



When emotions drive the market: Behavioral and economic determinants of panic selling among poultry farmers

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ABSTRACT

Background: Market volatility and emotional stress strongly influence agricultural decisions. Among Indonesia's small-scale broiler farmers, these pressures often trigger panic selling, an impulsive behavior that disrupts price stability and sustainability. Empirical studies on panic selling from a behavioral economics perspective remain limited. This study examines behavioral and economic determinants of panic selling and the mediating role of emotional stress linking production factors, market pressures, and sustainability orientation. **Methods:** Data were collected from 100 broiler farmers in East Java via structured questionnaires. A PLS-SEM model with 5 constructs: internal production factors, external market pressures, emotional stress, panic selling, and sustainability orientation. The model was analyzed using reliability, validity, and bootstrapped path tests. **Findings:** Internal production quality (feed efficiency, chick quality, flock health, management) reduces emotional stress ($\beta = -0.324, p < 0.001$) and panic selling ($\beta = -0.285, p < 0.001$), while external market pressures (feed cost, trader dependence, market volatility, information access) increase stress ($\beta = 0.222, p < 0.01$) and panic selling ($\beta = 0.192, p < 0.01$). Emotional stress strongly mediates panic selling ($\beta = 0.417, p < 0.001$). Panic selling negatively affects sustainability orientation ($\beta = -0.443, p < 0.001$), whereas internal factors enhance it ($\beta = 0.390, p < 0.001$). The indirect effect of internal factors via stress is also significant ($\beta = -0.135, p < 0.05$). **Conclusion:** panic selling results from the interaction of stress and market instability, leading to short-term decisions that undermine long-term sustainability. Strengthening technical capacity, market transparency, and access to reliable information can mitigate stress, prevent panic selling, and support sustainable poultry farming. **Novelty/Originality of this article:** This study offers one of the first empirical insights into poultry panic selling through a behavioral economics lens, linking emotional decisions with sustainability outcomes.

KEYWORDS: behavioral economics; broiler farmers; entrepreneurial decision-making; psychological buffer; sustainability outcomes.

1. Introduction

Global agricultural markets are increasingly exposed to volatility caused by fluctuating input prices, policy shocks, and global crises, which significantly affect farm income, production decisions, and overall market stability (Von Braun, 2012; Widiarta et al., 2024). In developing economies, these shocks disproportionately affect smallholder farmers who operate with limited financial buffers and high exposure to production risk. In Indonesia, small-scale broiler farmers face particularly high vulnerability due to feed price volatility,

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dependence on imported feed ingredients such as soybean and corn, and sensitivity to exchange rate fluctuations, all of which intensify economic uncertainty and income instability (Javadi et al., 2024; Jie et al., 2024).

Although numerous studies have documented economic volatility in agricultural markets, most analyses remain focused on macroeconomic indicators, price transmission, or cost efficiency. As a result, they provide limited insight into how farmers behaviorally respond to uncertainty at the micro level. Behavioral responses such as panic selling or emotion-driven decision-making are often overlooked, despite their critical role in shaping market outcomes during periods of stress (Ashtiani et al., 2021; Bhanot et al., 2021). Integrating behavioral economics with market analysis therefore offers a more comprehensive framework for understanding how psychological stress influences farmers' decisions and how targeted interventions, such as improved market information systems or institutional support, can stabilize behavior during market downturns (Thaler, 2016).

Beyond economic instability, smallholder broiler farmers face significant psychological vulnerability when exposed to repeated price shocks and asymmetric market information. Unlike large agribusiness firms, they operate with limited capital reserves, high debt exposure, and strong dependence on intermediaries. Under such conditions, market volatility is not merely an economic signal but also a psychological stressor that shapes farmers' perceptions, emotions, and decision-making processes. Behavioral economics emphasizes that individuals under stress do not always behave as fully rational agents; instead, uncertainty triggers cognitive shortcuts, loss aversion, and emotional responses that prioritize short-term relief over long-term optimization (Kahneman & Tversky, 1979; Thaler, 2016). For broiler farmers, panic selling represents a classic stress-coping response, selling prematurely to escape anxiety, even when such decisions undermine long-term profitability and sustainability.

This phenomenon has broader implications for the sustainable environmental economy. Repeated panic selling disrupts supply coordination, amplifies price volatility, and discourages reinvestment in animal welfare, biosecurity, and resource efficiency. Consequently, what initially appears to be an individual behavioral response becomes a systemic challenge, threatening regional food security and economic resilience within vulnerable entrepreneurial ecosystems (Alonso-Martínez, 2021; Bhanot et al., 2021). Despite its importance, empirical studies rarely integrate psychological mechanisms into models of agricultural market behavior. Existing research tends to examine economic determinants and psychological factors in isolation, limiting understanding of how emotional stress mediates farmers' responses to market pressure (Ashtiani et al., 2021; Wuepper et al., 2023).

