

Regional Context Matters More Than Commodity: Profiling Horticultural Agribusiness Firms Across Four Provinces in Java, Indonesia

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Article Info

Article History:

Published: 11 Feb 2026

Publication Issue:

Volume 3, Issue 2

February-2026

Page Number:

238-247

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Abstract:

Horticultural agribusiness plays a strategic role in supplying nutritious food commodities, particularly fruits and vegetables, yet faces persistent challenges related to perishability, postharvest handling, and market coordination. This study profiles horticultural agribusiness firms operating in two main commodity groups, namely fruits and vegetables, across four provinces in Java, Indonesia (DKI Jakarta, Banten, West Java, and Central Java). A cross-sectional survey of 109 firms was analyzed using (1) descriptive statistics via frequency distribution tables and (2) cross-tabulations with Pearson's Chi-square tests to examine associations between main commodity group and province with other firm profile variables. The results indicate that most firms are small-medium scale and rely primarily on traditional market channels, while participation in supermarkets, industry, inter-island distribution, and export remains limited. Inferential findings show that the main commodity group (fruit vs. vegetable) is not significantly associated with most firm profile variables, whereas province is significantly associated with several indicators of firm scale (labor, net assets, and turnover) and market orientation (traditional market, supermarket, industry, and inter-island distribution). These findings suggest that regional context is a stronger differentiator of firm profiles than commodity specialization, implying that strengthening strategies should be tailored to provincial roles within the value chain (production-aggregation-distribution-market). This study contributes enterprise-level, multi-province evidence combining descriptive profiling and association testing to inform more targeted horticultural agribusiness development interventions.

Keywords: horticultural agribusiness, company profile, fruits, vegetables, province, Chi-square, market channels

1. Introduction

Horticultural agribusiness, especially fruit and vegetable commodities, holds a strategic position because it contributes to the supply of nutritious food, increases business actors' income, and drives economic circulation in both production and consumption areas. In Indonesia, the importance of this subsector is reflected in the availability of annual statistical publications that specifically record horticultural enterprises (including directories, labor, and cultivated commodities), thereby providing an informational basis for policymaking and strengthening the horticultural business ecosystem (Badan Pusat Statistik, 2024).

However, the perishable nature of horticultural products means that key challenges do not stop at production, but also extend to postharvest handling and distribution. Based on Ihsan and Derosya (2024), fresh fruits and vegetables have a short shelf life and are therefore at high risk of food loss, and reducing such losses requires optimizing postharvest supply chains. International literature also emphasizes that weak coordination,

limited cold-chain facilities, and problems in logistics and demand information are major drivers of postharvest losses in fruit and vegetable supply chains (Anand & Barua, 2022).

On the downstream side, market dynamics are driving increasingly demanding standards: supply consistency, traceability, and compliance with quality and food safety standards. Referring to Widadie et al. (2022), the combination of vertical coordination mechanisms (e.g., control/requirements from buyers) and horizontal coordination (through producer organizations) can improve the efficiency of quality and food safety control and reduce coordination costs in Indonesian vegetable chains. In line with this, Supriatna et al. (2016) explain that in structured market destinations, vegetable logistics require special handling due to perishability while also requiring high quality and continuous supply; therefore, an effective and efficient supply chain structure becomes a key success factor.

These changing market requirements are closely related to the agenda of sustainability and value-chain efficiency. Based on Moreno-Miranda and Dries (2022), achieving sustainability in food supply chains requires coordinated interactions among actors, yet coordination remains relatively rarely integrated into supply chain sustainability assessment frameworks. At the firm level, a case study of a fresh-cut vegetable agribusiness in West Java shows that integrating value chain analysis and sustainability analysis can produce performance improvement recommendations, including strengthening partnerships and arranging cultivation locations closer to downstream processes (Wiryawan et al., 2020).

Beyond supply chain aspects, the performance of horticultural agribusiness is also determined by the internal capacity of business actors. Based on Rasmikayati et al. (2026), in a survey of horticultural agribusiness actors across four provinces (West Java, DKI Jakarta, Banten, and Central Java), entrepreneurial competence has a positive and significant effect on business performance, while some other internal factors are not consistently significant. These findings indicate that variations in firm characteristics and managerial capacity can lead to different performance outcomes, making firm profiling relevant as a basis for strengthening interventions.

