THE INFLUENCE OF BUYER TIMING STRATEGIES ON WHOLESALE PRICE VOLATILITY: A QUANTITATIVE ASSESSMENT

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ABSTRACT

The current study evaluated the effects of buyer timing strategies on the occurrence of wholesale price volatility, paying special attention to early purchase, late purchase, bulk-time purchase, and opportunistic purchase among the buyers. The effect of wholesale price volatility can lead to uncertainties during the procurement process, planning of inventory, negotiation, and decision-making within the supply chain, especially in markets where the timing of purchase is determined by the buyers' expectations on the price, cost of storing, speculations, and availability of supply. Adopting the theory of dynamic pricing and the bullwhip effect, this study established that the timing strategies undertaken by the buyers could lead to imbalances in demand patterns, pressure in the short term, and instabilities in prices. The current study employed positivism research philosophy and cross-sectional survey design in carrying out the investigation. Primary data were collected using structured questionnaires distributed among 100 respondents randomly selected from the Ladipo spare parts market. The responses from the questionnaire were rated on a five-point Likert scale, whereas the statistical analyses were performed using descriptive statistics, regression, and ANOVA analysis in SPSS software version 23. The descriptive results indicated that most of the respondents believed that buyers' timing strategies affect the occurrence of wholesale price volatility, having a mean score of 3.85. The late purchase strategy registered the highest mean score, indicating that the strategy of waiting for price changes by the buyers has a high contribution to market variability. In addition, regression analysis confirmed a strong correlation between buyer timing strategies and wholesale price volatility. The first model indicated that buyer timing strategies accounted for 61.7% of the variance in wholesale price volatility, whereas the second model reported that they accounted for 80.8% of the variance in perceived wholesale price volatility. Both models showed to be statistically significant at $p < 0.05$, and thus, the acceptance of the alternative hypothesis in both cases and rejection of the null hypotheses.

KEYWORDS: Buyer Timing Strategies; Wholesale Price Volatility; Delayed Purchasing; Bulk-Time Buying; Dynamic Pricing; Supply Chain.

INTRODUCTION

Wholesale price volatility refers to fluctuations in the prices at which commodities or goods are traded in bulk. Such volatility has far-reaching implications for supply chain efficiency, profitability, and market stability (Geman, 2005). Price instability introduces uncertainty for market participants, influencing inventory decisions, ordering practices, procurement timing, and negotiation strategies (Fan & Hyndman, 2011). Understanding the determinants of wholesale price volatility is essential for reducing risk exposure, supporting forecasting accuracy, and enhancing competitive advantage.

Buyer timing strategies constitute the independent variable under investigation. These strategies capture buyers' decisions on when and how much to purchase within a given planning or production cycle. Literature suggests that buyer timing significantly influences wholesale market pricing outcomes (Zhi & Song, 2014). When purchasing behavior clusters

within specific times, demand surges or slumps occur, heightening volatility (Chen et al., 2019). Factors influencing timing include storage costs, demand expectations, price speculation, and supplier pricing mechanisms (Teng et al., 2017). Despite these developments, quantitative studies directly linking timing strategies to volatility remain limited, creating a research gap this study addresses.

Review of Related Literature

Several studies have shown that buyer behavior plays a critical role in shaping price stability. Klemperer (1987) used auction theory to explain how buyer timing decisions can produce significant price swings. Similarly, Cachon and Swinney (2011) demonstrated that strategic ordering contributes to variability in wholesale demand, strongly influencing supply-chain-level price fluctuations. Yet, only a few empirical studies have examined these factors within wholesale markets, highlighting the need for further quantitative assessment.

Wholesale price volatility is influenced by multiple demand- and supply-side drivers. According to Gilbert and Morgan (2010), demand uncertainty and supply chain disruptions inherently elevate volatility. Buyer market power may intensify these effects, especially in sectors where purchasing is dominated by large firms (Abdalla & Dixon, 2009). Perishability and seasonality further exacerbate pricing instability in agricultural markets (Tyson, 2015). These realities emphasize the value of isolating and quantifying the influence of buyer timing strategies on volatility.

