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Renewable Energy Intentions in Indonesian Agriproduct Purchasing: Exploring Product Quality, Customer Orientation, Perceived Environmental Knowledge, and Farmers' Knowledge with a Moderation Effect

Evi Feronika Elbaar, Masliani

Department of Agribusiness, Faculty of Agriculture, Palangka Raya University, Palangka Raya, Central Kalimantan, Indonesia

Abstract

The smallholder farmers come across various constraints in cultivation of agriproducts and face number of challenges in marketing the agrifoods in Indonesia that assists in sustaining the market position. This research effort entails the product quality, customer orientation, farmers' knowledge and perceived environment knowledge with moderation role of intention to use renewable energy to explain the purchase decisions of agriproducts locally-produced in Indonesia. The study was quantitative in nature and sample of 308 respondents of customers of agriproducts in different regions of Indonesia was collected that depicted interesting results. The results show that hypothesis H1, H2, H4 and H5 reported statistically significant, but hypothesis H3 was rejected. The moderation effect of intention to use renewable energy reported between product quality, customer orientation, perceived environment knowledge and purchase decision, and no moderation effect was reported between farmers' knowledge and purchase decisions. The study suggested to devise the effective marketing initiatives for agriproducts specifically to ensure the quality, customers' feedback, and needs to focus on enhancing the knowledge of farmers towards adoption of innovative initiatives for implementation of renewable energy.

Keywords

Renewable energy, product quality, customer orientation, farmers' knowledge, innovation and purchase decision.

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Introduction

In contemporary times, there is an increasing trend towards renewable energy, even in Indonesia's agricultural sector (Raihan, 2023). Renewable energy has taken on an increasingly important role in maintaining the environment and agriculture itself (Nendissa et al., 2022). When discussing the purchase of sustainable agricultural products in Indonesia, understanding consumer intentions regarding the use of renewable energy becomes very important (Avicenna & Febriani, 2021). Renewable energy can be a key catalyst in encouraging consumers to support sustainable agricultural products.

Furthermore, the global challenges related to Renewable Energy Intentions in the Purchase of Agricultural Products in Indonesia are an urgent issue that requires immediate attention (Syamni et al., 2021). In Indonesia, the agricultural product sector plays a significant role in the country's economy but often relies on conventional energy sources that have a significant environmental impact (Tiawon & Miar, 2023). The use of fossil fuels at various stages of production, processing, and distribution of agricultural products in Indonesia contributes to greenhouse gas emissions and potential air pollution. Moreover, the high dependence on fossil energy sources makes Indonesia vulnerable to fluctuations in global energy prices and supplies, which threatens the country's economic stability and food security (Faizah & Husaeni, 2018).

However, there are substantial opportunities

in adopting renewable energy sources in the context of Indonesia's agricultural product sector (Zulkifli et al., 2019). The potential use of renewable resources such as solar energy and biomass promises to reduce environmental impact, decrease dependence on fossil resources, and enhance economic resilience (Silalahi et al., 2021).

The implementation of renewable energy in Indonesia can create job opportunities, stimulate green technology innovation, and improve international reputation in environmental sustainability (Langer et al., 2021). This research is important to understand how the intention to use renewable energy influences the purchasing decisions of agricultural products, which can shape sustainable policies in this sector (Udin, 2020). The European Union seeks to reduce its climate footprint through common agricultural policies (Schiermeier, 2019). About 38% of the global land surface is used for cultivation, but the demand for agricultural products is expected to increase by 100%. Economic growth adds pressure to agricultural systems, resulting in biodiversity loss (Beckmann et al., 2019). Land intensification and chemical use threaten species, with the main challenge being to meet biomass demand while preserving ecosystems (Seppelt et al., 2016).

Economic activity and development lead to market participation by farmers, indicating better income and improved food security in rural communities (Kennedy, 2018). Small farmers have sought to increase their market access in the face of existing markets and can attract agricultural and economic development. Market access must be enhanced due to its significant importance in increasing small farmers' market participation. The agricultural sector is one of the most prominent in terms of income and job provision, with 70% of the world's poor in rural areas related to agriculture. Small farmers contribute significantly to food security, equitable income distribution, and economic growth (Poole, 2017).

Farmers face constraints such as physical access to markets and lack of market information (Sambodo et al., 2022). Traditional food crops rely on market information due to weak connections with formal markets, thus increasing small farmers' income requires expanding relationships with formal markets. Small farmers' participation in rice markets is shrinking due to constraints such as remote areas, poor transportation, weak market infrastructure, high transaction costs, and lack of quick access to major markets. Lack of information between exchange partners also hinders agricultural success, thus reliable market information access needs to be improved for effective decision-making (Makhura et al., 2001). Small farmers have small production surpluses, high exposure to risk, and high transaction costs, so most sell their products in local markets. Lack of marketing knowledge leads to the sale of harvests at lower prices (Gyau et al., 2016). In South Asia and Sub-Saharan Africa, 60% of farmers own less than 1 hectare of land, and 80% own less than 2 hectares (Kyaw et al., 2018). Urgent action is needed to enhance small farmers' economic activities to ensure higher competitiveness, such as in Myanmar where many small farmers produce rice on less than 5 hectares of land (Lowder et al., 2016).

