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Seasonal Price Volatility and Short-Cycle Financial Stress in Perishable Retail Markets: Evidence from 90-Day Vegetable Purchase Prices

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Abstract

This paper examines the extent of price changes in perishable markets of vegetables, and the resultant financial burden created for retailers. Previous studies on the problems of agriculture and supply chain management have mainly issues such as volatility, seasonality, forecasting difficulties and spoilage risk; however, little attention has been given to the negative effects of short-term procurement instability on working capital, working capital margins, and liquidity. To fill this gap, this study evaluates 90-day purchase-price data for 10 vegetables, namely cauliflower, broccoli, cucumber, green beans, cowpea, capsicum, tomato, carrot, radish, and green chili. By employing descriptive statistics, coefficients of variation, daily absolute and percentage price changes, and 30-day block comparisons, the analysis reveals significant differences in procurement risk among these commodities. Results indicate that green chili, broccoli, and cauliflower experience the highest volatility, while capsicum, cowpea, and tomato exhibit relatively more stability. Patterns observed on a daily and block-wise basis further suggest that procurement conditions change unevenly over time, with some commodities experiencing sustained upward price pressure, while others fluctuate or decrease. Such fluctuations have a direct impact on the financial health of the perishable goods retailers, which have thin margins, fluctuating resale prices and minimal storage options. The study concludes that commodity-specific purchasing strategies, liquidity planning, and enabling market policies play a key role in reducing commodity-specific short-term financial risks.

Introduction

The perishable retail sector is a market with conditions where short-term price shifts can have significant economic consequences. Vegetables and fruits have short shelf lives and are very sensitive to spoilage and are transported in an imperfectly coordinated supply chain. The deterioration is rapid, so retailers can't wait to buy as prices for procurement can change rapidly. Rising prices put immediate working-capital stress on the business, and falling prices lead to a loss of inventory value. These are the attributes of the perishable goods market, as compared with the durable goods market where a cost shock may be accommodated by postponing sales. This is worse in emerging markets, where cold-chain infrastructure, a working capital buffer, and the real-time availability of price data are lacking.

Research on agricultural and food markets reveals that perishable food prices have a natural seasonality and variability. Yeasin et al. (2023) found high volatility and seasonality characteristics in agricultural commodities, especially vegetables. In Nepal, it has been observed that the returns and price variation of citrus market in Nepal was not stable throughout the year (Dahal, 2020) and price fluctuations were also observed in the major vegetables of Kathmandu Valley (Giri, 2023). In the same manner, Nepal et al. (2025) found seasonal dependence and seasonal price variations between different vegetable types using the market data for Kalimati market. The results suggest that price short-term volatility is a structural feature of perishable markets that is affected by harvest timing, the perishability of the product, market arrivals and market infrastructure.

However, the existing research has largely concentrated on prediction, storage, efficient supply chain management, and post-production (Akbari et al., 2023; Kayikci et al., 2022; Chaulagai & Koirala, 2021). Retailers' attention has been paid to the short-term financial difficulty of procurement – price instability. Limited attention has been paid to the short-term financial difficulty for retailers like procurement and price instability. For retailers, volatility is experienced in the daily decisions on buying inventory, allocating cash and setting prices. Higher procurement prices increase working-capital requirements. Lower prices squeeze margins and result in losses on unsold perishable inventory. Such short-run market fluctuations become a source of financial stress, especially for traders with low capital and slim profits margins (Rustamov, 2024).

This study attempts to fill the gap by analyzing 90 days of retailer purchase prices for 10 vegetables and looking at price behavior from a financial perspective. In perishable retail markets, the fast inventory turnover and the frequent purchases make the cash planning very sensitive to the price changes. This leads to the procurement-price instability being considered as an indicator of short-term financial vulnerability. Using an analysis of agricultural prices, the study illustrates how different levels of procurement risk across commodities, through the lens of financial sustainability, expose retailers to short operating cycles.

This study makes three major contributions. First, it integrates seasonality, perishability and volatility into a finance-oriented framework with emphasis on working-capital pressure and short-term sustainability. Secondly, it offers empirical findings based on an equal distribution of 90 days of data on ten vegetables, allowing a comparison of volatility and instability by commodities. Thirdly, it shows that short-term price variability is not only significant for market forecasting but also indicates retailers' vulnerability to financial risks.