Although studies on supply chains, coordination, and internal factors continue to develop, research that specifically presents horticultural company profiles remains relatively limited, particularly for cross-regional comparisons. Referring to Awaliyah (2020), a horticultural company profiling study in West Java provides an important overview of firm characteristics (e.g., business form, ownership, and types of business activities), but its scope tends to focus on a single province and does not test statistical relationships among profile variables across regions. On the other hand, national statistics provide quantitative snapshots of horticultural enterprises but do not always explain operational patterns, market orientation, and commodity-based differentiation analytically (Badan Pusat Statistik, 2024).

Based on the state of the art, a research gap exists at the intersection of (1) the need for more systematic profiling of horticultural companies and (2) the need for cross-provincial comparisons linking firm characteristics to commodity orientation and operational geography. Previous studies have largely focused on coordination mechanisms for quality and food safety (Widadie et al., 2022), performance improvement strategies based on value chains and sustainability (Wiryawan et al., 2020), or the effects of internal factors on business performance (Rasmikayati et al., 2026). However, studies that position the main commodity (fruit vs. vegetables) and province as differentiating factors and then test their associations with other firm profile variables using cross-tabulation and statistical association tests remain relatively rare.

This study was designed to address this gap by mapping the profiles of horticultural agribusiness firms in two main commodity groups (fruits and vegetables) across four provinces, namely DKI Jakarta, Banten, West Java, and Central Java. The analysis was conducted in two stages: (1) descriptive analysis using frequency distribution tables for all study variables; and (2) association analysis using cross-tabulations and Chi-Square tests to examine relationships between Main Commodity and Province and other firm profile variables. The province variable was constructed from district/municipality-based location information encoded through “clusters” in the field survey.

Accordingly, the objectives of this research are: (1) to describe the characteristics and distributions of horticultural agribusiness firm profile variables using frequency tables; and (2) to analyze associations between the main commodity and province and other firm profile variables using cross-tabulations and Chi-Square tests. The contribution (novelty) of this research lies in providing multi-province, enterprise-level evidence that

combines descriptive profiling and inferential association testing to understand patterns of horticultural firm differentiation by commodity and geography. The findings are expected to strengthen the scientific basis for designing more targeted horticultural agribusiness strengthening strategies, for example in supply chain development, market expansion, and capacity-building priorities aligned with regional and commodity contexts.

2. Literature Review

Studies on horticultural agribusiness emphasize that the performance and competitiveness of fruit and vegetable businesses are determined not only by production capacity, but also by supply chain structure and the ability of business actors to meet market requirements. At the national level, the importance of mapping business actors is reflected in official statistical publications that document the number of horticultural firms, labor, cultivated commodities, and business directories, which are useful for understanding the institutional landscape of horticultural enterprises (Badan Pusat Statistik, 2024). At the firm level, a company profiling study in West Java shows that institutional characteristics (such as business form, ownership, and the spatial distribution of operations) provide basic information for understanding the conditions and constraints facing horticultural company development (Awaliyah, 2020). However, such profiling studies tend to focus on specific regions, and relatively few have tested differences in profile patterns across provinces.

Recent literature also highlights that horticultural commodities, especially fruits and vegetables, are highly vulnerable to post-harvest loss, making handling, storage, and distribution key determinants of performance. Based on Anand and Barua (2022), post-harvest losses in fruit and vegetable supply chains are influenced by a combination of factors such as supply chain coordination, limited cold-chain facilities, logistics, and demand information. In the Indonesian context, efforts to reduce food loss are often associated with improvements in packaging and postharvest practices, because better postharvest quality can extend shelf life and reduce losses, particularly in supply chains serving broader markets (Ihsan & Derosya, 2024). These findings strengthen the argument that horticultural company profiles should incorporate operational variables (such as market orientation and logistics/postharvest capacity) as part of firm characteristics.