Panic selling, defined as the premature liquidation of livestock due to anticipated losses, is a common behavior among small-scale broiler farmers in Indonesia during periods of price instability and rising feed costs (Sutanto et al., 2024; Suganda et al., 2024). This behavior is exacerbated by structural conditions such as high dependence on traders, low market transparency, and rapid feed price fluctuations, which further constrain farmers' bargaining power and increase emotional stress (Jie et al., 2024). While existing studies provide descriptive accounts of distress sales, they often lack structural analysis of the causal pathways linking internal production quality and external market pressures to emotional stress and panic selling behavior, limiting their usefulness for policy and intervention design (Wuepper et al., 2023; Sutanto et al., 2024).

Behavioral economics and stress-coping theory offer theoretical foundations for addressing this gap. Behavioral economics explains deviations from classical rationality by emphasizing heuristics, loss aversion, and emotion-driven decision-making (Kahneman & Tversky, 1979; Thaler, 2016), while stress-coping theory highlights how chronic stressors, such as price volatility and information asymmetry, can trigger reactive behaviors that temporarily relieve anxiety but undermine long-term outcomes (Eberhardt & Pooyan, 1990). Sustainability orientation, defined as a long-term commitment to resource efficiency, animal welfare, and resilience, is therefore closely linked to farmers' capacity to manage emotional stress under market pressure (Alonso-Martínez, 2021). Incorporating emotional

stress as a mediating variable within structural models enables quantification of behavioral pathways and identification of leverage points for reducing panic selling while supporting sustainable farm management (Ashtiani et al., 2021; Bhanot et al., 2021).

Although empirical evidence highlights economic triggers of distress sales, very few studies have examined the integrated behavioral and sustainability mechanisms driving panic selling in Indonesian broiler farms (Sutanto et al., 2024; Suganda et al., 2024). Previous research has focused either on economic determinants or psychological factors, but rarely both within a single analytical framework. This study addresses this gap by developing and empirically testing a behavioral–sustainability model of panic selling among Indonesian broiler farmers. Specifically, it examines internal production factors and external market pressures as antecedents, emotional stress as a mediating mechanism, and panic selling as a determinant of sustainability orientation. The study provides one of the first empirical insights into panic selling in the poultry sector from a behavioral economics perspective, linking emotional decision-making with sustainability outcomes in agricultural systems (Ashtiani et al., 2021; Sutanto et al., 2024).

2. Methods

2.1 Research location and time

This study was conducted in East Java, Indonesia, specifically in Malang City, Malang Regency, and Batu City, from May to July 2024. These areas represent one of the largest and most dynamic poultry production clusters in Indonesia, characterized by high production intensity, volatile input prices, and strong dependency on commercial feed companies and traders (Sutanto et al., 2024; Suganda et al., 2024). The selection of this research location reflects not only its economic importance but also its relevance for capturing real-world farmer behavior under conditions of market stress. From an ontological perspective, this setting enables observation of actual decision-making practices among broiler farmers, while from an epistemological perspective, it provides an empirical basis for explaining behavioral–economic mechanisms underlying panic selling.

East Java functions as a strategic poultry production hub due to its dense concentration of small-scale broiler farms, proximity to feed suppliers, and integration with regional and national poultry markets. Most broiler farmers in this region operate as independent or semi-independent entrepreneurs, often under informal contractual arrangements with traders or integrators. Socio-economically, these farmers typically face limited capital reserves, high reliance on commercial feed inputs, and strong exposure to price fluctuations at both input and output levels. Feed costs constitute a substantial proportion of total production expenses, making farmers particularly sensitive to changes in global commodity prices and exchange rate movements (Sutanto et al., 2024; Suganda et al., 2024).

In addition, market access in East Java is commonly mediated by traders, resulting in asymmetric price information and limited bargaining power at the farm-gate level. Combined with short biological production cycles and perishable outputs, these structural characteristics intensify emotional stress during periods of market downturn. Consequently, East Java provides a suitable “laboratory” for examining panic selling behavior, as farmers’ selling decisions are shaped not only by economic calculations but also by psychological pressure and perceived loss.

2.2 Research design and sample

A quantitative explanatory research design using Partial Least Squares–Structural Equation Modeling (PLS–SEM) was employed to examine the causal relationships among behavioral and economic factors influencing panic selling behavior. The study population comprised small-scale broiler farmers operating in East Java, a region characterized by high market volatility and strong production risk. Using purposive sampling, 100 farmers were selected based on the following criteria: (1) completion of at least one production cycle

within the last six months; (2) reliance on commercial feed; and (3) willingness to participate in the survey. The selected sample size satisfies the minimum requirement for PLS–SEM analysis (Kock & Hadaya, 2018).

2.3 Research variables and indicators

The study involved five latent constructs grounded in behavioral economics and sustainability theories, as summarized in Table 1. All constructs were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Prior to full data collection, the questionnaire was pre-tested for clarity and reliability among 15 broiler farmers in neighboring districts.