Literature Review and Conceptual Framework

The literature is structured around four themes: agricultural and perishable market price volatility; perishability, spoilage, and operational risk; volatility as a financial-risk concept; and moderating factors like information, infrastructure, and access to recovery mechanisms. Themes combine to provide a broader context from which to argue that procurement-price instability is not simply a market feature but a short cycle financial problem.

The volatility in the prices of agricultural products during the agricultural seasons is widely recognized. The price of commodities may also fluctuate cyclically over time due to seasons of harvest, rainfall, availability of supplies and storage capacity. Yeasin et al. (2023) emphasize vegetables' volatility and seasonality, especially in the pre-harvest and harvest stages. This trend is also reflected in Nepal, which has similar data. Dahal (2020) observes high seasonality and unstable returns for both lime and sweet orange markets, and Giri (2023) concludes that there is significant seasonality and varying elasticity of vegetables in the Kathmandu Valley. In all of these studies the price fluctuation of perishables is found to be persistent in nature and not random.

This result is corroborated by recent forecasting and machine-learning analyses. Despite the presence of obvious seasonality in the vegetable price data, the models of SARIMA, LSTM and Prophet could not fully describe the dynamics of the short run, as shown by Giri and Giri (2024). The strong seasonality and inter-commodity variation also are supported by the Kalimati market data as seen by Nepal et al. (2025). While these studies contribute to better prediction accuracy, they tend to be rather narrowly directed towards prediction rather than matters of financial risk like working-capital risk.

The second theme is on perishability and operation vulnerability. Perishable items have a limited economic value, which decreases over time, and so it is important to catch them at the right time. Akbari et al. (2023) show how the uncertainty of demand, deterioration of product quality, and disruption of supply can have significant impacts on replenishment strategies and profitability in perishable supply chains. Similarly, Kayikci et al. (2022) emphasize the importance of dynamic pricing and maintaining freshness in the supply management and reduction of waste and improve performance. From the results, the procurement errors cost is high as the goods could not be stored for future price recovery.

There are also structural constraints as highlighted by studies in Nepal. Chaulagai and Koirala (2021) have identified the main market constraints in the vegetable markets as climate variability, transport inefficiencies and post-harvest losses. There are limitations in infrastructure, access to capital and adoption of technology mentioned by (Gyawali & Khanal, 2021). These constraints exacerbate the effects of the price volatility of goods in retail markets on financial results.

The third theme is a representation of volatility as financial risk. In finance, volatility is a measure of uncertainty of returns and risk in decision making. Rustamov (2024) says that the more volatile the environment, the more uncertain it is in terms of planning, resource allocation and risk management. In perishables markets, it involves unpredictable prices to be paid, immediate pressure for cash and the risk of spoilage. Retailers cannot postpone their purchasing decisions, unlike financial assets, and as such, volatility is a real operational and financial liability (Akbari et al., 2023; Kayikci et al., 2022).

The fourth theme is on moderation factors like infrastructure and information systems. Kayikci et al. (2022) demonstrate the reduction of waste and the increase of profit from information on real-time pricing and freshness. Post harvest losses and sustainability can be lowered through the introduction of cold chain systems and digital technologies (Vera et al., 2024).

Also, according to Chowdhury (2025), the impact of volatility depends on the ability to access information, storage, and coordination. Nonetheless, despite these findings, volatility is not often used as an indicator of immediate financial pressure.