In line with market changes, research on value chain coordination indicates that access to modern markets requires stricter quality and food safety standards, thereby increasing the need for more coordinated supply chain governance. Referring to Widadie et al. (2022), the combination of vertical and horizontal coordination in Indonesian vegetable chains is important to support safe and high-quality vegetable production while helping buyers design efficient coordination mechanisms. Meanwhile, studies of vegetable supply chains for structured markets emphasize that perishability and demanding quality requirements make efficient supply chain design, from continuous supply to distribution, critical for serving more formal markets (Supriatna et al., 2016). In addition, research integrating value chain and sustainability analysis in fresh-cut vegetable agroindustry suggests that performance improvement strategies can be directed toward strengthening supplier partnerships and arranging production locations to be more efficient relative to downstream processes (Wiryawan et al., 2020). Conceptually, the literature also shows that coordination has not always been strongly integrated into sustainability assessment frameworks for supply chains, indicating the need for approaches that can capture variations in firm-level conditions (Moreno-Miranda & Dries, 2022).

Beyond supply chain factors, internal dimensions of business actors are also frequently cited as important determinants of horticultural agribusiness performance. Based on Rasmikayati et al. (2026), internal factors, particularly entrepreneurial competence, significantly affect the performance of horticultural agribusiness actors in a cross-provincial survey in West Java, DKI Jakarta, Banten, and Central Java. This finding confirms that firms' characteristics and internal capacities likely vary across regions and may influence market orientation and business scale. Therefore, company profiling is relevant not only for descriptive purposes but also for empirically identifying differences in business characteristics across regions and commodity groups.

Based on the state of the art above, a research gap remains regarding the need for horticultural company profiling that is (1) cross-provincial and (2) compares profile patterns based on the two most common main commodity groups, namely fruits and vegetables. Existing profile studies provide useful overviews of business characteristics but are often limited to specific regions (Awaliyah, 2020), while supply chain and coordination

studies tend to focus more on inter-actor relationships or specific chain cases without statistically testing differences in firm profiles by province and commodity specialization (Widadie et al., 2022; Wiryawan et al., 2020). Accordingly, this study addresses the gap by profiling horticultural agribusiness firms using descriptive analysis (frequency tables) and testing associations using cross-tabulations and Chi-square tests between Main Commodity and Province and other firm profile variables, thereby providing more systematic empirical evidence to understand patterns of horticultural firm differentiation across the four study provinces.

3. Case and Methodology

This study was conducted in four provinces in Java, Indonesia (DKI Jakarta, Banten, West Java, and Central Java) covering a mix of metropolitan consumption centers and surrounding production and distribution corridors for horticultural commodities. The selected provinces represent major nodes in the movement of fresh horticultural products, where firms may operate as producers, aggregators, traders, distributors, or hybrid actors in fruit and vegetable value chains. The geographic unit recorded during fieldwork was the district/municipality (kabupaten/kota) level, which was captured using a “cluster” coding system derived from the study’s sampling frame.

The empirical context of this study is horticultural agribusiness firms whose operations are centered on two main commodity groups: fruits and vegetables. The unit of analysis is the firm (enterprise), not individual farmers or households. The dataset consists of 109 surveyed firms ($n = 109$). The study focuses on enterprise-level characteristics because company profiles (such as organizational form, ownership structure, labor size, assets, turnover, and market channels) are closely linked to how firms manage perishability risks, meet quality requirements, and coordinate activities in horticultural supply chains.

A quantitative, cross-sectional survey design was used because the primary aim is to document enterprise profiles and test whether observed differences are systematically associated with geography and commodity specialization. Accordingly, the analysis follows two complementary tracks. First, descriptive analysis summarizes the distribution of each variable using frequency tables (counts and percentages). Second, bivariate analysis applies cross-tabulations and Pearson’s Chi-square tests to examine associations between (a) main commodity group and (b) province, with other firm profile variables. This design is appropriate for identifying whether patterns observed in firm profiles differ by commodity type (fruit vs. vegetable) and/or by provincial context.

A cluster random sampling approach was applied, where clusters correspond to district/municipality units represented by the “Cluster 1, Cluster 2, ...” coding system. In this design, clusters served as the primary sampling units, and eligible horticultural agribusiness firms within selected clusters were surveyed, enabling coverage of multiple districts/municipalities across the four provinces while maintaining an organized geographic sampling structure.

