Research on World Agricultural Economy
https://journals.nasspublishing.com/index.php/rwae

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Agricultural Market Seasonality Dynamics Inducing Farmers' Commercialisation Intensity Efforts within Cash Crop Farming

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ABSTRACT

The importance of agricultural commercialization cannot be overemphasized, particularly with the need to achieve zero hunger and improve the provision of nutritious food for the gradually increasing population. Agricultural commercialization is essential for economic development, improved food security, and enhanced livelihoods for societies dependent on agriculture. The current study investigated agricultural market seasonality dynamics influencing farmers' transition from emerging to commercial farming at Thulamela municipality of Limpopo province, South Africa. A simple random sampling technique was used to select 207 vegetable farmers. Data was collected through in-person interviews and analyzed using descriptive analysis and a multinomial regression model. The study revealed that the vegetables most produced within the study sample were spinach, tomatoes, and cabbage, primarily due to their low production costs, affordability, and cultural preference. Furthermore, the study findings indicated that market dynamics such as commodity seasonality, product variation, perishability rate, commodity supplied volumes, and market selling price enhanced farmers' commercialization intensity. Meanwhile, market dynamics such as commodity shelf lifespan, market competition, and selling season had a regressive influence in intensifying commercialization at various levels. The study recommends integrating short-shelf lifespan commodities with more durable ones to improve sales volumes, intensifying commercialization efforts. Moreover, the study

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ARTICLE INFO
Received: 24 March 2025 | Revised: 11 April 2025 | Accepted: 16 June 2025 | Published Online: 21 November 2025
DOI: https://doi.org/10.36956/rwae.v6i4.1893

CITATION
Khorombi, T.I., Phaswana, D., Tshikororo, M., 2025. Agricultural Market Seasonality Dynamics Inducing Farmers' Commercialisation Intensity Efforts within Cash Crop Farming. Research on World Agricultural Economy. 6(4): 718–730. DOI: https://doi.org/10.36956/rwae.v6i4.1893

also recommends acclimatizing farmers to the market dynamics in which they intend to supply their produce
Keywords: Commercialization; Intensify; Transitioning; Emerging Farmers; Market Dynamics

1. Introduction

Agricultural commercialization remains a key focus in developing rural communities. It raises productivity in the farming sector and rural households' income, leading to high-value market participation, shifting smallholder farmers from subsistence production to market-oriented systems, increasing productivity and income [1]. According to Leakey [2], commercialization enhances high-value agricultural production, particularly vegetables, fruits, and dairy, offering better profit margins than staple crops. Additionally, Hemathilake [3] outlined that agricultural commercialization plays a crucial role in increasing food production to meet the demands of a growing population. Furthermore, commercialization enhances food security by integrating smallholder farmers into markets, enabling them to generate higher incomes and access diverse food sources [4]. A study by Ogutu [5] reiterates that enhancing rural livelihoods, especially for smallholder farmers, requires agricultural commercialization. Moreover, through the shift from subsistence to market-oriented production, farmers can increase their income, improve food security, and strengthen their economic resilience [6]. This transition of farmers to commercialization presents a key ingredient in the economic development of low-income countries [7]. A study by Hemathilake [3] highlighted that the degree to which farmers can effectively transition to commercial farming still varies widely.