Table 1. Latent constructs, key indicators, and supporting references used in the PLS–SEM model

Code	Construct	Key indicators	References
X1	Internal production factors	Feed efficiency, chick quality, flock health, housing management	Wuepper et al. (2023), Jie et al. (2024)
X2	External market pressures	Feed price volatility, trader dependence, market access, information asymmetry	Sutanto et al. (2024), Suganda et al. (2024)
M	Emotional stress	Financial worry, fatigue, anxiety about loss	Eberhardt & Pooyan (2018); Rudolphi et al. (2024)
Y1	Panic selling behavior	Premature sales decisions, response to price drop, herd effect	Ashtiani et al. (2021); Bhanot et al. (2021)
Y2	Sustainability orientation	Commitment to resource efficiency, welfare, and long-term resilience	Alonso-Martínez (2021)

2.4 Data collection and analysis

Data were collected through structured face-to-face interviews to minimize response bias and enhance data accuracy (Vogl et al., 2019). The collected data were coded and analyzed using SmartPLS version 4.0, following established procedures for measurement and structural model evaluation. Measurement model assessment included tests of reliability and validity using Cronbach's alpha (> 0.7), composite reliability (> 0.7), and average variance extracted (AVE > 0.5). Structural model testing was conducted using bootstrapping with 5,000 resamples to estimate path coefficients, mediation effects, and predictive relevance (R^2 , f^2 , and Q^2). The results were presented using tables, figures, and path diagrams.

3. Results and Discussion

3.1 Descriptive findings

Most respondents were male (97%), while only 3% were female. This indicates a strong male dominance in broiler farming activities in Greater Malang. Men are more likely to engage in physical activities such as feeding, cage maintenance, and harvest transport, which require physical endurance. Similar findings were reported in poultry sectors across Asia and Africa, where men typically act as household heads and economic providers (Nurwandi & Yuslem, 2018; Musyoka et al., 2025).

However, Pramuwidyatama et al. (2022) noted that women increasingly participate in financial and flock health decisions, especially in open partnership systems, suggesting gradual empowerment in small-scale poultry systems.

"I am the one who decides when the chickens should be sold, while my wife is responsible for managing all financial expenditures and feed procurement," stated an independent farmer from Kepanjen District, Malang Regency (field interview, 2024).

This illustrates the gendered distribution of productive and reproductive responsibilities within smallholder broiler-farming households in East Java.

Table 2. Profile of respondents (n = 100)

Variable	Category	Frequency	Percentage (%)
Gender	Male	92	92.0
	Female	8	8.0
Age (years)	≤ 30	12	12.0
	31–40	21	21.0
	41–50	35	35.0
	> 50	32	32.0
Education level	Elementary/Junior high	19	19.0
	Senior high	48	48.0
	Diploma/Bachelor	33	33.0
Farming experience (years)	< 5	11	11.0
	5–10	24	24.0
	11–20	40	40.0
	> 20	25	25.0
Farm scale (birds per rearing period)	< 5,000	15	15.0
	5,000–10,000	46	46.0
	> 10,000	39	39.0
Production system	Independent (non-contract)	41	41.0
	Partnership (plasma)	59	59.0
Primary income source	Poultry farming	81	81.0
	Mixed income (poultry + others)	19	19.0

About 93% of farmers were in the productive age group (24–60 years), indicating strong physical and cognitive capacities for managing farms. Productive farmers are typically more adaptive to technology and efficient management practices (Nurwandi & Yuslem, 2018; Haruna et al., 2025). Similarly, (Pramuwidyatama et al., 2022) found that 85% of broiler farmers in West Java were also in the productive age group, demonstrating higher biosecurity adoption rates compared to older farmers.

The findings show that 37% of respondents completed senior high school, 30% were university graduates, 23% elementary, and 10% junior high school. Formal education significantly affects analytical capacity and decision-making quality. Farmers with higher education are more capable of adopting efficient feed management and business strategies (Paltasingh & Goyari, 2018; (Ezekiel et al., 2024; Gabriel & Gandorfer, 2023). This aligns with the notion that education improves both managerial and technical efficiency among smallholder poultry producers worldwide.

Most respondents (87%) considered broiler farming as their primary occupation, while 13% treated it as a secondary activity. The majority (54%) had 6–15 years of experience, indicating strong practical expertise. Experienced farmers tend to remain calm in decision-making and are more resilient to market shocks. This finding is consistent with Febrianto et al. (2024) and Haruna et al. (2025), who reported that longer experience enhances technical efficiency and adaptive behavior toward market volatility.

Most farmers (90%) earned ≥ IDR 8.1 million per rearing period, exceeding the 2024 regional minimum wage. However, income fluctuated due to feed price volatility and market uncertainty. Suganda et al. (2024) identified feed cost as the largest contributor to profit variability in Indonesia's broiler sector, while Saptana & Ilham (2020) emphasized that partnership farmers enjoy more stable returns than independent ones.