The province variable was constructed through a recoding procedure based on the cluster-coded locations captured in the survey. In the raw dataset, location was recorded as a text label (e.g., “Cluster 1”, “Cluster 13”). The numeric cluster code was extracted from the label and mapped to its corresponding district/municipality and province using the cluster reference sheet from the operationalization table. The final analytical grouping uses four provinces consistent with the study design. A methodological note applies to Cluster 21 (Sleman): while Sleman is administratively part of the Special Region of Yogyakarta, it was grouped into Central Java in this study to maintain the four-province analytical frame used in the sampling design and reporting.

The survey instrument captured firm-level characteristics relevant to horticultural agribusiness profiling. Key variables include (i) main commodity group (fruit vs. vegetable), (ii) location (cluster and derived province), (iii) year of establishment, (iv) business entity form, (v) ownership type, (vi) labor size, (vii) net assets, (viii) annual turnover, and (ix) market channel orientation. Market channels were recorded as percentage shares (0–100%) across five outlets: supermarket, export, industry, traditional market, and inter-island distribution. To improve interpretability and meet the requirements of contingency table analysis, market channel variables were also recoded into binary indicators: “No” if the share equals 0% and “Yes” if the share is greater than 0%, representing whether a firm participates in a particular market channel.

Prior to analysis, basic data preparation was performed. Category labels were standardized to address minor inconsistencies in capitalization and typographical variations so that semantically identical categories were treated as the same value (e.g., “Yayasan” vs. “yayasan”). The year of establishment, originally numeric, was grouped into four periods (≤ 1990 ; 1991–2000; 2001–2005; 2006–2012) to facilitate categorical comparisons and more stable cell counts in cross-tabulations. For market channels expressed as percentages, the binary transformation (0 vs. >0) was applied primarily for Chi-square testing due to the categorical nature of contingency analysis and to reduce sparse-cell problems.

Statistical analysis was conducted in two steps. First, frequency tables were generated for all study variables to provide an overview of the horticultural firm landscape in the study area. Second, cross-tabulations were produced and Pearson’s Chi-square tests were conducted to assess associations between the two focal variables (main commodity group and province) and other firm profile variables. Statistical significance was evaluated at $\alpha = 0.05$. In addition, Cramér’s V was reported as an effect size measure because the contingency tables are not limited to 2×2 formats. Assumptions for Chi-square testing were examined using expected cell counts. Where expected counts were low due to small category sizes, categories with very small frequencies were collapsed into an “other” group and/or binary versions of market-channel indicators were used. When sparse cells could not be fully eliminated, results were still reported but interpreted cautiously, emphasizing descriptive patterns alongside inferential outcomes.

All statistical analyses were performed using IBM SPSS Statistics, while results are presented in aggregated form to protect confidentiality. The names of firms and identifying details were not disclosed, and the analysis focuses on patterns at the province and commodity-group levels rather than individual firm identification.

4. Results & Analysis

1. Respondent Characteristics and Spatial Distribution of Operations

This section presents the general profile of surveyed horticultural agribusiness firms, including the distribution by main commodity group and provincial coverage of the study area. The descriptive statistics provide an overview of how firms are spread across fruits versus vegetables and across the four provinces, which serves as the baseline for subsequent interpretation of firm characteristics and association testing.

As shown in Table 1, the study covers 109 firms, with vegetables representing a slightly larger share than fruits. Provincially, the sample is concentrated in West Java and Central Java, followed by DKI Jakarta and Banten. At the district/municipality level (derived from cluster mapping), respondents are most concentrated in East Jakarta, Depok, and Sleman, suggesting that many firms operate around consumption, distribution, and peri-urban nodes that facilitate the movement of fresh products.

Table 1.

Distribution of respondents by main commodity and province (n = 109).