Even though commercialization offers substantial advantages like increased incomes, better food security, and expanded economic opportunities, most farmers do not partake in output markets. When they do, their market share remains significantly low, trapping them in a cycle of low productivity and weak bargaining power [6]. Additionally, a study by Owusu [1] outlined that agricultural commercialization has varied impacts on rural households, with wealthier households often benefiting more due to access to modern technologies. Furthermore, limited access to physical infrastructure, such as roads, storage facilities, and markets, significantly reduces farmers' ability to engage commercially in the market. Hence, a study [8] outlined that smallholder farmers still face market-related challenges, which result in them selling only small surpluses, with factors such as limited market access, price volatility, and inadequate infrastructure still hindering full market integration. Moreover, a study by Mariyono [9] argued that vegetable production is essential in global agribusiness because it can increase farm productivity and higher farm gate values than cereals and other staple crops. Therefore, as high-value agricultural commodities, vegetables hold significant potential for driving commercialisation intensity, especially in semi-informal markets where demand is shaped by urbanization, changing consumer preferences, and evolving food systems [9,10]. Semi-informal markets, characterized by limited formal regulations and a blend of traditional and modern trade practices, link smallholder farmers to consumers [11]. Furthermore, a study by Barrett [12] alluded that these markets serve as hubs for exchanging agricultural produce and offer a platform for small-scale farmers to penetrate broader value chains. However, several agricultural market forces influence the degree of commercialization intensity within these markets. Several studies highlight the significance of agricultural commercialization in addressing global challenges such as population growth, food security, and employment [2–4]. According to Hemathilake and Gunathilake [3], agricultural commercialization is crucial in increasing food production to meet the demands of a growing population. This integration improves food storage, processing, and distribution, reducing post-harvest losses and increasing food availability. Moreover, commercialization fosters agro-industry development, boosting local economies and alleviating poverty through wage employment opportunities [13]. Furthermore, agricultural market forces heavily influence the selection of vegetables produced in these market hubs. According to a study by Kephe [14], factors such as market demand,

price volatility, input accessibility, and market infrastructure play a pivotal role in determining which crops farmers prioritize. Moreover, a study by Khutlapye[15] found that price volatility can discourage commercialization since erratic price fluctuations, especially in unregulated markets, undermine profitability and deter long-term investments; price instability particularly affects resource-poor farmers who lack access to storage, transportation, and risk mitigation tools. Additionally, it was determined that farmers frequently select vegetables with strong market demand to optimize sales while considering price stability to reduce financial risks[16]. Moreover, crop selection is strongly impacted by the cost and accessibility of inputs like seeds, fertilizer, and pesticides, as well as the existence or lack of suitable infrastructure for processing, storage, and transportation[17]. Additionally, a study by Hlatshwayo[18] indicated that the availability and affordability of seeds, fertilisers, irrigation systems, and pest control measures play a crucial role in crop selection. This is because vegetables requiring specialised inputs are less likely to be adopted by resource-constrained farmers[19]. Smallholder farmers who receive government support for input subsidies often skew farmer preferences toward supported crops[20]. Labour is another critical factor influencing vegetable selection among smallholder farmers, whereby the intensity of labour needed for different vegetable crops often dictates the choice of crops based on the availability of household labour, which ultimately lowers the commercialization of the labour-intensive crop[21]. In addition, cultural preferences, access to information, and land-related factors are critical in shaping production decisions. Communities often grow vegetables that align with traditional dietary habits and cultural significance[22]. Moreover, access to extension services and agricultural training encourages farmers to diversify and adopt high-value crops. These factors collectively determine the strategic choices farmers make in vegetable production. Climatic conditions, risk management, and local cultural preferences also influence decisions, as farmers often select crops resilient to weather variability or align with consumer habits in semi-informal markets[15]. Additionally, a study by Solankey[23] indicated that the adaptability of certain vegetables to local environmental conditions reduces input costs and risk, which are critical since they can determine which vegetables can be successfully grown in a particular area. Moreover, perishable vegetables are susceptible to climatic fluctuations, influencing planting and harvesting schedules, storage, and transportation logistics. Consumer preferences and cultural practices are some of the most important factors that influence the selection of vegetables to produce. Some vegetables are culturally preferred in specific seasons, ultimately guiding production planning[24]. This consumer-driven demand pattern enhances farmers' competitiveness and market integration when anticipated and aligned with production. Understanding the dynamics of agricultural markets' seasonality is critical for identifying opportunities to strengthen smallholder participation and enhance economic outcomes[25]. Against this backdrop, the current study sought to investigate the influence of agricultural market seasonality dynamics on commercialization-intensifying efforts amongst selected vegetable producers.