Studies assessing global and domestic drivers of the agri-food sector show that international markets face challenges and unexpected changes due to unsustainability in production, distribution, and consumption, as well as poor food governance. This hampers agricultural sustainability and access to sufficient, safe, and nutritious food. Issues faced include globalization, economic turbulence, climate change, population growth, food security, malnutrition, resource scarcity, and ecosystem loss. Improved market connections, trade initiatives, and consumer awareness of quality food are needed. The WTO criticizes subsidy reductions affecting small farmers, but governments in China, India, and Indonesia support their agricultural sectors to increase domestic supply (Borsellino et al., 2020).

Previous literature highlights factors influencing farmers' market orientation intentions, impacting market participation and economic activity. Vegetable crops, which are more profitable than cereal crops, contribute to market participation and economic development in Indonesia. The agricultural sector supports economic achievement, growth, and poverty reduction, thus urgent policies for this sector in developing countries are needed (Tiawon & Miar, 2023). Effective use of agricultural land and supportive agricultural products require proper planning and development. Farmers must change practices and crops to high-value crop production to increase profits and face challenges. Innovative initiatives are needed to develop the agricultural sector, reduce economic burdens, consider ecological risks, and increase profit ratios (Ikerd, 2011).

Vegetable production increases global agribusiness productivity and is more profitable than rice or cereal. In Indonesia, vegetables such as tomatoes, shallots, and chili peppers are important in the diet and economy, with many farmers shifting from rice to chili due to higher profits (Mariyono, 2018). Although vegetable production is increasing, its global market share is still low, requiring improvements in cultivation, plant availability, and irrigation. Production expansion can be achieved by promoting a commercial mindset and intensive farming methods (Mariyono, 2019b). This research investigates the relationship between product quality, customer orientation, farmer knowledge, and the environment on purchasing decisions in Indonesia's agricultural sector, and the moderating role of intentions to use renewable energy. This expands the understanding of sustainable agricultural product purchasing and the importance of environmental preservation, offering insights into the interaction of these factors and innovation in agricultural sustainability.

Literature review

The Indonesian economy depends upon the agriculture sector, so therefore there is need to consider the innovative initiatives in agriculture sector and needs to implement the creative ideas for development of agrifoods and expansion of businesses. The reduction of locally produced agriproducts has weakened the innovation and innovative initiatives, the consumers found to be concerned with quality and safety for local products. The absence of interest of consumers in purchasing of local goods are due to poor or low quality agrifood products, the lower level of differentiation, inappropriate segment identification and developmental aspect towards the products and clients (Chamhuri and Batt, 2015). The local agriproducts found to be of lower quality in Indonesia as compare to imported goods, the government and businesses must align their strategy for ensuring the quality of agriproducts and integrate the interest of community and prioritize the quality issues of local products. The Indonesian government has to regulate the policies for agriproducts due to presidential instructions, and Minister of Economic Affairs strengthened the policies for utilization of local products. The government initiated the trend and projected the slogan of ACI (I Love Indonesian Products to improve the understanding and manufacture the quality goods for locally-produced products, that also enable the government to create the jobs and domestic production (Wahyudi et al., 2019).

Product quality and purchase decision

The manufacturing sector of Indonesia has become an important pillar for the economy of the country as automobiles open their offices worldwide to increase production capacity and bring significant contributions to the national economy. The excellent efforts and progress shown in Indonesia's automobile industry have resulted in increased car production and a growing sales market, which in turn has contributed to the gross domestic product ((Lertkornkitja, 2017, Hidayatno et al., 2019). Southeast Asia controls 43% of automobile sales, and Indonesia is ranked second with a 34% market share (Negara and Hidayat, 2021). It is predicted that Indonesia has the capacity to grab market share at a higher pace and the capability to emerge as a leading market share holder in Southeast Asia (Susilo, 2018). The quality must be improved and a strong brand name established to maintain both domestic and international business expansion (Reschiwati et al., 2021). Competitors have significant market shares in Indonesia, with Japanese companies dominating the market. Studies have examined purchase decisions in Indonesia related to automotive firms, indicating that product quality tends to increase purchase decisions, influenced by perceived value (Budiono et al., 2021). The quality of the product affects customers' perception and perceived flow, which in turn influences their satisfaction and intentions (Sarjono et al., 2021). The performance of the product that matches the expectations of customers to a specific satisfaction level is influenced by the quality of the product (Nagaraja, 2012, Dhanani and Hasnain, 2002). The features of the quality of a specific product have the ability to satisfy consumers by fulfilling their needs (Amri, 2022).