Variable	Category	n	%
Main commodity	Vegetables	61	56.0
	Fruits	48	44.0
	Total	109	100.0
Province	West Java	48	44.0
	Central Java	34	31.2
	DKI Jakarta	18	16.5
	Banten	9	8.3
	Total	109	100.0

The concentration in urban–peri-urban nodes can be understood as a response to the perishable nature of horticultural products. Based on Anand and Barua (2022), logistics and supply chain coordination are central to reducing postharvest losses of fruits and vegetables; thus, proximity to markets and distribution nodes becomes an operational advantage. This is also consistent with the emphasis on fast and precise postharvest handling to reduce food loss (Ihsan & Derosya, 2024).

Thus, the spatial distribution indicates that enterprise-level horticultural agribusiness does not merely “follow production centers,” but also follows the logic of distribution efficiency for fresh produce. Therefore, interpreting firm profiles should consider each province’s position within the value chain (production–aggregation–distribution–market), rather than relying solely on administrative boundaries.

2. Institutional Profile and Business Scale

After describing the commodity and geographic distribution, this subsection summarizes institutional characteristics and business scale indicators to illustrate how firms are structured and how large they operate. These variables are important because formalization, ownership, labor size, assets, and turnover often shape firms’ capacity to comply with quality requirements and adopt improved postharvest and coordination practices.

Table 2 indicates that firms are dominated by formal entities (e.g., PT and UD), yet a notable share still operates without formal legal status. Ownership is largely individual or partnership-based, implying that decision-making is concentrated in owners/partners. This profile is relevant because internal capacity and entrepreneurial competence can influence performance and the ability to adapt to market demands (Rasmikayati et al., 2026), and it is also consistent with earlier profiling work emphasizing the importance of institutional characteristics in understanding horticultural company development (Awaliyah, 2020).

In terms of scale, most firms fall within small–medium categories for labor size, net assets, and turnover. For highly perishable commodities, small–medium scale operations may face limitations in investing in cold chain and quality control, which can affect market orientation and channel access (Anand & Barua, 2022; Ihsan & Derosya, 2024).

Hence, the institutional and scale profiles suggest the need for differentiated strengthening strategies: formally established medium-scale firms can be guided toward standardization and structured-market access, while informal or small-scale firms require institutional support, basic management improvements, and postharvest loss-reduction assistance.

Table 2.

Institutional characteristics and business scale (n = 109).

Variable	Category	n	%
Year established	2006–2012	45	41.3
	2001–2005	25	22.9
	1991–2000	22	20.2
	≤1990	17	15.6
	Total	109	100.0
Business entity form	Limited liability company (PT)	26	23.9
	Sole proprietorship (UD)	14	12.8
	Foundation (Yayasan)	12	11.0
	Other	12	11.0
	No formal legal status	11	10.1
	Limited partnership (CV)	10	9.2
	Regional enterprise (PD)	7	6.4
	Cooperative	6	5.5
	Farmer group	6	5.5
	Seed breeder	3	2.8
	Government agency	2	1.8
	Total	109	100.0
Ownership	Individual	53	48.6
	Partnership/cooperation	40	36.7
	Family	11	10.1
	Other (combined minor categories)	5	4.6
	Total	109	100.0

Variable	Category	n	%
Number of workers	5–19 persons	49	45.0
	20–99 persons	44	40.4
	>100 persons	16	14.7
	Total	109	100.0
Net assets*	> IDR 50 million–500 million	52	47.7
	> IDR 500 million–10 billion	34	31.2
	> IDR 10 billion	12	11.0
	≤ IDR 50 million	11	10.1
	Total	109	100.0
Annual turnover	> IDR 300 million–2.5 billion	59	54.1
	> IDR 2.5 billion–50 billion	27	24.8
	≤ IDR 300 million	20	18.3
	> IDR 50 billion	3	2.8
	Total	109	100.0

3. Marketing Channels and Market Orientation

This subsection describes where firms sell their products and how diversified their marketing channels are. Mapping market-channel participation is essential because different channels impose different requirements for quality consistency, logistics capability, and coordination mechanisms—factors frequently highlighted in horticultural supply chain research.

Table 3.

Marketing channel indicators (Yes = share > 0%).