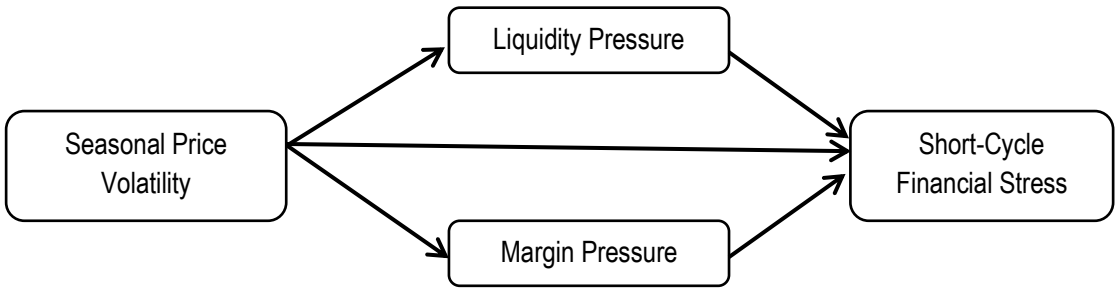
Based on these literatures, the theoretical basis of the study combines three perspectives, which are working capital theory, price volatility theory, and transaction cost theory. Working capital theory states that due to perishability, there is a need for constant procurement. Though consistent pricing ensures predictable cash flows, volatile markets tend to make inventory expenses higher and margins less predictable. Due to the inability to store commodities for an extended period, procurement mistakes instantly impact both cash flow and profits (Akbari et al., 2023).

The price volatility theory also elucidates that increased variability adds to uncertainty in cost projections. The goods that fluctuate highly in their prices are very difficult to plan as compared to other products (Rustamov, 2024; Yeasin et al., 2023). According to transaction cost theory, there is an increase in the costs of information search, bargain, coordination, and timing. The costs further increase if the environment lacks an information system and storage capacity (Chowdhury, 2025; Vera et al., 2024). Collectively, these theories confirm the central theory that short cycle procurement price instability exacerbates financial distress because of higher working capital needs, lower margins predictability, and high transaction costs.

The theoretical framework adopts seasonal price fluctuation as the independent variable while the dependent variable is defined by short-term financial distress of retailers. The measures of price fluctuation include daily price changes, coefficient variation, and trends at the block level. Working capital distress, margin fluctuation, and liquidity constraints are used to identify financial distress (Rustamov, 2024; Akbari et al., 2023). This relationship is summarized In Figure 1.

Figure 1

Conceptual framework that links seasonal price volatility to retailer financial stress



Liquidity pressure and margin uncertainty are the transmission mechanisms and the credit availability, the cold storage technology, and the information technology are moderator variables. According to Vera et al. (2024) and Chowdhury (2025), these factors influence the level of the impact of volatility on financial pressure without empirical validation.

The framework makes four predictions. First, the more volatile the vegetables, the greater the risks to procurement. Secondly, more variation in prices is more likely to result in increased exposure to unanticipated costs. Third, upward price trends are likely to put additional strain on working capital. Finally, the ongoing volatility is more likely to signal long-term structural stress in finance than noise (Yeasin et al., 2023; Rustamov, 2024).

Research Methods

This study used descriptive-analytic design which adopts quantitative approach. The data set used consists of 90 days' data on retailers' buying prices of 10 vegetables, namely cauliflower, broccoli, cucumber, green beans, cowpea, capsicum, tomato, carrot, radish, and green. Regular observation is taken each day for each item, making an overall tally of 900 prices. The period selected here is appropriate since it corresponds to the short operational cycle of many retailers of perishable goods who are inclined to purchase their inventory daily (Yeasin et al., 2023; Giri & Giri, 2024; Nepal et al., 2025).

The study proceeded through data validation process, which confirmed that all the vegetables had 90 observations with no missing values. A variable for day index was added from 1 to 90 (Nepal et al., 2025; Giri & Giri, 2024). The statistical analysis was conducted through several steps. In the first step, descriptive statistics such as mean, median, minimum, maximum, range, variance, and standard deviation for each vegetable were calculated. Second, the coefficient of variation (CV) was determined to determine the relative variability of the products at various price ranges. Given the large disparity in the mean prices of each vegetable, the coefficient of variation (CV) becomes the key performance indicator to determine procurement risk. Third, daily prices and changes in percent were determined to calculate the level of volatility. Fourth, the 90 days period was divided into three sub-periods of 30 days each to check for changes in average purchasing conditions. Finally, an outlier test based on the interquartile range method was performed to examine whether the detected volatility structures were common or significantly influenced by outlier data (Rustamov, 2024; Yeasin et al., 2023). The approach adopted is considered valid as per the nature of perishable retailers in which procurement costs affect capital, profit margin, and cash flow. Thus, the study follows exploratory method from a financial perspective because it uses data on price behavior in order to establish the expected distribution of short-term risks across various products (Rustamov, 2024; Akbari et al., 2023; Kayikci et al., 2022).

