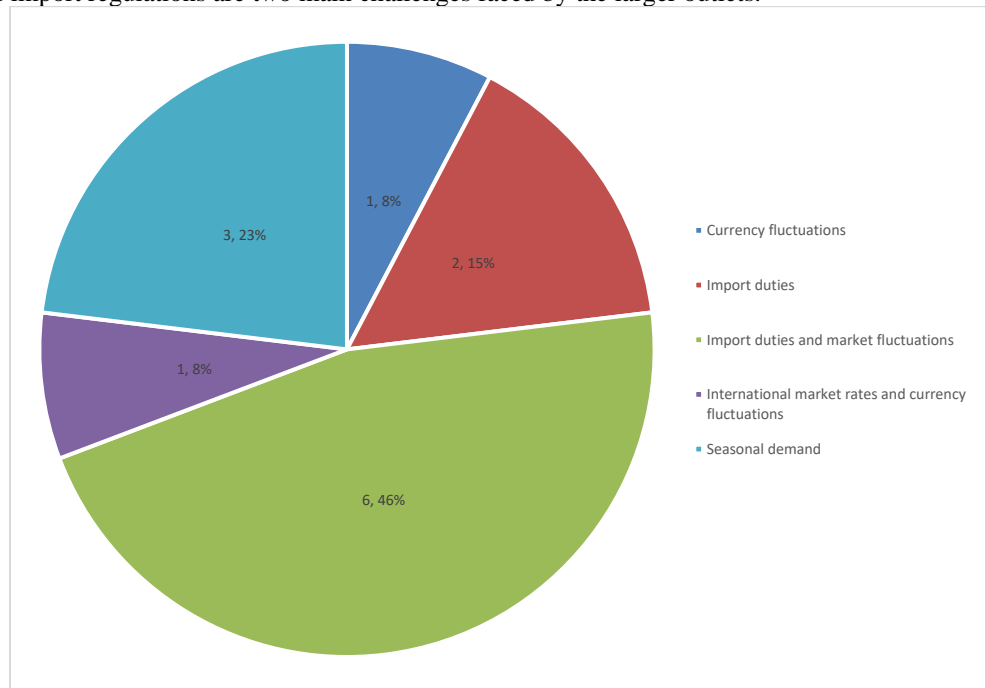


Figure 9: - Factors Contributing to Volatility.

The above figure describes that the factors that are contributing to the violation of price in larger outlets are import duties and market fluctuations which can be changed according to the situation of several factors. The second factor contributing to volatility is the seasonal demand, then import duties, while currency fluctuations and international market rates each account for 8% of the contribution.

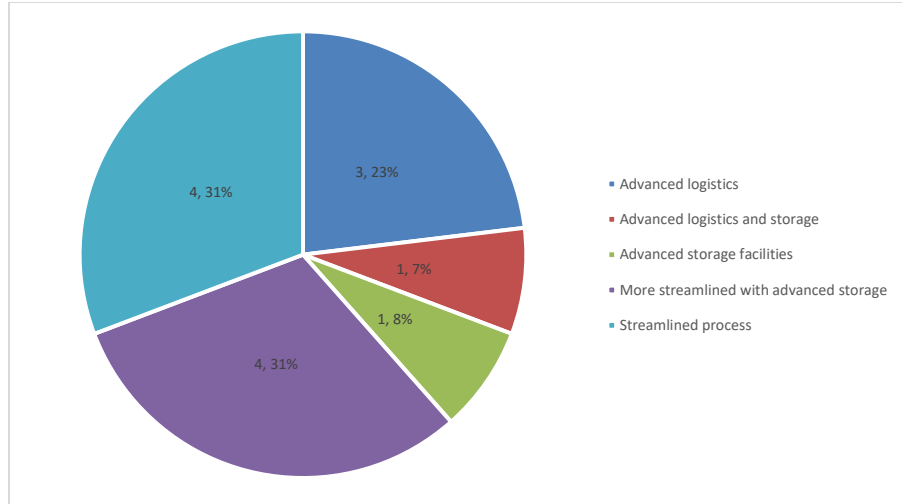


Figure 10: - Differences across the markets.