The agriculture sector of Indonesia produces the large-scale agriproducts that are different in quality and quantity perspective, there is specific appearance of such agriproducts of Indonesia in terms of different aspects such as water contents, duration of cultivation, storage of agriproducts, maturity of industry, size of products and outputs, the firms face challenges related to all aspects in local as well as in international markets. The unique flavor of Indonesian agriproducts attracts the customers and they pay the primum price for such high-quality agriproducts. The consumers

prefer the quality of such agrifoods and pay for freshness and quality. Moreover, the consumer prefers specific products that relates to the culture and taste including fruits and rice. The purchase decision of consumers depends upon the various factors including culture, psychological perspective and lifestyle factor that also influenced by the trends in food industry (Campbell, 2013). Rice is considered as staple food in Indonesian market and is an important in food security, the production of rice has increased the annual average 2.34% during last decade due to enhancement in production and due to government policies, such as direct support. The production of rice in Indonesia must be capable of meeting the need and demand of consumers in terms of safety, quantity and quality, the increased income of consumers lead to increase the demand for quality. On the other hand, there are other factors including education, female labor force, urbanization and along with current transportation and communications advances, influence consumer preferences. The consumers focused on the balance of quality, aesthetics, nutrition, and participation of the workforce, which encourages the consumers to adopt food from specific brands. The current marketing competitive strategy for the production of rice in Indonesia is very keen and includes the rice producers, the traders of rice around the world, and the distribution of imported rice (Timmer, 1974). The higher production of rice and superior varieties of rice have been focused on spreading in the market to meet customer demand (Simatupang and Timmer, 2008). The diversification of such varieties of rice leads towards the nature and quality of rice production intended to be sold in the market (Panuju, Mizuno and Trisasongko, 2013). The study has been conducted on the consumers of agriproducts of Indonesia in Jakarta province to assess the factors that influence the locally-produced agriproducts (Wahyudi et al., 2019). The study revealed that a number of factors gained attention in such a scenario, including gender, age, occupation, education, income, product characteristics, price, and promotion, all of which influenced the frequency of buying by the consumer (Mucharam et al., 2020). There is a need to increase the quality of locally-produced agriproducts and devise effective and appropriate marketing strategies by lowering the price of products compared to imported rice. The promotion must be attractive to increase the frequency of purchases of such agriproducts in Indonesia (Moslehpour, Kien and Danyfisla, 2014).

The above literature assists in devising the following hypothesis:

H1: The product quality of Agriproducts in Indonesia influences the purchase decisions of consumers in Indonesian markets

Customer orientation and purchase decisions

The degree to which a firm implement the marketing approach and concept for strategic development and tactical marketing decisions in expressed as the market orientation. The superior customer value can be achieved through the effective implementation of market and customer orientation. The competitive capacity is also considered that play role in assessing the market situation and effective market orientation enhance the financial performance. The prior literature has explored the relationship between effective market orientation and value chain, that found to be influential that effective marketing approach increase the value for customers and influence the performance. The customer orientation is considered as a philosophy within value chain that suggest various factors to create the value by serving the ultimate customers' need and strategically coordination with other participants for creation of superior value. The literature has explained that effective coordination enables firms to generate and share the benefits, the competitiveness of whole chain that influenced by the market intelligence (Ayele et al., 2012).

The are various number of research papers have been conducted to explore the impact of market and customer orientation, it has been reported that innovation is necessary for being high performance organizations (Nasution et al., 2011). The positive relationship has been occurred in literature between customer and performance, the market orientation found to be impactful on innovative capabilities by understanding the they need of customers that increase the efficiency and enhances the sales and profitability. The studies have been found that expressed the customer and competitor orientation that positively associated with innovative capabilities (Grinstein, 2008). The customer and competitors have the tendency to increase the willingness of firm for development of newly emerging products. It has been found that strong relationship has been reported between customer orientation and innovation initiated by the firm for achievement of specific performance standards (Newman et al., 2016).

The studies have also expressed that customer

orientation and inter-functional that influence the financial chain performance, the information acquisition process is necessary for knowledge creation about the markets to spread the accurate information related to potentially important issues. It has been reported that inter-functional coordination and communication enable the firms to gain the knowledge that assist the firms to gain insight the markets through utilization of effective knowledge management. The inter-function coordination has the tendency to establish the various functional units to create the conditions for applying the market information through business initiatives. The study has reported that competitive orientation, customer orientation and inter-functional coordination influence the innovation and enhances the performance of organizations (Ho et al., 2018).