Results and Discussion

Empirical data analysis starts with ensuring the quality of the data used. The quality data set consists of 90 observations for 10 types of vegetables daily with no missing data. This allows for comparison among different products without being influenced by variations in the number of observations. The analysis includes a total of 900 recorded prices of procurement, which is sufficient to analyze not only the average price trends but also the relative dispersion, day-to-day fluctuations, and price changes over 90 days.

An initial descriptive review shows that vegetables are very different in terms of their procurement prices. Cowpea, green chili and cucumber cost the most, on average, while cauliflower, tomato and radish cost less. Analytically this is important because if one compares absolute standard deviations of commodities by their prices, one cannot make any sense out of the comparison. The absolute daily variation for a vegetable with a price of approximately 170 is similar to the absolute daily variation for a vegetable with a price of approximately 25, but the proportional risk is very different. Hence the coefficient of variation is used as the main indicator of relative volatility (Yeasin et al., 2023; Rustamov, 2024).

Table 1 is a good indicator of the great variation in the prices and distribution of prices in this sample. Green chili has the widest range, varying between 90 and 280 in 90 days, and cucumber is also considerable with a range of 105. In comparison, radishes are only in a small 15-point range. This difference is further accentuated by the pattern of standard deviations, where the highest is 61.58 for green chili and the lowest is 4.17 for radish. The results indicate that the level of uncertainty in procurement prices is not the same across all commodities. Retailers have very sharp fluctuations in their costs for some vegetables than for others. However, absolute dispersion is not enough to solve the problem of relative volatility. The larger standard deviation of a commodity with a high price could be because of its high price only. Therefore, the analysis of relative volatility offers a clearer insight into short-cycle procurement risk.

Table 1

Descriptive statistics of daily purchase prices by vegetable

Vegetable	N	Mean	Median	Min	Max	Range	SD
Broccoli	90	58.72	55.0	30	100	70	20.93
Capsicum	90	110.56	110.0	90	130	40	11.03
Carrot	90	56.50	55.0	45	95	50	10.51
Cauliflower	90	43.14	50.0	20	65	45	13.78
Cowpea	90	171.11	170.0	120	200	80	21.12
Cucumber	90	131.50	137.5	80	185	105	27.42
Green Beans	90	95.78	100.0	70	130	60	14.34
Green Chili	90	142.89	110.0	90	280	190	61.58
Radish	90	24.89	25.0	20	35	15	4.17
Tomato	90	41.26	40.0	25	60	35	5.70

As shown in Table 2, green chili is the most volatile commodity with a coefficient of variation of 43.09%, followed by broccoli (35.64%) and cauliflower (31.94%). These vegetables are volatile. On the other hand, capsicum was the least volatile with coefficient variation of 9.97% followed by cowpea with 12.34% and tomato with 13.81%. And in the middle of the volatility spectrum, the things like cucumber, carrot, radish, green beans. There is a lot of money at stake in the ranking. Retailers dealing in green chili, broccoli or cauliflower are likely to face more uncertainties in procurement, cash needs and profit margin, as compared to those dealing in more stable commodities like capsicum and cowpea.

Table 2

Relative volatility ranking based on coefficient of variation

Rank	Vegetable	Mean	CV (%)	Volatility level
1	Green Chili	142.89	43.09	High
2	Broccoli	58.72	35.64	High
3	Cauliflower	43.14	31.94	High
4	Cucumber	131.50	20.85	Moderate
5	Carrot	56.50	18.59	Moderate
6	Radish	24.89	16.76	Moderate
7	Green Beans	95.78	14.97	Moderate
8	Tomato	41.26	13.81	Low
9	Cowpea	171.11	12.34	Low
10	Capsicum	110.56	9.97	Low

This ranking is an important finding of the study from a financial perspective since the short-term financial stress exposure is not a function of the fact that a trader sells vegetables but depends largely on the types of vegetables handled. Therefore, the coefficient of variation becomes a practical tool for the risk mapping by commodity in perishables retail activities.