2. Materials and Methods

2.1. Study Area, Sampling Technique, and Data Collection

This study was conducted in the Thulamela Local Municipality, in the Limpopo Province of South Africa. Dispersed rural settlements, communal land tenure systems, and traditional village-based governance structures characterise the municipality. Agriculture is a cornerstone of the local economy, significantly contributing to provincial and national food systems[26]. A quantitative research approach was employed to achieve the study's objective. A structured questionnaire was used as a data collection tool, where a sample of 207 emerging vegetable farmers was selected through a simple random sampling technique from a population of 445. This method was chosen for its ability to provide each potential respondent with an equal and independent chance of selection, thereby reducing sampling bias and improving the validity, reliability, and generalisability of the study's findings[27].

2.2. Analytical Tools

The study used descriptive statistics to draw insight into the socioeconomic status distribution of emerging vegetable farmers. Additionally, the study employed the Multinomial Logistic Regression model to ascertain the influence of agricultural market seasonality on the commercialization intensity effort amongst farmers. The multinomial logistic regression model helped simultaneously estimate the log odds of more than three factors and compare many contrasts. The empirical Multinomial Logistic Regression model was specified as $Y_i = f(X_1, X_2..., X_n)$, where Y_i is the polychotomous dependent variable and represents commercialization intensity statuses. The definition of (Y_i) is as follows: 0 for non-commercial status, 1 for weak commercialization intensity, 2 for medium commercialization intensity, and 3 for higher commercialization intensity. The category base in this analysis was the non-commercial status, while the explanatory variables are denoted by X_s, as shown in **Table 1** below.

Table 1. Description of explanatory variables used in the regression model.

Variable	Name of Description	Type of Measure	Expected Sign
X1	Market selling Price	Price (rands)	+
X2	Commodity demand	0 = low demand; 1 = medium demand; 2 = higher demand	+
X3	Product Variation	0 = low variation; 1 = medium variation; 2 = higher variation	+
X4	Market accessibility	0 = not accessible; 1 = accessible	−
X5	Market competition	0 = low competition; 1 = medium competition; 2 = higher competition	−
X6	Perishability	0 = low; 1 = medium and 2 = higher rate	+
X7	Commodity Seasonality	0 = seasonal; 1 = year-round	−
X8	Market saturation	0 = No; 1 = Yes	+
X9	Product benefits	0 = No benefits; 1 = there are benefits	+
X10	Supplied volumes	Quantity (in numbers)	−
X11	Sales volumes	Number of products sold	+
X12	Shelf lifespan	0 = short; 1 = medium; 2 = long	−
X13	Selling season	0 = No; 1 = Yes	+

Source: Author's computation (2025).
Note: The expected signs denoted by (+ and −) in **Table 1** indicate how the independent variables would influence the dependent variable.

3. Results and Discussion

3.1. Discussion on the Distribution of the Socio-Economic Statuses

The findings, as shown in **Table 2** below, revealed that female farmers dominated the study sample, accounting for 62.2%, while males accounted for 37.8%. With regards to the age group of the respondents, the study findings show that most of the respondents were aged between 51 and 65 years (33.8%), followed by those aged 21 and 35 years, accounting for 32.4%. Moreover, those under 20 years were the least, accounting for 0.9%. Furthermore, the study discovered that most respondents had secondary education, accounting for 50.3%, while those with primary education accounted for 21.7%, and the smallest group was those with tertiary education, accounting for 19.6%. Moreover, the study respondents without formal education were only 8.4%. The study also found that most farmers with less than 10 years of farming experience accounted for 46.9%, followed by those with 26–40 years of experience (37.7%), while those with 41 years of farming experience were the smallest group with only 3.3%. Most importantly, the findings also uncovered that most respondents were full-time farmers, accounting for 70.6%. Meanwhile, those with other economic activities accounted for 29.4%.

According to the study findings, as depicted in **Figure 1**, the most produced vegetables in the study sample were spinach, 35%, followed by tomatoes and cabbage with 27% and 23%, respectively. Lastly, butternuts and onions were the least produced, at 9.2% and 5.5% respectively. The results indicate that spinach was the most produced. The latter may be because the product is popular amongst the Vhavenda people. Furthermore, the product is preferred because of its lower production costs and its market demand due to its affordability. These findings are consistent with those of Nesamvuni [28], who reported that the Vhavenda people pre-

fer green leafy crops above other relishes due to their affordability and high nutritional value. Additionally, farmers' selection could be based on certain commodities being more profitability, as Mdoda et al. [29] found that cabbage is one of the most widely grown vegetable crops in South Africa due to its affordability and profit margin.