Taken together, these descriptive characteristics suggest that broiler farmers in Greater Malang possess adequate human capital, production experience, and sustainability awareness. However, these strengths coexist with high exposure to market volatility and psychological pressure, indicating a potential gap between farmers' long-term intentions

and their short-term behavioral responses under stress. This gap becomes more evident in the structural model results discussed in the following sections.

Table 3. Summary of PLS–SEM results for the structural model

Relationship	Path coefficient (β)	t-value	p-value	95% CI	Significance
X1 → M internal → emotional stress	-0.324	6.12	0.000	[-0.395, -0.259]	Significant (negative)
X2 → M external → emotional stress	0.222	5.01	0.000	[0.123, 0.312]	Significant (positive)
M → Y1 emotional stress → panic selling	0.417	7.55	0.000	[0.338, 0.495]	Significant (positive)
X1 → Y1 internal → panic selling	-0.285	5.47	0.000	[-0.393, -0.178]	Significant (negative)
X2 → Y1 external → panic selling	0.192	4.28	0.000	[0.086, 0.298]	Significant (positive)
Y1 → Y2 panic selling → sustainability orientation	-0.443	8.17	0.000	[-0.543, -0.327]	Significant (negative)
X1 → Y2 internal → sustainability orientation	0.390	6.21	0.000	[0.275, 0.503]	Significant (positive)
M → Y2 emotional stress → sustainability orientation	-0.106	1.82	0.069	Marginal ($p \approx 0.07$)	($\pm$)

Note: R^2 Emotional stress = 0.213; R^2 Panic selling = 0.457. Data analyzed using SmartPLS v4 with 3,000 bootstrap resamples. All CR ≥ 0.70 , AVE ≥ 0.40 .

Table 3 presents the PLS–SEM results, showing that internal production factors significantly reduce emotional stress ($\beta = -0.324$, $p < 0.001$) and panic selling ($\beta = -0.285$, $p < 0.001$), while external market pressures significantly increase emotional stress ($\beta = 0.222$, $p < 0.001$) and panic selling ($\beta = 0.192$, $p < 0.01$). Emotional stress positively affects panic selling ($\beta = 0.417$, $p < 0.001$). Panic selling, in turn, has a strong negative effect on sustainability orientation ($\beta = -0.443$, $p < 0.001$). These findings indicate that panic selling is not merely an economic reaction to price movements but a behavioral outcome shaped by emotional stress and perceived loss of control. The strong negative association between panic selling and sustainability orientation highlights a critical behavioral trade-off: when farmers prioritize short-term loss avoidance, their capacity to engage in long-term sustainability-oriented practices declines.

3.2 The effect of internal production factors on emotional stress and panic selling

Quantitative analysis indicates that the highest mean scores for internal production factors were found in flock health and feed efficiency ($M = 4.3$ each), followed by chick quality ($M = 4.2$) and housing management ($M = 4.1$) (Table 4). These values suggest that farmers consistently perceive the biological and nutritional aspects of broiler production as the core determinants of farm performance. Similar findings were reported by Wuepper et al (2023), who emphasized that feed efficiency and animal health are primary drivers of profitability and emotional stability among smallholder farmers.

“Even with good feed and proper management, poor-quality chicks will not grow well,” - stated an independent farmer from Singosari District, Malang Regency (field interview, 2024).

This quote illustrates the practical logic shared by most farmers—that input quality fundamentally defines production outcomes. Nevertheless, 17 percent of respondents were less convinced that management practices alone could improve flock performance, arguing that genetics and feed composition are the “ultimate limiters.” This contrasts with the 83

percent who believe that good management practices (biosecurity, recordkeeping, ventilation, sanitation) remain crucial to achieving the flock's genetic potential.

Table 4. Descriptive statistics of internal production factors

Indicator (X1)	Mean	Std. Dev.	Description
Feed efficiency	4.30	0.42	Efficient feed use lowers cost burden
Chick quality	4.20	0.47	Healthy chicks determine growth potential
Flock health	4.30	0.40	Key to mortality control and feed conversion
Housing & management	4.10	0.55	Includes biosecurity, ventilation, sanitation
Average	4.23	–	–

Table 3 presents both the descriptive indicators and the structural path coefficients derived from the PLS–SEM model. Internal production factors significantly reduced emotional stress ($\beta = -0.324$, $p < 0.001$) and panic selling ($\beta = -0.285$, $p < 0.001$). This negative association indicates that farmers with better control over feed, health, and management experience less psychological tension when facing market volatility—consistent with Jie et al. (2024), who found that effective farm management buffers emotional fatigue and impulsive decisions among poultry producers in Asia.

The negative effect of internal production factors on emotional stress ($\beta = -0.324$) suggests that technical control functions as a psychological safety net. Farmers who perceive their production systems as stable, through healthy flocks, efficient feed use, and sound management, experience lower anxiety even when market prices fluctuate. This perceived control reduces loss aversion and prevents emotional escalation that often triggers panic-driven decisions. Importantly, strong internal production capacity also supports sustainability orientation by enabling farmers to maintain biosecurity, resource efficiency, and reinvestment planning despite external shocks. Thus, production competence contributes not only to technical efficiency but also to behavioral resilience.