Figure 2 shows the evolution of the different prices during a 90-day period. The last part of the period is most significant for the growth of green chili, while broccoli and cauliflower also show a strong upward trend. On the other hand, prices of cucumber decrease for most of the period, and capsicum's price remains relatively stable.

Figure 2

Daily purchase prices of selected vegetables over 90 days

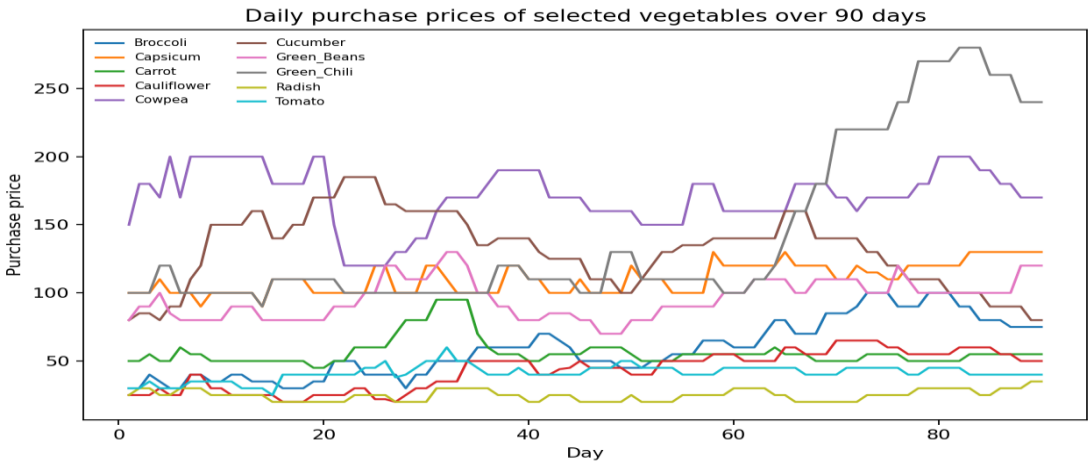
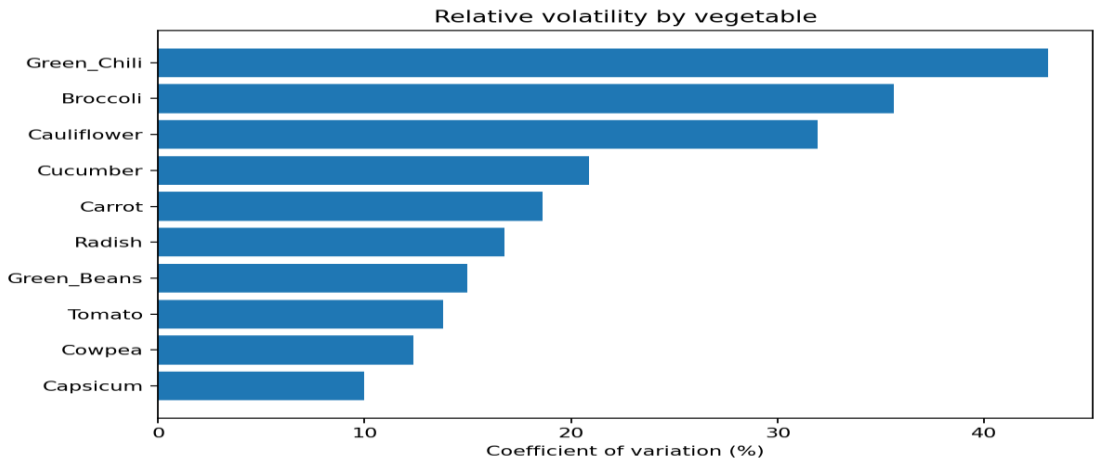


Figure 3 demonstrates the trend in comparative form, indicating that the volatility exists in select goods only and not uniformly in all components of the basket. The graphical representation supports the empirical result that some vegetables create highly volatile procurement scenarios as compared to others (Yeasin et al., 2023)

Figure 3

Relative volatility by vegetable (coefficient of variation)



The analysis of day-to-day changes allows a closer look at how these procurement factors operate. Businesses that are trading in perishable goods typically have to make purchasing decisions daily; thus, even the slightest day-to-day change could be more important than the longer-term one. Even if the average price of a commodity is low, it can create significant operational stress because of regular daily price hikes.