Table 2. Distribution of the socioeconomic characteristics results.

Variable	Frequency	Percentage
Gender of respondent		
Female	129	62.2
Male	78	37.8
Age group		
20 years or less	2	0.9
21–35 years	67	32.4
36–50 years	53	25.6
51–65 years	70	33.8
66 years and above	15	7.2
The educational level of the respondent		
No Formal Education	17	8.4
Primary Education	45	21.7
Secondary Education	104	50.3
Tertiary Education	41	19.6
Farming experience		
10 years or less	97	46.9
11–25 years	25	12.1
26–40 years	78	37.7
41 years and above	7	3.3
Occupation		
Full-time farmer	146	70.6
Part-time farmer	61	29.4
Total	207	100

Source: Field data, 2024.

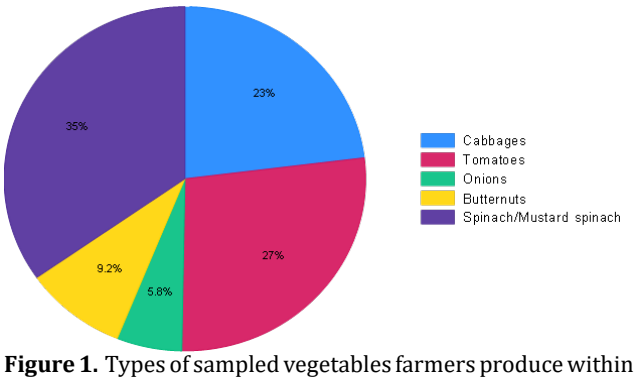

Figure 1. Types of sampled vegetables farmers produce within the study area.

3.2. Discussion on the Market Seasonality Dynamics Influencing Commercialization Intensity

The current study utilized four levels of commercialization intensity status: non-commercialized, low, medium, and high. Non-commercialization served as a reference group in the analysis. Additionally, commercialization intensity refers to how products are integrated into commercial markets, measuring how much of a farmer's production is allocated for market sales rather than consumption [4]. The study used the Market Orientation Index (MOI) to examine the intensity of commercialization. Commercialization intensity was measured using a scale from 0 to 1, with 0–0.24 being non-commercial, 0.25–0.49 being low commercial, 0.5–0.74 being medium commercial, and 0.75–1 being highly commercial. The measurement units of MOI were adopted from a study conducted by Mukaila [30].

3.2.1. Discussion on Market Seasonality Dynamics Contributing to Farmers Achieving a Low Commercialisation Intensity

Demand for the Commodity

The study findings in **Table 3** below have revealed that agricultural market dynamics such as demand for the commodity, product seasonality, and market competition significantly influenced farmers' achieving a low commercialization intensity. The commodity's demand was statistically and significantly influential at a 10% significance level, with a coefficient of −0.34 and a *p*-value of 0.61. The negative coefficient value for commodity de-

mand symbolizes that low commodity demand hampers farmers' commercialization efforts. The results pinpoint how sales volumes have a significant importance on the financial well-being of the agribusiness enterprise, with low commodity demand resulting in an undesirable financial status. Furthermore, the study findings also imply that fluctuations in commodity demand negatively impact farmers' commercialization. The current study's findings are similar to the findings of Sujoya [31], who indicated that low commodity demand leads to higher risks of product losses due to spoilage, which hampers farmers from improving their commercialization intensity. Moreover, a study by Mahaputra [32] outlined that product quality and limited awareness of product benefits can lead to a reduced customer base demand, which disadvantages farmers from enhancing their farm income. These results indicate that low commodity demand largely disadvantages farmers with low commercialization intensity. This could also suggest that farmers intending to transition from emerging farming status to commercial farming level should expand their operations to increase their sales volume, potentially enhancing their financial well-being.