There is scarcity of research on exploring the relationship between customer orientation and purchase decisions, the researcher hasn't come across any study that has already explained the relationship, so therefore, this study found to be one of the pioneers to explain the role of customer orientation and purchase decisions. The following hypothesis is derived:

H2: Customer Orientation significantly influences the Purchase Decisions of customers in Indonesian markets

Farmer's knowledge and purchase decision

The emerging economies depends upon the strong sectors such as the strengthen and sustainable agriculture sector to be consistent, the poor population dominate the other population, the agribusiness and agriproducts has the tendency to move the economic circle of the country due to its significant importance. The large number of people found to be engaged with agricultural business and activities, the huge population is engaged in agriculture industry specifically related to the farming. The smallholder farmers are found in huge number that are engaged in agricultural activities to contributes in the economy and play crucial role in fulfilling the need for food, vegetable and food related items for whole population in Indonesia. The research studies have been conducted that assessed the impact of different farming commodity on welfare of the farmers, the socio-economic, the technical aspect and the institutional factors that influence the farmer's decision for engaging in intensive farming Java, Indonesia. The Indonesian economy largely depends upon the agriproducts, this is also a motivation to conduct this present study as well, that appropriate marketing tactics may enable the firms and countries to harvest the large-scale benefits. The agriculture sector provides the employment and dominate with 58% population associated with agriculture and 75% people are poor (McCulloch, 2008). The agriculture sector constituted 24.5% of gross domestic product and employed 54.8% of total workforce. The sector significantly contributes in economic strength of the country. The Indonesia is famous for five vegetables that are cultivated and grown in Indonesia including production of chilli. The highest share of chilli in Indonesian agriproducts that value and contribute the existing financial strength (Statistik and Pokok, 2019).

This study incorporated the farmers' knowledge that is referred as age, education, experiences and training. The family size, farming size and land tenancy and fragmentation is also considered as important factor in economic wellbeing of the farmers that further contribute in gross domestic products. The prior literature has also expressed the role of credit access, the technological adoption, intensive farming and farmer's welfare, that further leads to the performance and financial wellbeing of farmers. The study focused on the telephones, marketplace, credit sources, traders, market information, farmers' knowledge, and household endowment that play significant roles in the welfare of farmers (Matouš, Todo and Pratiwi, 2015, Rahayu and Riyanto, 2020). The direct and indirect influences of various variables explain the farmers' welfare through intensive farming (Mariyono, 2019a). Access to credit and financial services significantly impacts agricultural productivity and farmers' welfare (Nuryartono, 2007, Wibowo, 2015). Improved market information and the use of mobile phones are associated with better market outcomes and increased welfare for farmers (Matouš, Todo and Pratiwi, 2015). Furthermore, household endowments such as education and land ownership have been found to significantly affect farmers' welfare (Skoufias and Olivieri, 2013). These factors highlight the complex interplay of resources and information in enhancing the economic conditions of farming households (Nuryati et al., 2019), Achmad and Diniyati, 2018).

This study incorporated the farmers' knowledge that influence the intention of individuals to purchase the specific goods, this study argues that farmers' knowledge expected to the important and striking factor in explaining the purchase decision. There is scarcity of research on farmers'

knowledge, the farmers' knowledge also includes the knowledge about the marketing policies and marketing approach to attract the customers. The following hypothesis is derived on the base of above literature.

H3: Farmers' knowledge influences the ppurchase decision related to the agricultural sector of Indonesia

Perceived environmental knowledge and purchase decisions

This study incorporates the environmental concern and knowledge about environment among the farmers to assess their concerns towards environmental protection and adopt the renewable energy resources. It is expected that requirement for energy predicted to be increased by 30% up to year 2035 due to rapid increase in population, requirement and due to rapid economic growth. The fossil fuels met the existing demand and one-quarter of demand is fulfilled that causes destruction of ozone layer (Scheffran et al., 2020). The carbon emission has been increased by 50% due to heavy industrialization, and now decarbonizing is necessary as well as agricultural production system that mitigate the greenhouse gas emission and limit the or reduce the global warning while ensuring the climate stabilization (Rissman et al., 2020). The current energy usage that is being utilized by food system is not sustainable, the usage of fossil fuels in agriculture affects and put long-lasting consequences on the environment (Zafeiriou et al., 2018).