As shown in Table 3, green chili has the highest daily average price increase, followed by broccoli and green beans, with an increase in prices of 1.57 price units, 0.51 price units, and 0.45 price units, respectively. The green chili vegetable exhibits the highest gain within a day (+40), while cowpea exhibits the highest loss in one day (-50). Broccoli shows the highest percentage change per day with an average of 1.63%, followed by cauliflower with 1.45% and green chili with 1.23%. Many other vegetables show large day-to-day changes, like an increase of 60% for both cauliflower and tomatoes. This indicates that short-term procurement pressure cannot be attributed only to higher average variability but can also be a result of unexpected daily changes, which immediately affect replenishment expenses (Akbari et al., 2023; Kayikci et al., 2022; Rustamov, 2024). This phenomenon is vital to the trader who relies on repeated purchases and fast turnover. A positive surge in the market every day will quickly boost their liquidity requirement, especially where they need to maintain minimum inventory levels to ensure customer flow. However, if there is a large negative change, it may also prove damaging, especially if it occurs after the purchase of the inventory at a higher price. In this regard, changes in prices on a day-to-day basis turn market instability into business risks that carry a direct financial impact.

In an attempt to analyze directional change in the procurement environment over time, the 90-day period was divided into three 30-day blocks. This is important since a product may be volatile without necessarily being costly over time. However, in contrast, an asset may

have a medium level of relative volatility but impose increasing demands on working capital if the mean cost of acquisition increases in successive periods.

Table 3

Summary of daily absolute and percentage price changes

Vegetable	Mean daily change	Max increase	Max decrease	Mean % change	Max % increase	Max % decrease
Broccoli	0.51	15	-10	1.63	42.86	-25.00
Capsicum	0.34	30	-20	0.56	30.00	-16.67
Carrot	0.06	15	-25	0.34	20.00	-26.32
Cauliflower	0.28	15	-10	1.45	60.00	-26.67
Cowpea	0.22	30	-50	0.38	20.00	-25.00
Cucumber	0.00	30	-20	0.20	25.00	-12.50
Green Beans	0.45	20	-20	0.69	20.00	-16.67
Green Chili	1.57	40	-20	1.23	30.00	-16.67
Radish	0.11	10	-5	0.99	50.00	-20.00
Tomato	0.11	15	-12	0.75	60.00	-24.00

Table 4 reveals notable differences in directional trends between various goods. For instance, the value of broccoli moves from 37.00 on Days 1-30 to 56.00 on Days 31-60 and further up to 83.17 on Days 61-90. In a similar vein, the value of cauliflower increases from 26.3. Green chili exhibits the most marked increase, from 103.33 to 109.33, and finally rising to 216.00 in the last block. Capsicum, green beans, and radish too exhibit an increasing trend. However, in the case of cucumber, there is a consistent reduction from 143.33 to 131.17, and subsequently to 120.00, but for the case of carrot, cowpea, and tomato, it has been observed that their prices fluctuate.

Table 4

Thirty-day block average prices and directional trends

Vegetable	Days 1-30	Days 31-60	Days 61-90	Trend
Broccoli	37.00	56.00	83.17	Increasing
Capsicum	103.00	107.33	121.33	Increasing
Carrot	55.50	60.67	53.33	Fluctuating
Cauliflower	26.30	46.30	56.83	Increasing
Cowpea	168.67	168.67	176.00	Fluctuating
Cucumber	143.33	131.17	120.00	Decreasing
Green Beans	90.50	90.83	106.00	Increasing
Green Chili	103.33	109.33	216.00	Increasing
Radish	23.83	24.33	26.50	Increasing
Tomato	36.93	44.17	42.67	Fluctuating