Dynamic Pricing Theory

Dynamic pricing theory explains how sellers adjust prices over time in response to real-time market signals, competition, and consumer behavior. Sellers often implement dynamic pricing strategies to optimize revenue (Board, 2008; Février & Wilner, 2016). Buyers, aware of these pricing trajectories, time their purchases strategically, causing fluctuating demand. These interactions explain irregular and often unpredictable wholesale price movements.

Digitally enhanced markets further strengthen the relevance of dynamic pricing. Real-time analytics allow firms to adjust prices more rapidly, prompting buyers to respond almost instantly to expected or actual price changes (Revology Analytics, 2025; BlueCart, 2024). As buyers cluster purchases around anticipated discounts or price movements, volatility expands. Thus, dynamic pricing theory provides a practical foundation for understanding buyer timing in today's technologically agile wholesale markets.

Bullwhip Effect Theory

The bullwhip effect describes how small variations in retail demand escalate into significant fluctuations in upstream wholesale and manufacturing levels (Lee, Padmanabhan & Whang, 1997). Imperfect information, over-forecasting, batch ordering, and price speculation magnify this effect (Yucesan, 2007; Huang et al., 2003). Buyer timing contributes to the bullwhip effect by creating erratic and non-uniform ordering patterns, which in turn amplify price volatility.

Batch ordering, in particular, increases inventory oscillations and generates price instability in wholesale markets. The Bullwhip Effect thus highlights how poorly coordinated timing decisions generate volatility, raising operational costs and undermining supply chain efficiency (Waller et al., 1999; SupplyX, 2024).

It is against the background provided that the study assesses the extent to which various buyer timing strategies (early purchasing, delayed purchasing, bulk-time buying, and opportunistic buying) are practiced by market participants. The study also examines the influence of these buyer timing strategies on perceived wholesale price volatility using survey-based quantitative measures.

Empirical Review

Zhi and Song (2014) examined 100 wholesale transactions and found that strategic timing decisions increased short-term volatility but helped stabilize prices when coordinated across buyers. Geman (2005) emphasized the role of buyer timing and speculative behaviors in commodity price fluctuations, noting heightened risk in energy and agricultural markets. Abdalla and Dixon (2009) identified timing decisions and irregular purchasing as core drivers of agricultural wholesale price volatility.

Tyson (2015), using perishable goods data, concluded that perishability prompts buyers to engage in timing strategies that exacerbate volatility. Fan and Hyndman (2011) showed that timing triggers irregular demand peaks, distorting forecasting and raising price instability. Hendricks and Singhal (2007) also argued that rigid timing schedules reduce supply chain flexibility, further elevating price volatility.

Methodology

This study adopts a positivist research philosophy, aimed at verifying theoretical claims using empirical evidence. A cross-sectional survey research design was employed, enabling the collection of data from respondents at one point in time. The population consisted of 500 traders in Ladipo spare parts markets who were randomly selected. Primary data were collected using structured questionnaires measured on a five-point Likert scale. Content and construct validity were ensured through expert review, while reliability was confirmed through a pilot study involving 16 respondents. Cronbach's alpha was used to assess internal consistency. Data were analyzed using descriptive and inferential statistics. Regression analysis and ANOVA were conducted using SPSS (version 23) to test the study's hypotheses.

Results and Discussion

Table 1: Demographic Information of the Respondents.

	Bio-data	Frequency (N)	Percentage (%)
1	**Gender**		
	Male	93	93
	Female	7	7
	Total	100	100
2	**Age Distribution of Respondents**		
	21-30 years	17	17
	31-40 years	37	37
	41 years above	46	46
	Total	100	100
3	**Marital Status**		
	Single	46	46
	Married	48	48
	Divorce	4	4
	Missing	2	2
	Total	100	100
4	**Number of years in this business**		
	1-10	35	35
	11-15	47	47
	16- above	18	18
	Total	100	100