In the field interviews, 97 percent of farmers agreed that maintaining animal health is essential to economic resilience. Several respondents noted that illness or mortality directly increases their stress level because surviving chickens must “carry the cost” of those that died. As one farmer explained,

“When the chickens get sick, I can’t sleep. Every loss means extra feed cost for those still alive,” stated a contract farmer from Dau Sub-district (field interview, 2024).

These psychological responses reinforce findings from Eberhardt & Pooyan (1990) and Rudolphi et al. (2024), which documented how physical stressors, such as animal mortality or feed shortages, translate into cognitive strain and anxiety in agricultural work. Farmers with limited technical control over input quality tend to develop anticipatory stress, often leading to impulsive selling during downturns.

Among plasma (contract) farmers, management practices were more constrained by company-provided inputs, so emotional stress often arose not from technical factors but from perceived power imbalance with integrators. In contrast, independent farmers reported greater autonomy but also greater exposure to market risks. This duality mirrors the “efficiency–control paradox” discussed by Saptana & Ilham (2020) and confirmed by Suganda et al. (2024), efficient systems can reduce operational stress but amplify financial vulnerability when market prices fluctuate.

Overall, the PLS–SEM results confirm that internal production capacity (feed, chick quality, flock health, and management) plays a protective role in preventing emotional distress and panic-driven decision-making. Strengthening technical competencies, through farmer training, improved recordkeeping, and health management, can thus indirectly reduce panic selling and foster more rational responses to market volatility.

3.3 The effect of external market pressures on emotional stress and panic selling

The descriptive findings reveal that broiler farmers in Greater Malang experience strong external pressures driven by volatile input prices, trader dependence, and limited price transparency (Table 5). The highest mean score was recorded for feed price volatility ($M = 4.4$), followed by trader dependence ($M = 4.3$) and market volatility perception ($M = 4.2$). Indicators of market information access ($M = 3.7$) and price transparency ($M = 3.5$) were the lowest, indicating that most farmers perceive asymmetric information between producers and middlemen.

“The traders decide everything. We only follow their offered price,” stated a contract farmer from Turen District, Malang Regency (field interview, 2024).

This perception of unequal market power has been widely discussed by Pramuwidyatama et al. (2022) and Suganda et al. (2024), who showed that information asymmetry and feed-price shocks contribute directly to farmers’ psychological strain and financial vulnerability.

Table 5. Descriptive statistics of external market pressure indicators

Indicator (X1)	Mean	Std. Dev.	Description
Feed efficiency	4.30	0.42	Efficient feed use lowers cost burden
Feed price volatility	4.40	0.41	Feed cost dominates operational burden
Loss below HPP	4.10	0.46	Frequent loss due to falling prices
Trader speculation	4.00	0.49	Traders bargain below production cost
High chick price	3.90	0.55	Limited control over DOC cost
Market volatility	4.20	0.44	Prices change weekly
Trader dependence	4.30	0.48	Reliance on brokers for selling
Market information access	3.70	0.53	Limited knowledge of demand & price
Price transparency	3.50	0.60	Low trust in price fairness
Average	4.01	–	–

The PLS–SEM analysis (Table 3) demonstrates that external market pressures exert a positive and significant effect on both emotional stress ($\beta = 0.222$, $p < 0.001$) and panic selling ($\beta = 0.192$, $p < 0.01$). This indicates that farmers exposed to stronger market volatility tend to feel more anxious, fatigued, and impulsive in decision-making. Consistent with Haruna et al. (2025) and Rudolphi et al. (2024), economic uncertainty and perceived loss of control are major predictors of psychological distress in agricultural contexts.

“When the price drops suddenly, we just sell all chickens before losing more,” reported an independent farmer from Batu City (field interview, 2024).

Such behavior reflects a classic “panic-selling loop” where emotional stress mediates market shocks and decision behavior. These results demonstrate that external market pressures act as emotional stressors rather than purely economic constraints. Under conditions of price opacity and trader dominance, farmers tend to interpret price declines as signals of imminent loss, amplifying anxiety and triggering premature selling. This aligns with behavioral economics literature emphasizing that uncertainty heightens risk perception and accelerates short-term coping behavior (Ashtiani et al., 2021; Bhanot et al., 2021).

3.4 The mediating role of emotional stress

The PLS–SEM mediation analysis (Table 6) reveals that emotional stress acts as a significant psychological mediator between production and market conditions (X1 and X2) and panic selling behavior (Y1). Specifically, the indirect path from Internal Production Factors → Emotional Stress → Panic Selling is negative and significant ($\beta = -0.135$, 95% CI

$[-0.210, -0.070]$, $p < 0.01$), while the indirect path External Market Pressures → Emotional Stress → Panic Selling is positive and significant ($\beta = 0.093$, 95% CI $[0.047, 0.162]$, $p < 0.05$).