Table 3. Multinomial regression analysis on agricultural market dynamics contributing towards commercialisation intensity.

Explanatory Variables	Low Commercial		Medium Commercial		High Commercial	
	Coeff.	*p*-Value	Coeff.	*p*-Value	Coeff.	*p*-Value
Intercept	−1.919	0.284	−1.470	0.321	0.000	0.678
Market selling Price	−0.612	0.250	−0.120	0.779	1.771	0.035**
Commodity Demand	−0.034	0.061*	0.011	0.441	0.009	0.024**
Product Variation	0.154	0.581	0.631	0.069*	0.033	0.881
Market accessibility	−0.078	0.511	−0.009	0.920	0.005	0.957
Market competition	−1.966	0.162	−0.276	0.194	−0.582	0.002***
Perishability	0.278	0.212	1.553	0.016*	0.579	0.112
Commodity seasonality	0.260	0.097*	−0.343	0.569	0.474	0.391
Market saturation	0.594	0.176	0.186	0.300	1.282	0.185
Product benefits	−1.865	0.120	0.000	0.393	0.509	0.229
Supplied volumes	−0.004	0.415	0.007	0.083*	0.023	0.128
Sales volumes	1.168	0.448	2.127	0.153	0.347	0.773
Shelf lifespan	0.000	0.070*	0.000	0.872	−2.955	0.309
Selling season	0.224	0.754	−0.048	0.709	−0.113	0.009**
Diagnostics						
Base category non-commercialization						
Number of observations: 207						
LR chi-square 61.137						
−2 Log likelihood 494.269						
Pseudo-R^2 0.256						

Note: Field data, 2024. ***, **, *Significant at 1%, 5%, and 10% probability level, respectively. Coeff. -coefficient; Sig.-Significance level.

Shelf Lifespan

Furthermore, the study results revealed that commodity shelf lifespan negatively impairs farmers' efforts to achieve a low commercialization intensity. The shelf lifespan was statistically and significantly influential at a 10% significance level as denoted by the *p*-value of 0.070, with a coefficient of −1.966. The study findings imply that farmers' efforts to secure a low commercialization intensity were negatively affected by the commodity's shelf lifespan. These findings could potentially mean that commodities with short shelf lifespans after harvest could disadvantage farmers from capitalizing on such commodities to improve their commercialization intensity. The study findings could primarily be influenced by the fact that most vegetables are highly perishable, which prevents farmers from earning high revenue if their harvest takes too long to procure. The findings could further be influenced by the recent trend of adverse climatic conditions within the study area, with temperatures gradually increasing, catalysing the perishability rate of vegetables. These results imply that the shorter the commodity shelf lifespan, the lower the chances of achieving a low commercialization intensity are by almost two units. The current study's findings could suggest the need for farmers to integrate short-shelf lifespan commodities with those that

are more durable to minimize the risk of selling at a lower price due to deteriorating commodity quality. The current findings are supplemented by a study that uncovered that lower prices reduce profit margins, making commercialization less achievable, particularly for emerging farmers who may lack economies of scale [33]. Furthermore, the current study's findings are complemented by the results of Niyonsaba [34], who indicated that most farmers leave with unsold stock, especially in semi-informal markets where demand is typically more volatile and contributes to high spoilage.

Commodity Seasonality

Regarding commodity seasonality, the findings in **Table 3** have revealed that it significantly influences securing a low commercialization status at a 10% significance level. The coefficient value of 0.260 implies that the commodity's seasonality influences farmers transitioning toward higher commercial status. The study findings could imply that seasonal commodities can improve farmers' revenues, boosting their commercial intensity. These findings suggest that farmers should consider seasonal commodities, which could improve their short-term commercialization intensity and build on it. The current findings could also imply the need to combat seasonal commodities with commodities that farmers have established to improve their long-term financial sustainability. The study findings could be primarily influenced by commodity demand and competition, which were found to harm farmers' commercialization intensity. A related study by Giri [35] echoed that low-intensity and seasonal commodities create brief but intense demand periods, which could boost farmers' commercialization intensity. This could be primarily influenced by specific vegetables thriving only in particular seasons. Furthermore, it was noted that smallholder farmers face unsteady income year-round, leading them to reduce the overall intensity as products are not consistently available throughout the year [36]. The findings could also be influenced by farmers who opt for seasonal commodities that help them achieve low-intensity commercialization since producing year-round might not be feasible due to limited resources [37].