Figure 10 shows there are differences available in larger outlets compared to the traditional markets. The above analysis identifies that the larger outlets system has advanced logistics, advanced logistics storage, advanced storage facilities, streamlined with advanced storage system and streamlined processes in larger outlets which are compared to the traditional markets. So, the above identified factors and facilities are not available in the traditional markets.

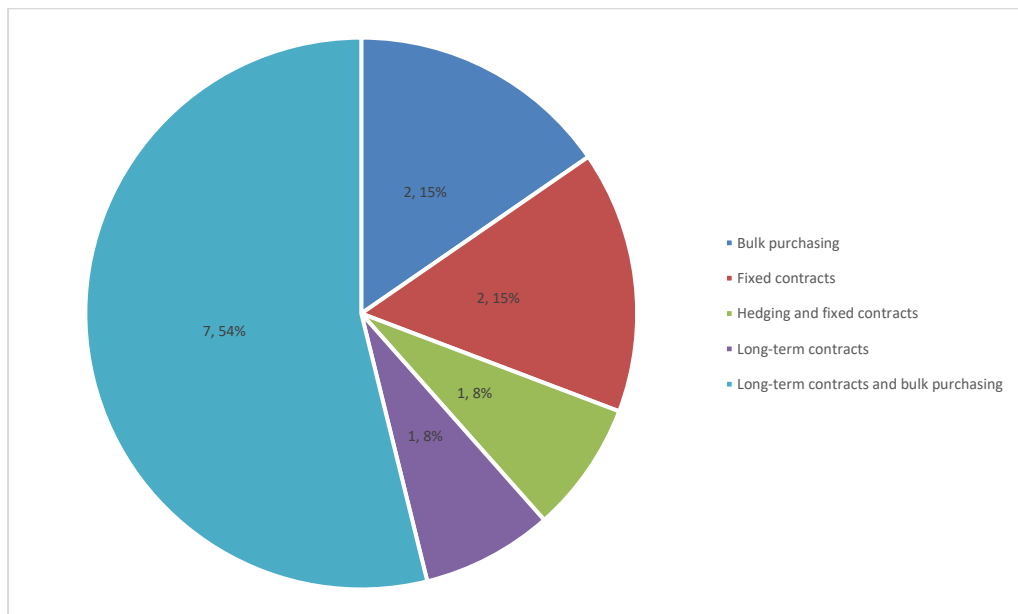


Figure 2:- Strategies to Minimize the Volatility.

The above pie-chart illustrates that there are strategies to minimize the price instability in the larger outlets in Hyderabad city. It can be observed that long-term contracts and purchasing is the most demanding and profitable strategy to handle price instability and its violation.

PEST Analysis**Political Factors****Table 1:-** Political Factors.

Aspects	Traditional Market	Premium (Large Outlet) Market	Interpretation	Result
Government Policies	Regulations affecting local farmers and wholesalers.	Import regulations and duties.	Aspect affects larger outlets due to the additional import duties and regulations.	According to the analysis, traditional marketplaces have more price stability than larger outlets regarding political factors and aspects.
Agricultural Regulations	Impact on the quality and quantity of produce from local farmers.	Standards and quality checks for imported products.	Agricultural regulations directly affect the traditional marketplace than larger outlets.	

Economic Factors:

This is the second factor of PEST analysis which is about economic factor that directly affects the price stability of the market.

Table 2:- Economic Factors.

Aspect	Traditional Market	Premium (Large Outlet) Market	Interpretation	Result
Pricing	Determined by cost price, market demand, and competition.	Influenced by cost price, competitor pricing, market demand, and international market rates.	The pricing aspect suggests that there is more dependency and factors in larger outlets.	Traditional marketplaces have more price stability than larger outlets regarding economic factors and aspects.
Market Dynamics	Demand and supply are influenced by seasonal availability.	Demand is influenced by quality consistency and import regulations.	It affects equally on both markets.	
Economic Challenges	Transportation costs and spoilage.	Currency fluctuations and import duties.	The traditional market is more stable than larger outlets.	