The governments are striving for goal achievement for implementation of energy-smart food system that helps to remove the dependency on fossil fuels for energy security and assists in higher production of agriproducts. The increasing demand of energy for production and reduction in pollution can be fulfilled by the green energy resources, the solar energy is considered as sustainable energy, that is pollution free and inexhaustible and also plays significant role in providing the clear and clean energy. The usage of solar energy is acceptable for electricity in domestic, industrial, commercial and agricultural projects without creating any pollution or negative impact on the environment. The solar energy should be implemented in agricultural projects for operation of farms to control the environmental agriculture (Xue, 2017). Environmental knowledge is such an important factor in determining the consumer behavior that influence the usage of renewable energy resources. The people or the firms having environmental concerns and knowledge expected to act more environmentally friendly and adopt ecological behavior (Chan et al., 2014). It has been occurred in the literature that environmental knowledge positively related to the intention to purchase energy conservation products for production of agricultural products. It has been also found and reported that emission reduction behavior positively related to environmental knowledge (Chan et al., 2014; Ngo et al., 2009).

Similarly, the current study argues that perceived environmental knowledge has the tendency to influence the purchase decisions. The above literature and assumption of the study assist in devising the following hypothesis.

H4: Perceived environmental knowledge influences the purchase decision related to the agricultural sector of Indonesia

Moderating role of intention to use renewable energy

This study incorporates the important factor of intention to use renewable energy, the moderation effect of intention to use renewable energy is assessed in the study between exogenous and endogenous constructs. The innovative capability has the tendency to influence the purchase decisions and has the capacity to influence the relationship between various variables. The agriculture production is not vulnerable to climate changes but plays significant role in production of green house gas emission that drive climate shifts. The agricultural contributes to the greenhouse emissions, the agricultural sector reported to be emits up to 30% of greenhouse gas emissions worldwide due to equipment and inputs (Lombardi et al., 2017).

The utilization of renewable energy considered as an important initiative during farming and greening aspect reduce the greenhouse emissions and avoid alternative source of energy for agriculture through adoption and implementation of applications. There are number of barriers that have been highlighted for usage of alternative energy. The literature has expressed the intention as third layer and it has been reported as lack of community acceptance for adoption of alternate source of energy. The willingness of an individual for specific action considered as intention and intention to use renewable energy sources for effective purchase decisions (Huijts et al., 2012). There are number of influential variables that affect the intention by positive effect, negative effect,

perceived cost, perceived benefits and perceived risk (Bozorgparvar et al., 2018).

The intention to use renewable resources brings the newly emerging ideas that are related to organizational activities that develop the new process, product or services. The prior literature has focused on the diverse types of innovation including new products, new services, and new technology or the process. The introduction of the products or services that are demanded in highly turbulent business environment and innovation is considered as an important aspect to sustain in the markets and to compete on the base of innovative initiatives to meet the customers' demand and market needs. The achievement of such large-scale change and innovation that alter the existing practices in terms of features or the change in processes through implementation of the newly emerging technological techniques for effective production process (Lukas and Ferrell, 2000). The firms strive for upgrading and renovation of existing processes to ensure the latest features in the products and services to maintain and sustain the market position. The innovation in processes relates to the upgradation of existing practices and process for achievement of organizational goals to maximize the benefits, the processes of managing the raw material, adoption of new equipment, and adoption of latest technologies to alter the existing processes that create the value (Ho et al., 2018).

The literature has embarked on the intention to adopt innovation for business performance, it has been argued that innovation is chance for firms to harvest the long-term benefits through implementation of innovative initiatives. The engagement of firms in innovation, technology adoption and entrepreneurial activities helps to survive in the competition and assists in competitive advantage. The innovation provides grounds to the firms to avoid price competition, it also helps to access the new marketing approach and create the new demand to enhance the business performance, the financial metrics, the turnover, profits, and the stock prices to develop the strategic approach. The positive relationship has been depicted between innovation and business performance, the study has reported positive relationship between innovation and business performance, the firms' effort prevent competitors to enter in markets or to gain the market share, the successful innovation enable the firms to create the customers loyalty by strengthening the positional advantages that brings the improvements to the existing processes (Moreau and Herd, 2010; Cheng et al., 2014).

Contrary, the negative effects of innovation related to adopt the renewable energy are also reported including greater expenditure, greater resources consumption, distribution of resources and less equitable. There are mid findings of the innovation are reported in the literature, this study intends to determine the moderating role of intention to use renewable energy between independent and dependent variables. The researcher argues that innovation initiatives for intention to use renewable energy has the tendency to strengthen the relationship between customers orientation and purchase decision, between product quality and purchase decision and between farmers' knowledge and purchase decisions. So therefore, the following hypotheses are devised:

H5: Intention to use renewable energy influences the purchase decision in agricultural products in Indonesia consumer markets

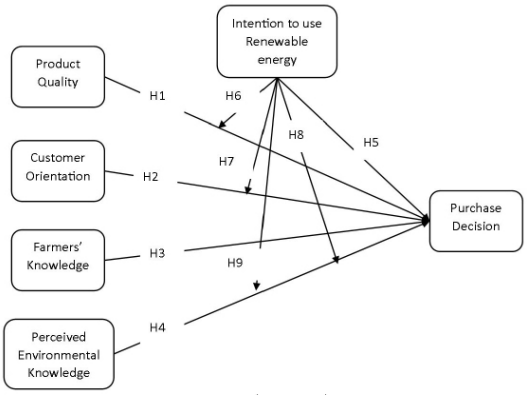
H6: Intention to use renewable energy moderates the relationship between product quality and purchase decisions

H7: Intention to use renewable energy moderates the relationship between customer orientation and purchase decisions

H8: Intention to use renewable energy moderates the relationship between farmers' knowledge and purchase decisions

H9: Intention to use renewable energy moderates the relationship between perceived environment knowledge and purchase decisions.