3.2.2. Discussion on Market Seasonality Dynamics Contributing to Farmers Achieving a Medium Commercialisation Intensity

Product Variation

The findings in **Table 3** above revealed that product variation significantly and positively influences farmers' efforts to commercialize their operations. Product variation was statistically significant at a 10% significance level, with a positive coefficient of 0.631. The study findings imply that when farmers supply varieties of products in the markets, their chances of intensifying their commercialization increase. The study findings could be influenced by earlier observations indicating the influence of market competition and market selling price on the commercialization intensity efforts of farmers. The findings are complementary in that when farmers experience high market competition, they tend to lose market shares, which can be expanded by supplying varieties of products, as it broadens one's chances of securing more market shares. The study findings could suggest the need for farmers to consider diversification practices, as they enhance their market share security and improve their commercialization intensity. This could also be translated by the common understanding within the farming industry that unique and diverse products have a competitive market edge over commonly harvested products [38]. According to Sulaiman et al. [39], farmers who adopt a product variation strategy can respond to market forces more effectively. This was supported by Zhong [40], who stated that product differentiation may help farmers build brand recognition and customer loyalty in informal and semi-formal markets, which often lack standardised grading systems. Additionally, Rubiyanto [41] highlighted that product diversification stabilizes income through risk reduction and increases competitiveness in dynamic markets, contributing to a gradual shift from subsistence to commercial farming. Additionally, it was asserted that diversification of agricultural products allows smallholder farmers to mitigate market risks, meet varied consumer demands, and improve access to differentiated markets [42].

Supplied Volumes

Furthermore, the study findings show that sup-

plied volumes in the markets were statistically significant at a 10% significance level, with a coefficient of 0.007 towards securing a medium commercialization intensity. This means a positive relationship exists between the commodities supplied in the market and the commercialization intensifying efforts. The current study findings imply that when more commodities are provided to a market, the chances of farmers securing a medium commercialization intensity increase. The findings are logically influenced by the notion that farmers make revenues from the sale of commodities. The study findings also show that higher sales volumes positively influence securing a medium commercialization intensity. The study findings align with the findings of Cele [43], who indicated that substantial sales volumes can boost farmers' confidence and financial stability, encouraging them to expand operations. Furthermore, a study by Khorombi [44] concluded that good distribution networks and good-quality products improve customer retention and ultimately increase sales volumes, which increases farmers' commercialization efforts.

Perishability Nature

The study also found that the perishable nature of the vegetables statistically and significantly influenced farmers' efforts to enhance their medium commercialization intensity. The perishability nature of the vegetables was found to be significant at a 5% significance level with a coefficient value of 1.553. The findings, as indicated in **Table 3**, imply that higher perishability enhances farmers' efforts to improve their commercial status. The study findings highlight the uncommon notion of high perishability positively influencing commercialization intensity, as such perishability contributed to high spoilage, leading to substantial loss amongst farmers. However, the study findings could primarily suggest that farmers with highly perishable commodities can swiftly sell their produce, which could be ideal for generating revenue [45]. A study by Binge [46] echoed that perishability pressures farmers to engage actively with markets, adopt efficient post-harvest handling practices, and prioritize timely sales, often increasing farmers' market participation and commercialization levels. Additionally, Tietjen [47] highlighted that perishability necessitates efficient supply chain responses, usually forcing farmers to operate within tighter marketing timelines. Furthermore, the urgency to avoid spoilage compels farmers to rapidly mobilise their produce toward market channels, increasing market participation rates and, in turn, raising commercialization intensity [48].