These findings suggest that improved technical capacity (feed management, health control, recordkeeping) buffers psychological distress and discourages panic-driven sales, whereas volatile market environments amplify anxiety, fatigue, and impulsivity. This dynamic resonates with the framework proposed by Rudolphi et al. (2024) and Eberhardt & Pooyan (1990), which conceptualize emotional exhaustion as a mediator linking occupational stressors and economic decision-making among farmers.

"When prices suddenly drop, I feel my heart racing. I sell quickly just to end the stress," explained an independent farmer from Karangploso District (field interview, 2024).

This statement captures the cognitive mechanism of loss aversion under pressure, a behavioral shortcut that converts emotional discomfort into immediate economic action. Emotional stress reflects farmers' perceived helplessness during fluctuating prices and uncertain demand, confirming its role as a psychological bridge between economic stimuli and behavioral outcomes. Farmers with stronger coping mechanisms (support networks, routine management) reported lower levels of anxiety and were less likely to engage in premature sales. Similar mediating patterns were found by Haruna et al. (2025) in Ghana and Jie et al. (2024) in Southeast Asia, where emotional resilience significantly buffered market-related risks.

"When I keep calm and check the market trend first, I can wait for a better price," stated a contract farmer from Kepanjen District (field interview, 2024).

The contrasting testimonies highlight that emotional regulation is not merely a personal trait but also a function of production stability and institutional support. Contract farmers benefit from structured marketing agreements that reduce emotional volatility, while independent farmers, operating under high uncertainty, experience stress-induced cognitive narrowing—a tendency to focus on short-term survival decisions (Bhanot et al., 2021; Ashtiani et al., 2021).

Emotional stress thus emerges as a central behavioral transmission mechanism linking economic conditions and farmer decision-making. Rather than responding directly to objective market signals, farmers' actions are filtered through affective states shaped by production stability and institutional context.

Table 6. Mediation effects of emotional stress on panic selling

Path	Indirect β	95% CI (Boot)	t-value	p-value	Significance
Internal → emotional → panic selling	-0.135	$[-0.210, -0.070]$	4.02	0.000	Significant (negative mediation)
External → emotional → panic selling	0.093	$[0.047, 0.162]$	3.11	0.002	Significant (positive mediation)
Direct X1 → Y1	-0.285	$[-0.393, -0.178]$	5.47	0.000	Remains significant (partial mediation)
Direct X2 → Y1	0.192	$[0.086, 0.298]$	4.28	0.000	Remains significant (partial mediation)

3.5 The impact of panic selling on sustainability orientation

The descriptive findings show that panic selling behaviors such as premature selling ($M = 3.20$) and price anxiety ($M = 3.30$) remain moderately high among broiler farmers (Table 7). These results suggest that emotional pressure and short-term coping responses persist even when sustainability awareness is relatively strong. The highest mean values are observed for partnership and collaboration ($M = 4.05$) and innovation orientation ($M =$

4.00), indicating that farmers acknowledge the importance of efficiency and cooperation but often fail to apply these principles under stress. A contract farmer from Malang Regency explained,

“When prices fall, I just sell early to cover my debts. I can’t think about the next cycle yet.”
(field interview, 2024).

This reflects the present-bias tendency, where immediate relief is prioritized over long-term sustainability (Ashtiani et al., 2021; Bhanot et al., 2021). The PLS–SEM analysis confirms that panic selling significantly and negatively affects sustainability orientation ($\beta = -0.443$, $p < 0.001$) (Table 3). Emotion-driven selling undermines farmers’ commitment to resource efficiency, welfare-based management, and reinvestment in production improvement. This finding echoes recent evidence that loss aversion and risk perceptions can lead farmers to adopt more conservative or defensive strategies rather than sustainable improvement actions (He et al., 2023; Han & Cheng, 2023).

From a behavioral perspective, emotional stress narrows cognitive focus, leading farmers to prioritize immediate liquidity over long-term resilience. Conversely, farmers who maintain emotional stability and production control demonstrate higher sustainability orientation. They continue optimizing feed, maintaining biosecurity, and engaging in collaborative schemes even during price volatility. Wuepper et al. (2023) and Oke et al. (2024) describe this as behavioral resilience—a balanced integration of economic prudence and emotional regulation. At the systemic level, repeated panic selling disrupts poultry supply chains and price formation mechanisms, generating cyclical instability that discourages sustainable investment (Suganda et al., 2024). It also erodes trust between farmers, traders, and integrators, limiting collective initiatives such as cooperative marketing and joint feed procurement (Bhanot et al., 2021).