Social Factors:

The third factor in the PEST analysis concerns social factors which ultimately affect both marketplaces. It can be observed that social factors contain three aspects.

Table 3:- Social Factors.

Aspect	Traditional Market	Premium (Large Outlet) Market	Interpretation	Result
Consumer Preferences	Preferences are influenced by seasonal availability.	Preferences are influenced by consistent quality and variety.	The traditional marketplaces contain only seasonal availability and larger outlets have more dependencies.	According to the analysis, traditional marketplaces have more price stability than larger outlets regarding social factors and aspects.
Social Influences	Weather conditions affect product demand.	International market trends affecting product demand.	Larger outlet is also connected to the international market as well so, it will affect more.	
Community Dynamics	Role of local farmers and wholesalers in market operations.	Role of large-scale farmers and international suppliers in market operations.	The traditional marketplace is good compared to the larger outlets.	

Technological Factors:

This is the last factor of PEST analysis which contains the technological factors and their aspects compared to both marketplaces.

Table 4:- Technological Factors.

Aspect	Traditional Market	Premium (Large Outlet) Market	Interpretation	Result
Supply Chain Tech	Use of advanced storage and logistics.	Advanced logistics and storage facilities.	Both marketplaces have the same strategy to handle this aspect.	According to the analysis, traditional marketplaces have more price stability than larger outlets regarding technological factors and aspects.
Market Operations	Role of wholesalers in the supply chain.	Contracts with large-scale farmers and international suppliers.	Traditional marketplaces have only had to observe the role of wholesalers.	
Technological Advancements	Streamlined processes with advanced storage.	Streamlined processes with advanced logistics and storage facilities.	The Traditional marketplaces have fewer dependencies compared to the larger outlets.	

Recommendations: -

It is recommended that both markets should consider integrating technology into their operations. This includes inventory management systems, advanced logistics solutions, and data analytics to forecast demand and supply. Regular training sessions for vendors and suppliers can help them understand the latest market trends, technological advancements, and best practices in supply chain management. Both markets should actively seek feedback from consumers as it provides valuable insights into their preferences, product quality, and areas of improvement. With increasing emphasis on sustainability, both markets should consider sustainable farming practices, reduce wastage, and promote eco-friendly packaging. Traditional vendors and large outlets can collaborate on certain fronts, such as bulk purchasing, shared logistics, or joint marketing campaigns, to leverage each other's strengths and reduce costs.

Conclusion: -

It can be concluded that price stability and customer satisfaction are more important in the traditional marketplace compared to the larger outlet of Hyderabad city. As with many other developing nations, agriculture remains the main source of subsistence for a significant portion of Pakistan's population. The majority of the population of the nation lives in rural areas, where this dependency is most pronounced. In these more rural areas, a significant trend is starting to emerge: the dominance of low-level producers in the agricultural landscape. Both challenges and opportunities are present as Pakistan's marketing system develops. It could increase market accessibility, reduce post-harvest losses, and connect rural farmers with a larger customer base. The complete SCM process is a value chain in which drawbacks, factors such as value addition, and liability factors are acknowledged and addressed, therefore empowering the retailers to experience an effective supply chain. Supply is one of the prime portions of retail operations that safeguards that the right product is in the right place, at the right time, and at the right cost. So, the research includes the methodology for analyzing the Traditional markets and larger outlets. It uses the Political, Economic, Social, and Technological aspects to analyze the different factors of both markets. The results show that the traditional market contains suitable price and have only some price volatility in the system but on the other hand, larger outlets do contain several factors which ultimately tends to have more price volatility within the system and needs a more enhanced value supply chain. So, last, both markets contain several advantages and disadvantages as well but according to the research, the traditional market has more reliability than a traditional marketplace.

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