Research framework



Source: Author

Figure 1: Research framework.

Materials and methods

This study examined the purchase decisions of vegetable customers in four different regions of Indonesia, including Blitar and Kediri in East Java, as well as Tabanan and Bangli in Bali. These regions were selected because they are vegetable producers and contribute to commercial farming. These regions have diverse characteristics of farming systems and marketing channels that shape agribusiness. This research is quantitative, with data collected through an adopted questionnaire using a simple random sampling technique, and a sample of 380 customers was selected based on Krejcie and Morgan (1970).

The purchase decision measurement scale with seven indicators refers to the research by Ali (2019). The product quality measurement scale with four indicators was adopted from the study by Waluya et al. (2019). The customer orientation measurement scale with five indicators was taken from the research by Ho et al. (2018). The farmers' knowledge measurement scale with six indicators was adopted from the paper by Mariyono (2019). The innovation measurement scale with three indicators was adopted from the study by Ho et al. (2018). The three indicators of perceived environmental knowledge were taken from the study by Elahi et al. (2022). The four indicators of intention to use renewable energy were adopted from the research by Bozorgparvar et al. (2018). All indicators for each variable were assessed on a five-point scale ranging from 1 to 5, where 1 is strongly disagree, 2 is disagree, 3 is neutral, 4 is agree, and 5 is strongly agree. Data were analyzed using Smart-PLS in two phases.

The first phase is the measurement model assessment. At this stage, analysis is conducted to assess the reliability and validity of the constructs. Reliability tests include Cronbach's Alpha and Composite Reliability to ensure the internal consistency of the indicators. Average Variance Extracted (AVE) is used to assess convergent validity, with an AVE value greater than 0.5 (Hair et al., 2014). The Fornell-Larcker Criterion and Cross Loadings are used to test discriminant validity, ensuring that indicators correlate more strongly with the constructs they measure than with other constructs (Fornell and Larcker, 1981).

The second phase is the structural model assessment. At this stage, analysis is conducted to investigate the relationships between constructs within the research framework. Bootstrapping with resampling of 5000 subsamples is used to test the statistical significance of the path coefficients, ensuring that the t-statistic values exceed 1.96 for significance at the 5% level (Henseler et al., 2009). This model allows researchers to identify and validate factors that influence purchase decisions, product quality, customer orientation, farmers' knowledge, innovation, perceived environmental knowledge, and the intention to use renewable energy. With this method, the research results can provide comprehensive insights into consumer preferences and behavior in the agribusiness context in the studied regions.

Results and discussion

This phase addresses the analysis of collected data, the Smart-PLS was employed to investigate the hypothesized relationships of research framework. The first section consists of measurement model assessment, and second phase consists of structural equation model.

Measurement model assessment

The Table 1 below demonstrates the Cronbach alpha, composite reliability and average variance extracted, the value for Cronbach alpha must remain higher than 0.70, similarly the CR must be higher than 0.70, and value for AVE should be higher than 0.50, and factor loading must remain higher then 0.50 for acceptability of reliability of the construct (Hair Jr. et al., 2021). The values in Table 1 satisfies the reliability and validity constraints.

Constructs	Cronbach alpha	CR	AVE
Purchase Decisions (PD)	0.834	0.887	0.524
Intention to use RE	0.853	0.876	0.710
Product Quality (PQ)	0.940	0.824	0.734
Customer Orientation (CO)	0.862	0.877	0.642
Farmers' Knowledge (FK)	0.927	0.942	0.732
Perceived Environmental Knowledge (PEK)	0.818	0.941	0.734

Note: PD (Purchase Decision), IuRE (Intention to Use Renewable Energy), (PQ) Product Quality, CO (Customer Orientation), FK (Farmers' Knowledge), PEK (Perceived Environment Knowledge)

Source: Author

Table 1: Alpha, CR and AVE.

The reliability and validity of the constructs were assessed using the PLS algorithm method of Smart-PLS. Cronbach's alpha values for all

constructs exceed the threshold of 0.70, indicating strong internal consistency. Specifically, Purchase Decisions (PD) has a Cronbach's alpha of 0.834, Intention to Use Renewable Energy (IuRE) is 0.853, Product Quality (PQ) is 0.940, Customer Orientation (CO) is 0.862, Farmers' Knowledge (FK) is 0.927, and Perceived Environmental Knowledge (PEK) is 0.818. These values confirm the reliability of the measurement scales used.