Table 7. Descriptive statistics of panic selling and sustainability orientation indicators

Indicator (Y1-Y2)	Mean	Std. Dev.	Description
Premature selling	3.20	0.72	Selling broilers earlier than optimal due to fear of further price decline
Price anxiety	3.30	0.80	Psychological tension triggered by volatile input and output prices
Debt-driven decision	2.95	0.69	Selling to meet urgent debt repayment or operational cash flow
Reduced reinvestment	3.10	0.66	Limited reinvestment in feed, chicks, or housing after loss
Sustainable management focus	3.90	0.58	Consistent biosecurity, feed optimization, and waste control practices
Environmental responsibility	3.85	0.61	Awareness of environmental impact and resource efficiency
Innovation and efficiency orientation	4.00	0.54	Adoption of improved management and resource-saving techniques
Partnership and collaboration	4.05	0.52	Participation in cooperative or integrator-based marketing
Average	3.67	–	–

From a sustainability and social value creation perspective, panic selling undermines not only individual farm resilience but also collective outcomes within the poultry value chain. Repeated distress sales destabilize supply, weaken trust among farmers, traders, and integrators, and discourage cooperative initiatives such as collective marketing and shared input procurement. These dynamics limit the sector’s ability to generate stable livelihoods, equitable market participation, and long-term environmental stewardship. This finding demonstrates that behavioral instability at the farm level can translate into systemic inefficiencies and reduced social welfare. Sustainability orientation,

therefore, depends not only on farmers' awareness or values but also on their emotional capacity to withstand market stress without resorting to panic-driven actions.

3.6 Measurement model: Validity and reliability test

Before examining the structural relationships, a measurement model assessment was conducted to ensure that all latent constructs met the minimum reliability and validity standards required in PLS-SEM. As shown in Table 8, all constructs exhibited strong internal consistency (Cronbach's $\alpha > 0.80$; CR > 0.87) and satisfactory convergent validity (AVE > 0.60). All constructs demonstrated acceptable psychometric quality. The highest reliability was found in Sustainability Orientation ($\alpha = 0.878$; CR = 0.916), showing consistent response patterns in sustainability-related indicators. These results confirm that the dataset fulfills the minimum standards for measurement model adequacy, allowing structural model testing to proceed.

Table 8. Reliability and validity test of constructs (PLS-SEM)

Construct	Cronbach's α	Composite reliability (CR)	Average variance extracted (AVE)	Description
Internal production factors (X1)	0.853	0.894	0.678	Reliable and valid — indicators consistently measure production control quality (feed, chicks, health, management).
External market pressures (X2)	0.811	0.870	0.627	Reliable — captures variations in feed cost, trader dependence, and market volatility.
Emotional stress (M)	0.862	0.901	0.695	High internal consistency — reflects anxiety, fatigue, and pressure in economic decisions.
Panic selling behavior (Y1)	0.846	0.889	0.667	Reliable and valid — indicates impulsive sales and reactive responses under uncertainty.
Sustainability Orientation (Y2)	0.878	0.916	0.735	Very reliable — strong construct validity in measuring long-term sustainability awareness.

3.7 Structural model and hypothesis testing

All hypothesized relationships were statistically significant ($p < 0.05$), validating the behavioral-sustainability framework. Internal production factors lowered both emotional stress and panic selling, while external pressures amplified them. Emotional stress emerged as a strong mediator ($\beta = 0.417$), reinforcing the behavioral economics premise that emotion-driven decisions influence economic outcomes. Panic selling negatively impacted sustainability orientation ($\beta = -0.443$), while internal production control enhanced it ($\beta = 0.390$).

The results of this study highlight several strategic directions to enhance behavioral resilience and sustainability in Indonesia's poultry sector. Behavioral capacity building can be strengthened by integrating behavioral economics and emotional regulation into farmer training programs, which can reduce cognitive biases and improve marketing discipline. Recent behavioral interventions in agricultural decision-making (Ashtiani et al., 2021; Wuepper et al., 2023) have shown that self-awareness of emotional triggers significantly decreases panic-driven sales.

Market information transparency can be improved by developing digital poultry price dashboards and early warning systems to mitigate uncertainty and reduce panic-selling tendencies. Studies from Tanzania (Mwakifwamba et al., 2024) and Ghana (Neza et al., 2023) emphasize that transparent price signals and real-time market data enhance farmers' sense of control and planning stability. Institutional coordination and collective action can be strengthened through farmer cooperatives and contract partnerships, which can reduce trader dependence and information asymmetry. Similar institutional innovations in developing economies have been found effective in stabilizing farmgate prices and reducing distress selling (Bhanot et al., 2021; Hatab et al., 2021; Suganda et al., 2024).

Financial safety nets and market stabilization policies can be supported through access to microcredit, warehouse receipt systems, or price stabilization funds, which can minimize short-term liquidity stress. Studies by Zaman et al. (2024) and Boyd et al. (2018) show that farmers with financial buffers are less prone to emotional decision-making during price downturns. Mental health and social support programs can help manage emotional stress through farmer peer groups or counseling sessions, which can enhance well-being and resilience. Younker & Radunovich (2022) and Rudolphi et al. (2024) found that peer-based mental health initiatives substantially improve coping behavior and reduce burnout in farm communities. Overall, addressing panic selling requires an integrated approach that combines behavioral, institutional, and informational reforms. By targeting both economic and emotional dimensions, policymakers can enhance sustainability-oriented decision-making and ensure long-term resilience of Indonesia's poultry value chains.