3.2.3. Discussion on Market Seasonality Dynamics Contributing to Farmers Achieving a High Commercialisation Intensity

Market Selling Price

The study findings showed in **Table 3** above that the market selling price was statistically and positively significant at a 5% significance level with a coefficient of 1.771. The study findings indicate that as the market selling price for a particular commodity increases, the chances of strengthening farmers' commercialization efforts also increase. The study findings also pinpoint the importance of better agricultural markets since they are ideal and influential towards commercializing farmers participating in such markets. The study findings could be potentially influenced by the selling price of a commodity, which is one direct way a farmer receives revenue from their enterprise. The findings aligned with the study by Getahum [49], who stated that farmers are incentivized to invest in more extensive commercialization efforts when commodities can fetch and achieve premium prices in the market. Furthermore, the study findings could highlight the importance of market price standardization, particularly in the semi-structured agricultural markets, to assist farmers in attaining incentives from their revenue, as it potentially impacts their economic viability and sustainability. A study by Ruben [50] indicated that fair and attractive market prices are essential for all market participants, especially in rural and underserved regions where market inefficiencies are prevalent, since they catalyse commercialization and build long-term agricultural sustainability. Moreover, Ma [51] emphasizes that securing better prices through reliable markets boosts farmers' income and motivates them to scale up production and integrate more deeply into commercial value chains, strengthening their long-term economic viability.

Commodity Demand

Furthermore, the study findings in **Table 3** above

show that the commodity demand was statistically and positively significant at a 5% significance level with a coefficient of 0.009. The study findings indicate a positive relationship between commercialization efforts and the demand for an agricultural commodity. The study findings imply that when there is a continuous and higher demand for a particular commodity, its producers are likely to achieve higher commercial status. The study results could be positively linked with the increase in the selling price of a commodity, which is a positive predictor for farmers achieving commercial status. Furthermore, the findings also portray the importance of securing revenue from selling the demanded commodities, as such sales are interpreted as income generation for farmers. From the study context, the results could be influenced mainly by the fact that staple vegetables, such as tomatoes, cabbage, and spinach, typically have consistent demand, which enhances continuous income generation among farmers and propels their commercialization efforts. In a similar study, Diphoko[52] echoed related findings by outlining that farmers gradually grow when their commodities are in steady demand. Additionally, a study by Aharoni[53] alluded that a stable demand base justifies investments in expanding production and reaching broader markets, which propels farmers to grow in operation and enhance their economic viability. Additionally, Tripathi[48] supported the finding by highlighting that when agricultural commodities experience steady and strong market demand, it reduces market uncertainty and assures returns on investment in production and market access, which ultimately enhances commercialization by encouraging farmers to allocate more resources toward market-oriented production

Market Competition

The study findings revealed that market competition has an inverse association with the farmers' commercialization efforts. As denoted in **Table 3**, market competition was found to statistically and negatively influence achieving a high commercial status among farmers at a 1% significance level. The coefficient value of −0.582 implies that farmers' chances of enhancing their commercialization status decrease as the market competition tightens up for market shares. The study findings could complement the earlier findings that higher commodity demand positively contributes to farmers enhancing their commercialization efforts. Furthermore, the study findings could also be interpreted as a loss of commodity selling volumes, which is the loss of market competitive edge, hampers farmers from improving their commercialization intensity. The study findings are also interlinked with the prior findings about the selling season and commodity seasonality influencing commercialization efforts. This suggests that harvesting and selling seasons would increase suppliers in the market, intensifying the competition to secure market shares amongst the farmers and subsequently impacting their commercial intensity. The current study findings are aligned with the findings of Zondi[54], who outlined that market competition directly influences farmers' decisions to participate in markets and their ability to maintain a competitive edge. Furthermore, as market competition intensifies, farmers with lower resource capacities often cannot support market shares, decreasing their commercialization efforts[55]. A study by Zang[56] emphasized that market saturation, resulting from an influx of suppliers, often suppresses prices and diminishes the market power of smallholder farmers. This limits their potential to maximize returns and discourages further investment in commercial production, especially those lacking economic resources[57].