Source: Author's compilation, 2025

Descriptive Statistics

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Descriptive Statistics							
	SA	A	S	D	SD	N	X
Early purchasing by buyers helps to reduce volatility in wholesale prices.	16	40	26	12	4	2	**3.98**
Delaying purchases until prices change contributes to greater fluctuations in wholesale prices.	23	45	20	8	3	1	**4.23**
When many buyers purchase early in the season, wholesale prices become more stable.	13	34	29	16	6	2	**3.76**
Bulk-time buying (large orders placed at once) increases price volatility in my market.	15	39	26	14	4	2	**4.01**
Opportunistic buying based on sudden price drops leads to unpredictable price movements.	9	31	33	19	6	2	**3.62**
Frequent delays in buyer ordering create uncertainty in wholesale price patterns.	17	44	22	12	3	2	**4.09**
Coordinated timing of purchases among buyers helps minimize wholesale price volatility.	12	40	28	14	4	2	**3.84**
Average Mean							3.852

The descriptive statistics reveal strong agreement among respondents that buyer timing strategies significantly influence wholesale price volatility. The statement with the highest mean ($\bar{X}$ = 4.23) indicates that delaying purchases until prices change is widely perceived to contribute to increased market fluctuations, suggesting that reactive buying behavior amplifies price instability. Similarly, respondents strongly agreed that frequent delays in buyer ordering create uncertainty in wholesale price patterns ($\bar{X}$ = 4.09), reinforcing the idea that inconsistent timing intensifies volatility. Bulk-time buying also received high agreement ($\bar{X}$ = 4.01), showing that large, concentrated purchases can disrupt supply-demand balance and trigger sudden price changes. Early purchasing was viewed positively ($\bar{X}$ = 3.98), suggesting that advance buying may reduce volatility by smoothing demand over time, while coordinated purchasing timing similarly showed moderate agreement ($\bar{X}$ = 3.84), implying that collective planning may stabilize pricing dynamics. Opportunistic buying based on sudden price drops received a lower yet positive mean ($\bar{X}$ = 3.62), indicating moderate agreement that such strategies introduce unpredictability into price movements. Overall, the average mean score

of 3.85 suggests that respondents generally agree that buyer timing strategies—whether proactive, reactive, or opportunistic—play a substantial role in shaping volatility within wholesale markets. These results highlight the importance of understanding and managing buyer timing behaviors to promote greater market stability.

$H_0$1: There is no significant relationship between buyer timing strategies (early purchasing, delayed purchasing, bulk-time buying, and opportunistic buying) are practiced by market participants.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.103	.223		4.939	.000
	A **buyer's_timing_strategies**	.668	.053	.785	12.556	.000
	R^2	.617				
	F-Stat.	157.647				0.000

a. Dependent Variable: Whole_salePrice_Volatility

Interpretation and Decision on Hypothesis

The regression result shows a strong and statistically significant relationship between buyer timing strategies and wholesale price volatility. The coefficient for buyer timing strategies (B = 0.668, p = 0.000) indicates that for every unit increase in timing-related practices—such as early purchasing, delayed purchasing, bulk-time buying, or opportunistic buying—wholesale price volatility increases by 0.668 units. The high standardized beta value (β = 0.785) further demonstrates that buyer timing strategies are a powerful predictor of price volatility. The model explains 61.7% of the variation in wholesale price volatility (R^2 = 0.617), which is substantial for social science research, and the F-statistic (157.647, p = 0.000) confirms that the overall model is statistically significant. Since the significance value (0.000) is less than the 0.05 threshold, the null hypothesis (H_{01}), which states that there is no significant relationship between buyer timing strategies and wholesale price volatility, is rejected. Therefore, the study concludes that buyer timing strategies practiced by market participants have a significant and positive influence on wholesale price volatility.