Composite reliability (CR) values also exceed the recommended threshold of 0.70 for all constructs, further supporting the reliability of the measures. The CR values are 0.887 for PD, 0.876 for IuRE, 0.824 for PQ, 0.877 for CO, 0.942 for FK, and 0.941 for PEK. These high CR values indicate that the items consistently measure the intended constructs.

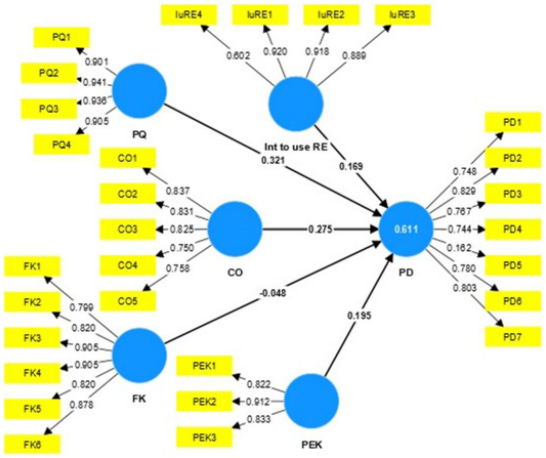
The Average Variance Extracted (AVE) values, which should be higher than 0.50, also meet the criteria for all constructs. The AVE values are 0.524 for PD, 0.710 for IuRE, 0.734 for PQ, 0.642 for CO, 0.732 for FK, and 0.734 for PEK. These values demonstrate good convergent validity, indicating that the constructs capture the majority of variance from their indicators.

Discriminant validity

The Table 2 shows the discriminant validity. The values in Table 1 satisfies the criteria for discriminant validity.

This section examined the discriminant validity of the constructs, the square root of AVE must remain higher than the correlation value of other constructs, the intersectional values or diagonal values must remain higher than other values of same column, the intersectional values shows the square root of AVE, and remaining values show the correlation value under the criteria of (Fornell and Larcker, 1981). The Table 2 shows the discriminant validity.

The Figure 2 shows the measurement model.



Note: PD (Purchase Decision), IuRE (Intention to Use Renewable Energy), (PQ) Product Quality, CO (Customer Orientation), FK (Farmers' Knowledge), PEK (Perceived Environment Knowledge)
Source: Author

Figure 2: Measurement model Assessment.

Structural Equation Model (SEM)

This section of the research paper investigates the relationship between variables by employing the SEM and through utilization of bootstrapping method. The relationships between variables are examined on the base of β value, t-value and p-value. The criteria for significance of the relationship is based on the values of different items, the β value shows the direction of relationship, t-value must remain higher than 1.96 for achievement of level of significance and p-value should be lower than 0.05 as 5% error margin is suggested in social sciences (Hair Jr. et al., 2014).

The study has four direct relationships to be investigated and three moderating hypothesized relationship. All the relationships are investigated

Constructs	CO	FK	IuRE	PD	PQ	PEK
CO	**0.801**					
FK	0.545	**0.856**				
IuRE	0.735	0.445	**0.843**			
PD	0.700	0.491	0.650	**0.724**		
PQ	0.663	0.440	0.617	0.677	**0.921**	
PEK	0.553	0.796	0.635	0.561	0.448	**0.856**

Note: PD (Purchase Decision), IuRE (Intention to Use Renewable Energy), (PQ) Product Quality, CO (Customer Orientation), FK (Farmers' Knowledge), PEK (Perceived Environment Knowledge)

Source: Author

Table 2: Discriminant validity.

on above mentioned criteria. The Table 3 below presents the results of the direct relationships.

Hypotheses	β	t-value	p-value	Remarks
PQ→PD	0.329	3.460	0.001	Sig
CO→PD	0.278	2.345	0.019	Sig
FK→PD	0.086	1.019	0.308	In-sig
IuRE→PD	0.197	1.963	0.041	Sig
PEK→PD	0.141	1.971	0.002	Sig

Note: PD (Purchase Decision), IuRE (Intention to Use Renewable Energy), (PQ) Product Quality, CO (Customer Orientation), FK (Farmers' Knowledge), PEK (Perceived Environment Knowledge)
Source: Author

Table 3: Direct Relationship.