Selling Season

Another factor that significantly influenced commercialization efforts was the selling season, which negatively impacted the effort. The selling season statistically influenced commercialization intensity at 1%, with a coefficient of −0.113. The study findings imply that the selling seasonality negatively impacts farmers' efforts to enhance their commercialization intensity. The findings indicate that a particular selling season significantly impacts farmers' commercializing efforts. Furthermore, the findings suggest that when farmers sell during harvesting season, their chances of commercialization weaken. The findings are primarily influenced by the market competition intensifying during harvest season. The study findings could imply that farmers may need to consider using storage facilities to preserve their commodities, particularly during the harvest sea-

son, and retrieve them when the harvesting season has elapsed, as there will be few suppliers in the market. Moreover, the study findings could also be influenced by commodity seasonality, which means that commodities are likely to sell at a lower price during their harvest seasons than in other seasons. The current study suggests that the selling season largely disadvantages farmers from securing high revenue, potentially impacting their pursuit of enhanced commercialization intensity. The study findings are supplemented by the findings of Nugroho [58], which indicated that farmers with higher incomes are better equipped to manage the risks of market participation, including price volatility. Additionally, Peng [59] highlighted that farmers who have the means to delay sales are better positioned to reduce their vulnerability to market shocks associated with seasonal fluctuations. Furthermore, enhancing farmers' access to post-harvest technologies, such as cold storage and market information systems, could empower them to time their sales strategically, ultimately supporting a more resilient commercialization process [60].

4. Conclusion, Practical Implications and Recommendations

The study findings reveal that most respondents had a farming experience of more than 10 years and were aged between 51 and 65. The findings also showed that agricultural market seasonality dynamics influence commercialization, intensifying efforts among farmers at various levels. The study concludes that the commodity demand and its short shelf lifespan hamper farmers from achieving a low commercial status, while commodity seasonality improves farmers' low commercialization intensity. Meanwhile, commodity variation, perishability, and market-supplied volumes significantly boosted farmers with medium commercialization intensity. Furthermore, farmers who achieved high commercialization intensity were positively assisted by the market selling price and commodity demand. However, market competition and the selling season regressed, achieving high commercialization intensity. The study findings imply the need to capacitate emerging farmers who are yet to secure a low commercial status on market dynamics relating to different market setups for better insights on commodity demand and commodity perishability, as it hinders their achievement of a low commercial status. At a policy level, the study findings could imply the need to tighten the agricultural markets regulation at a regional level to ensure adherence to the market standards, fair trade, and commodity requirements, as it boosts farmers in achieving the medium commercialisation status. The study findings could also imply that there is a need for future studies to scrutinize the association of market performance for various commodities with the integration of climate change dynamics to improve the accuracy of market performance in the changing climatic conditions. The study recommends the following to enhance farmers' transition from emerging to commercial farming, expand production to increase sales volumes, and diversify seasonal and year-round commodities to supplement both short- and long-term enhanced revenues. The study also recommends identifying and integrating highly perishable and more durable commodities to minimize the potential loss of income from high spoilage. The study recommends acclimatizing farmers to the market dynamics in which they intend to supply their produce.

Author Contributions

Conceptualization was done by T.I.K. and M.T.; Methodology, T.I.K. and M.T.; Validation, T.I.K. and M.T.; Formal Analysis, T.I.K. and M.T.; Investigation, T.I.K. and D.P.; Resources, T.I.K., D.P. and M.T.; Data Curation, T.I.K. and D.P.; Writing—Original Draft Preparation, T.I.K., D.P. and M.T.; Writing—Review & Editing, T.I.K. and M.T.; Visualization, M.T.; Supervision, M.T. All authors have read and agreed to the published version of the manuscript.

Funding

This research was funded by the University of Venda grant number G927, and the Research and Publication Committee of the University of Venda funded the APC.

Institutional Review Board Statement

The University of Venda's Ethical Committee approved this study on 27 October 2023 (Ref. No. FSEA/23/AECA/01).

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

Data is available on request, subject to adherence to the POPI Act 2013 of the Republic of South Africa

Acknowledgments

The authors wish to acknowledge all the study participants for their patience and willingness to participate.

Conflicts of Interest

The authors declare no conflict of interest.

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