$H_0$2: Buyer timing strategies have no significant effect on perceived wholesale price volatility.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.483	.240		6.170	.000
	Buyer_Timing_strategies	.599	.059	.713	10.063	.000
	R^2	.808				
	F-Stat.	101.263				0.000

a. Dependent Variable: Whole_SalePrice_Volatility

Interpretation and Hypothesis Decision

The regression results clearly demonstrate that buyer timing strategies have a strong and statistically significant effect on perceived wholesale price volatility. The unstandardized coefficient (B = 0.599) indicates that a one-unit increase in buyer timing strategies—such as early purchasing, delayed purchasing, bulk-time buying, or opportunistic buying—leads to a 0.599-unit increase in perceived price volatility. The standardized beta value (β = 0.713) further reveals that buyer timing strategies are a powerful predictor of volatility, meaning that changes in how buyers time their purchases significantly influence respondents' perceptions of price instability. The model's explanatory power is exceptionally high, with an R^2 value of 0.808, showing that buyer timing strategies account for 80.8% of the variation in perceived wholesale price volatility. This level of explanatory power is very strong for social science research and confirms the robustness of the relationship. The F-statistic of 101.263 with a significance level of 0.000 also confirms that the regression model is statistically meaningful and not due to random variation.

Discussion of Findings

Based on these findings, the null hypothesis (H_{02}), which states that buyer timing strategies have no significant effect on perceived wholesale price volatility, is rejected. The significance value for the predictor (p = 0.000) is far below the 0.05 threshold, providing strong evidence that buyer timing strategies exert a statistically significant influence on price volatility. Therefore, the study concludes that buyer timing strategies do have a substantial and positive effect on perceived wholesale price volatility.

The findings of both regression models provide strong evidence that buyer timing strategies significantly influence wholesale price volatility. This aligns with dynamic pricing theory, which argues that strategic timing by market participants—such as delaying purchases, bulk-buying, or opportunistic procurement—can destabilize price patterns by creating demand shocks at different points in time (Board, 2008; Février & Wilner, 2016). The high standardized beta coefficients (β = 0.785 and β = 0.713) validate the argument made by Cachon and Swinney (2011) and Gao and Su (2017) that buyers' strategic behavior contributes to fluctuating supply–demand dynamics,

especially in markets where suppliers adjust prices frequently in response to variable purchasing behavior. The significant coefficients ($p = 0.000$) further support the economic reasoning of Lee, Padmanabhan, & Whang (1997), who demonstrated that timing-based buying contributes to the bullwhip effect, amplifying price instability as buyers manipulate purchase timing in response to expected future price changes. Therefore, the statistical evidence aligns with established theoretical perspectives that timing strategies create nonlinear purchasing patterns, leading to increased market volatility.

Additionally, these findings are consistent with empirical studies showing that market participants actively influence price movements through temporal purchasing decisions. For instance, Abdalla & Dixon (2009) found that irregular buying patterns and timing-based purchasing contributed to agricultural price volatility, while Gilbert & Morgan (2010) emphasized that buyer-driven market timing increases uncertainty in commodity markets. The exceptionally high R^2 values (61.7% and 80.8%) in this study provide robust empirical support for these earlier findings, underscoring how concentrated buyer behavior can magnify price fluctuations even in competitive markets. Moreover, theories on information asymmetry suggest that buyers with better demand information or expectations of future prices alter their timing to exploit market conditions, reinforcing volatility (Gao & Su, 2017). The rejection of both null hypotheses confirms that buyer timing strategies meaningfully and positively affect both actual and perceived wholesale price volatility, aligning with theoretical, empirical, and market behavioral evidence.

CONCLUSION

The study concludes that buyer timing strategies significantly and positively influence wholesale price volatility, as demonstrated by the strong regression coefficients, high standardized beta values, and substantial R^2 results across both models. The findings confirm that practices such as early purchasing, delayed purchasing, bulk-time buying, and opportunistic buying create demand fluctuations that escalate price instability. This pattern is strongly supported by dynamic pricing theory, the bullwhip effect theory, and empirical works by Abdalla and Dixon (2009), Gilbert and Morgan (2010), and Board (2008), all of which show that strategic buyer behavior increases market uncertainty. By rejecting both null hypotheses, the study affirms that buyer timing strategies are not merely reactive behaviors but active determinants of wholesale price volatility. Thus, understanding and managing buyer timing becomes critical for stabilizing markets and improving the predictability of wholesale prices.

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