Table 9. Path coefficients and hypothesis testing results (H1–H8)

Hypothesis	Structural path	Path coefficient (β)	t-value	p-value	Direction	Result
H1	Internal production factors → emotional stress	-0.324	5.812	< 0.001	Negative	Supported
H2	Internal production factors → panic selling	-0.285	5.094	< 0.001	Negative	Supported
H3	External market pressures → emotional stress	0.222	3.218	0.002	Positive	Supported
H4	External market pressures → panic selling	0.192	2.981	0.004	Positive	Supported
H5	Emotional stress → panic selling	0.417	7.536	< 0.001	Positive	Supported
H6	Panic selling → sustainability orientation	-0.443	8.028	<0.001	Negative	Supported
H7	Internal production factors → sustainability orientation	0.390	6.417	< 0.001	Positive	Supported
H8	Indirect effect (internal → emotional stress → panic selling)	-0.135	2.454	0.015	Negative (Mediated)	Supported

4. Conclusions

This study develops and empirically tests a behavioral–sustainability model of panic selling among small-scale broiler farmers in East Java, Indonesia. The findings demonstrate that panic selling is not merely a rational response to price fluctuations but a behavioral outcome shaped by the interaction between internal production capacity, external market pressures, and emotional stress. Internal production factors, such as feed efficiency, flock health, chick quality, and management practices, significantly reduce emotional stress and panic selling, while external market pressures—particularly feed price volatility, trader dependence, and information asymmetry—intensify both psychological strain and impulsive selling behavior.

Emotional stress plays a critical mediating role, acting as a psychological transmission mechanism through which economic uncertainty translates into panic-driven decisions. Farmers experiencing heightened anxiety and perceived loss of control are more likely to engage in premature selling as a short-term coping strategy, even when such decisions undermine long-term economic and environmental outcomes. This confirms key propositions from behavioral economics and stress-coping theory, highlighting that farmer behavior under uncertainty deviates from classical rationality and is strongly influenced by affective states.

Importantly, the study finds that panic selling has a significant negative effect on sustainability orientation. Emotion-driven sales reduce farmers' willingness and capacity to reinvest in biosecurity, resource efficiency, animal welfare, and long-term farm resilience. From a broader sustainability and social value creation perspective, repeated panic selling also disrupts supply coordination, erodes trust among value-chain actors, and weakens collective initiatives such as cooperative marketing and institutional partnerships. These dynamics limit the poultry sector's ability to generate stable livelihoods, equitable market participation, and long-term social and environmental benefits.

The results suggest that strengthening sustainability in the poultry sector requires more than technical or price-based interventions. Policy responses should integrate behavioral capacity building, including emotional stress management, improved market information transparency, and institutional arrangements that reduce uncertainty and perceived power imbalances. Enhancing farmers' emotional resilience, alongside production competence, can reduce panic selling, support sustainability-oriented decision-making, and contribute to greater social value creation within agricultural systems.

Despite its contributions, this study is subject to several limitations. The cross-sectional design restricts causal inference over time, and the sample is geographically concentrated in East Java. Future research could employ longitudinal data, experimental behavioral interventions, or comparative regional analyses to further examine how emotional stress and institutional support interact in shaping farmer behavior and sustainability outcomes.

Overall, this study advances the literature by integrating behavioral economics, emotional stress, and sustainability into a unified empirical framework. By positioning panic selling as a behavioral and social challenge rather than solely an economic anomaly, the study provides new insights for policymakers, practitioners, and researchers seeking to enhance resilience and social value creation in agricultural markets under uncertainty.

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Author Contribution

Conceptualization, H.S.; Methodology, H.S.; Formal Analysis, H.S.; Data Curation, H.S.; Writing – Original Draft Preparation, H.S.; Writing – Review & Editing, H.S.; Visualization, H.S.; Supervision, H.S.; Project Administration, H.S. The author confirms sole responsibility for all aspects of the work, including study design, data analysis, and manuscript preparation, in accordance with the CRediT taxonomy.

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Informed Consent Statement

Informed consent was obtained from all subjects involved in the study. All participants were briefed about the purpose of the research, data confidentiality, and their right to withdraw at any time without consequence. Written informed consent was obtained prior to data collection.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request. Due to privacy and confidentiality restrictions, raw interview transcripts cannot be made publicly available. Aggregated survey data and analysis codes (SmartPLS project files) are available upon request for academic and non-commercial purposes.

Conflicts of Interest

The author declares no conflict of interest. The study was independently designed, executed, and analyzed without any influence from funding agencies, institutions, or third-party organizations.

Declaration of Generative AI Use

The data supporting the findings of this study are available from the corresponding author upon reasonable request. Due to privacy and confidentiality constraints, the authors used ChatGPT (OpenAI, GPT-5) to assist with grammar correction during the preparation of this work. Interview transcripts cannot be published.

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