Channel	Yes (n, %)	No (n, %)	Total
Traditional market	86 (78.9%)	23 (21.1%)	109 (100.0%)
Supermarket	34 (31.2%)	75 (68.8%)	109 (100.0%)
Industry	23 (21.1%)	86 (78.9%)	109 (100.0%)
Inter-island distribution	13 (11.9%)	96 (88.1%)	109 (100.0%)
Export	8 (7.3%)	101 (92.7%)	109 (100.0%)

As summarized in Table 3, most firms sell to traditional markets, while participation in supermarkets and industry is relatively limited, and inter-island distribution and export are rare. This pattern suggests that many firms remain concentrated in channels that are more tolerant of quality variation and supply fluctuations. In contrast, structured markets typically require continuous supply and higher quality standards (Supriatna et al., 2016), and entry often depends on vertical and horizontal coordination mechanisms that support quality and food safety assurance (Widadie et al., 2022). Low participation in export and inter-island channels is also consistent with literature emphasizing postharvest and logistics constraints as major drivers/barriers in fresh produce supply chains (Anand & Barua, 2022; Ihsan & Derosya, 2024).

Accordingly, a marketing structure dominated by traditional markets suggests that leverage points for strengthening horticultural agribusiness lie in improving postharvest capacity, supply consistency, and coordination—so that firms can gradually access higher-value channels (supermarkets/industry/inter-island/export).

4. Cross-tabulation and Chi-square Tests: Statistical Meaning and Contextual Interpretation

1) Main Commodity × Province: Not Significant, Yet Contextually Meaningful

To examine whether commodity specialization is geographically concentrated, a cross-tabulation between main commodity group and province was constructed, followed by Pearson's Chi-square testing.

Table 4.

Cross-tabulation of main commodity $\times$ province ($n = 109$).

Main commodity	Banten	DKI Jakarta	West Java	Central Java	Total
Fruits	3	8	19	18	48
Vegetables	6	10	29	16	61
Total	9	18	48	34	109

Table 4 presents the distribution of fruit- and vegetable-based firms across the four provinces. The Chi-square test shows that the association between main commodity and province is not statistically significant ($\chi^2(3)=1.900$; $p=0.593$; Cramér's $V=0.132$). Substantively, this indicates that provincial differences in this study do not primarily separate firms by commodity type, but may instead reflect each region's functional role in the value chain (e.g., consumption/distribution hubs versus production/aggregation areas). This interpretation aligns with supply chain literature emphasizing that fresh commodities share common operational challenges—perishability, handling, and coordination—so business patterns may be shaped more by logistics and market environment than commodity type alone (Anand & Barua, 2022; Moreno-Miranda & Dries, 2022).

Accordingly, because main commodity is not strongly tied to province, strengthening strategies should not rely solely on commodity-based approaches (fruit vs. vegetable), but should also consider regional context as a supply chain node and market-access environment.

2) Main Commodity $\times$ Other Firm Profile Variables: Mostly Not Significant

Beyond geography, the study also tested whether firm characteristics systematically differ between fruit-based and vegetable-based firms. Overall, the Chi-square tests indicate no significant associations for most institutional, scale, and channel variables. Although some directional tendencies appear descriptively (e.g., turnover), they do not reach statistical significance, implying that cross-commodity strengthening priorities may be more relevant than commodity-specific interventions in this dataset. This pattern is consistent with the view that shared operational constraints (e.g., postharvest handling and logistics) can shape firms' profiles across horticultural commodities (Anand & Barua, 2022; Ihsan & Derosya, 2024).

Hence, strengthening efforts may be better focused on cross-commodity factors—especially postharvest management, coordination, and market access—rather than interventions that are separated strictly by fruit versus vegetables.

3) Province $\times$ Other Firm Profile Variables: Significant and Demonstrates Regional Differentiation

While commodity type shows limited differentiation, provincial context appears to be a stronger driver of differences in firm scale and market orientation. To summarize this pattern concisely, a Chi-square results table is provided.

Table 5.

Summary of Chi-square tests: Province vs. other variables ($\alpha = 0.05$).