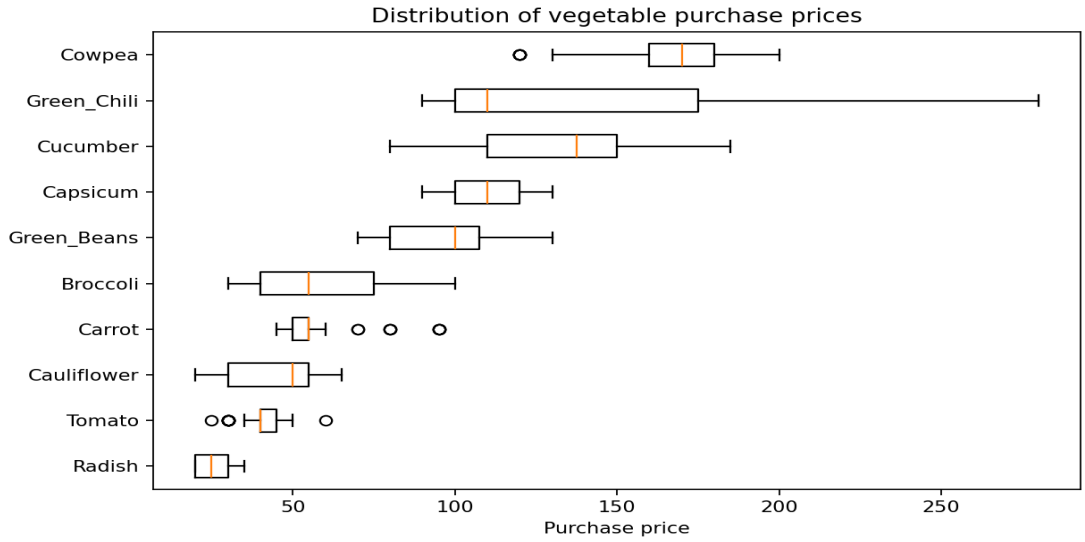
These changes in time are important because the retailers face the problem of uncertainty not just as a spread, but as an evolution of cost problems in time. The sharp rise in the cost of green chilies in the most recent 30 days suggests a significant increase in costs, requiring higher working capital at the end of the period. The upward pressure on broccoli and

cauliflower is less noticeable. On the other hand, the decreasing prices for cucumbers could relieve the current purchase pressures but might create problems if expensive inventory was purchased in the past. The classification of rising, declining, and fluctuating block averages allows for a more sophisticated operating-cycle approach compared to simply measuring volatility.

Outliers (Figure 4) further provide additional information. Since most commodities have no outliers using the IQR rule, it shows that volatility for these commodities is generalized and not due to any outlier. Carrot and Tomato, on the other hand, have many outliers, while Cowpea has few outliers. It indicates that there are certain vegetables that continuously move, while there are others that maintain stability but have instances where they register very strange prices. This distinction is important for making managerial decisions since a vegetable that is always in constant movement needs a different management approach than one that is stable.

Figure 4

Distribution of purchase prices by vegetable



These results support the central claim of the article that price instability during procurement for perishables is connected to financial vulnerability due to short cycles. The erratic nature of such goods requires businesses to utilize funds amid heightened uncertainties, set prices often, and confront challenges in achieving profit targets. These impacts are enhanced in the perishable trade since the inventory involved is time-sensitive, and the losses can neither be postponed nor deferred. In practical terms, green chili, broccoli, and cauliflower are most likely to put the greatest demand on short-term purchasing, while capsicum, cowpea, and tomato seem less troublesome.

Moreover, this investigation contributes further to the existing literature that has been mentioned above. The earlier literature pointed out the fact that there is seasonality

associated with perishables, spoilage and disruptions in supply chain, and the importance of price and storage systems in determining market results. This present study contributes to the existing literature by showing that even during the short-term period of 90 days, variations in prices could be considered as indicators of financial fragility of retail companies. Instead of considering volatility as merely a market phenomenon, the article emphasizes its importance as a signal of vulnerability to working capital and liquidity risk. This is the main theoretical contribution of the paper.

Implications are significant to both managers and policymakers. Retailers cannot make assumptions about the same degree of procurement risk for all vegetables. Classification of products based on their level of variation can aid in formulating appropriate procurement policies and liquidity management. In terms of policy measures, it is apparent that increased market information, access to short-term financing, and efficient storage and distribution may help reduce the influence of prices on financial distress. In locations where these measures are not present, volatility is bound to be a risk for the sustainability of short-term businesses.