Variable	χ^2	df	p-value	Cramér's V
Net assets ($\leq$ IDR 500 million vs $>$ IDR 500 million)	17.123	3	0.001	0.396
Selling to supermarkets (Yes/No)	14.278	3	0.003	0.362
Turnover ($\leq$ IDR 2.5 billion vs $>$ IDR 2.5 billion)	12.883	3	0.005	0.344
Inter-island distribution (Yes/No)	11.093	3	0.011	0.319
Number of workers (3 categories)	15.809	6	0.015	0.269
Selling to traditional markets (Yes/No)	9.577	3	0.023	0.296
Selling to industry (Yes/No)	8.329	3	0.040	0.276

As shown in Table 5, province is significantly associated with multiple indicators of firm scale (labor size, net assets, turnover) and market channel participation (traditional markets, supermarkets, industry, and inter-island distribution). These findings suggest that geography—interpreted as regional context and value-chain position—shapes firms' capacity and market access. This is consistent with value-chain and coordination literature which emphasizes that differences in governance, logistics, and buyer networks across regions can lead to differentiated business models and market outcomes (Wiryawan et al., 2020; Widadie et al., 2022; Moreno-

Miranda & Dries, 2022).

These results confirm that geography (province) differentiates firm profiles more strongly than main commodity type. Therefore, horticultural agribusiness strengthening strategies are better designed on a regional basis, tailored to provincial roles within the value chain.

5. Discussion: Synthesis and Key Implications

When compared with the existing literature, this study reinforces three key messages. First, the dominance of traditional market sales indicates that many firms still operate in channels with relatively flexible quality requirements, consistent with findings that postharvest/logistics limitations are major barriers to accessing higher-value channels (Anand & Barua, 2022; Ihsan & Derosya, 2024). Second, provincial differences in supermarket, industry, and inter-island access strengthen the argument that coordination and supply chain governance shape market performance and structure (Widadie et al., 2022; Supriatna et al., 2016; Moreno-Miranda & Dries, 2022). Third, institutional heterogeneity and the dominance of individual/partnership ownership highlight the importance of internal actor capacity for adapting to market demands, as emphasized by Rasmikayati et al. (2026), while single-province profile work such as Awaliyah (2020) supports the view that company profiles must be interpreted within regional contexts.

Referring to supply chain–postharvest–coordination literature, the findings indicate that challenges and opportunities for strengthening horticultural agribusiness are more regional than commodity-specific. Accordingly, the most relevant interventions include (1) strengthening postharvest capacity and standardization to expand access to modern/industry markets (especially in provinces with stronger modern-buyer networks such as West Java), and (2) strengthening logistics and loss-management capacity to support inter-regional/inter-island distribution (especially in provinces that function as supply bases such as Central Java). This study extends earlier firm profile research that is often local in scope by providing multi-province evidence and statistical association testing, confirming that provincial context is a stronger differentiator of firm profiles than main commodity type.

5. Conclusion

This study profiles horticultural agribusiness firms operating in two main commodity groups (fruits and vegetables) across four provinces (DKI Jakarta, Banten, West Java, and Central Java) using descriptive analysis and association testing (cross-tabulations and Chi-square). Descriptively, the respondent firms are predominantly small–medium scale, with traditional markets as the main marketing channel, while access to supermarkets, industry buyers, inter-island distribution, and exports remains limited. Inferentially, the findings show that the main commodity (fruit vs. vegetable) is not significantly associated with most firm profile variables, including province; therefore, commodity type is not the primary differentiator of firm characteristics in this dataset.

In contrast, the province variable shows significant associations with several indicators of business scale and market orientation, including labor size, net assets, turnover, and participation in specific marketing channels (supermarkets, industry, traditional markets, and inter-island distribution). Thus, this study confirms that regional context differentiates firm profiles more strongly than the type of main commodity. The finding that province differentiates firm profiles more strongly than commodity type suggests that horticultural agribusiness strengthening programs should be designed with greater sensitivity to regional context. An approach that emphasizes mapping value-chain nodes (production–aggregation–distribution–market) and providing infrastructure and institutional support aligned with regional needs is likely to be more effective in expanding access to higher-value markets, reducing postharvest losses, and strengthening the long-term competitiveness of horticultural enterprises.

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