Conclusion and Implications

This study investigated the purchase price variations in 10 vegetables for 90 days through financial risk analysis approach. The results demonstrated distinct patterns of price changes among the commodities. Volatility was seen to be higher for green chilies, broccoli, and cauliflower than capsicum, cowpea, and tomato. From the daily prices, there were frequent and sometimes sharp fluctuations in procurement. As a 30-day block average, it enhanced clear means that some items went up in price and some others fell. These results support the theory that price fluctuations in the perishable market are not only an issue of forecasting and market dynamics but also of financial risk. Organizations that are exposed to close margins, procurement, and limited warehouse space are directly prone to the effects of working capital difficulties and marginal instability because of variations (Rustamov, 2024; Akbari et al., 2023; Kayikci et al., 2022). Price volatility in procurement process can help to give useful information on the risk of financial distress even in the absence of accounting information.

The study is important since it provides a structured comparison of the 90 days volatility, daily volatility, and block pricing of the vegetables. The findings from the study are also useful to relate the pricing behavior of agricultural commodities with financial sustainability in the short run. It expands the scope of volatility research from market description to financial sustainability of retailers (Rustamov, 2024; Chowdhury, 2025). On a practical note, it can be said that retailers need commodity-oriented approaches to the procurement process instead of a blanket approach to vegetables' purchasing. Commodities that are highly volatile like green chili, broccoli, and cauliflower need more monitoring, faster pricing adjustments, and higher liquidity cushions. By diversifying purchases among stable and volatile commodities, the likelihood of a sudden price shock will be reduced. Furthermore, rolling price surveillance and block trade analysis over shorter intervals may help traders in recognizing any new

procurement threats and taking action accordingly (Akbari et al., 2023; Kayikci et al., 2022; Chowdhury, 2025).

In terms of public policy, better and faster information regarding markets can facilitate decision-making through increased certainty. Working capital finance can assist retail businesses cope with sudden price hikes without resorting to understocking and distress selling. The implementation of investment strategies in cold chain and storage facilities may also lessen the total losses from volatility and spoilage by increasing the decision period. For emerging economies, protecting themselves from the monetary effects of volatility is equally important as reducing volatility (Yeasin et al., 2023; Chaulagai & Koirala, 2021; Kayikci et al., 2022). Theoretically, the research supports the relevance of combining the working capital management theories, price volatility theories, and transaction cost economics to comprehend perishable retail industry markets. This combination sheds light on how short-run price volatility causes financial problems and how these problems vary based on commodity types and situations (Rustamov, 2024; Chowdhury, 2025).

However, this study is subject to certain weaknesses. The analysis was done using a 90-day data sample that fails to capture complete seasonal patterns and hence shows short-term purchasing volatility and not seasonal volatility (Yeasin et al., 2023). Moreover, the analysis only covers purchase prices but not sales prices, volumes, wastage, or any cash-flow measures, which means that volatility is used as an indicator of financial pressure instead of financial distress itself (Rustamov, 2024; Akbari et al., 2023). Moreover, differentiation among retailers, location, credit facilities, and infrastructure have also been ignored, although they might have the ability to impact the way that volatility is experienced (Chaulagai & Koirala, 2021; Chowdhury, 2025). This is because the study is descriptive in nature and does not attempt to establish causality, as its primary aim is to detect certain patterns.

Future studies should consider large number of observations and incorporate data on selling price, quantity sold, loss, and profit margin. Incorporating other measures associated with working capital, such as liquidity constraints and short-term debt. These may shed more light on the connection between volatility and financial distress (Rustamov, 2024; Akbari et al., 2023). Multi-year time series would allow to distinguish between volatility and seasonality (Yeasin et al., 2023). Future studies should also examine the impact of credit constraints, digital pricing, cold chain logistics, and market heterogeneity, which have theoretical relevance but lack empirical evidence in this study (Kayikci et al., 2022; Chowdhury, 2025; Chaulagai & Koirala, 2021).

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