The results from the SEM analysis in Table 3 provide a clear understanding of the direct relationships between various independent variables and purchase decisions. Each hypothesis has been tested for significance, as indicated by the β coefficients, t-values, and p-values. The relationship between product quality and purchase decision is significant and positive (β = 0.329, t = 3.460, p = 0.001). This indicates that higher product quality significantly increases the likelihood of consumers making a purchase. The result underscores the importance of maintaining high-quality standards in products to influence consumer purchase behavior positively. Companies should focus on enhancing product quality through rigorous quality control, innovation, and the use of high-grade materials to attract and retain customers.

Customer orientation also shows a significant and positive effect on purchase decisions (β = 0.278, t = 2.345, p = 0.019). This suggests that businesses that prioritize customer needs and satisfaction can significantly influence their customers' purchasing decisions. It highlights the need for companies to adopt a customer-centric approach, actively engaging with customer feedback, and continuously improving their service offerings to meet customer expectations effectively.

In contrast, the relationship between farmers' knowledge and purchase decision is not significant (β = 0.086, t = 1.019, p = 0.308). This result implies that the knowledge of farmers does not directly influence consumers' purchasing decisions in this context. While farmers' knowledge is crucial for improving agricultural practices and product quality, it may not be a direct factor considered by consumers when making purchase decisions. Consumers are more likely to be influenced by the visible attributes of the product and their overall experience.

The intention to use renewable energy has a significant positive impact on purchase decisions (β = 0.197, t = 1.963, p = 0.041). This finding reflects the growing importance of sustainability in consumer decision-making processes. Consumers who are inclined to use renewable energy are more likely to make purchasing decisions that align with their environmental values. This suggests that companies promoting renewable energy and sustainable practices can attract a segment of environmentally conscious consumers.

Perceived environmental knowledge significantly affects purchase decisions (β = 0.141, t = 1.971, p = 0.002). Consumers who are more knowledgeable about environmental issues are more likely to make purchase decisions that support sustainability. This emphasizes the role of consumer education in promoting sustainable consumption. Companies should invest in educating their customers about the environmental benefits of their products to encourage more informed and responsible purchasing behaviors.

The analysis reveals that product quality, customer orientation, intention to use renewable energy, and perceived environmental knowledge all significantly influence purchase decisions. These findings provide valuable insights for businesses aiming to enhance their marketing strategies by focusing on these critical factors. Companies should strive to maintain high product quality, adopt customer-centric approaches, promote renewable energy use, and educate consumers about environmental issues to drive purchase decisions effectively.

This section presents the moderating analysis of the innovation between exogenous and endogenous constructs, this research paper has three moderating variables. The Table 4 demonstrates the results of the moderating variables. The Iu in Table 4 demonstrates the structural equation model.

Hypotheses	β	t-value	p-value	Remarks
PQ*IuRE→PD	0.226	2.336	0.020	Sig
CO*IuRE →PD	0.229	2.126	0.034	Sig
FK*IuRE →PD	0.077	0.810	0.418	In-Sig
PEK*IuRE→PD	0.981	1.981	0.004	Sig
PEK→PD	0.141	1.971	0.002	Sig

Note: PD (Purchase Decision), IuRE (Intention to Use Renewable Energy), (PQ) Product Quality, CO (Customer Orientation), FK (Farmers' Knowledge), PEK (Perceived Environment Knowledge)
Source: Author

Table 4: Moderation assessment.

The SEM analysis results in Table 4 provide insights into the moderation effects of the intention to use renewable energy on the relationships between product quality, customer orientation, farmers' knowledge, perceived environmental knowledge, and purchase decision. First, the interaction between product quality and the intention to use renewable energy has been found to have a significant positive effect on purchase decisions ($\beta = 0.226$, $t = 2.336$, $p = 0.020$). This result suggests that consumers who have a high intention to use renewable energy place an even greater emphasis on product quality when making their purchasing choices. The implication is clear: for companies targeting environmentally conscious consumers, ensuring high product quality is paramount. Such consumers are likely to be more discerning and demand higher quality standards, reinforcing the need for businesses to maintain rigorous quality control and innovation in their products.

The interaction between customer orientation and the intention to use renewable energy also shows a significant positive effect on purchase decisions ($\beta = 0.229$, $t = 2.126$, $p = 0.034$). This finding indicates that the intention to use renewable energy enhances the impact of customer orientation on purchase decisions. Companies that prioritize customer satisfaction and are responsive to customer needs can more effectively influence the purchasing decisions of consumers inclined towards renewable energy. This underlines the importance of adopting a customer-centric approach, where understanding and meeting the specific needs and preferences of environmentally conscious customers can lead to increased purchase intentions.

In contrast, the interaction between farmers' knowledge and the intention to use renewable energy does not have a significant effect on purchase decision ($\beta = 0.077$, $t = 0.810$, $p = 0.418$). This outcome suggests that while farmers' knowledge is crucial for sustainable agricultural practices, it does not directly influence the purchase decisions of consumers in the context of renewable energy intentions. Consumers may value the end product's quality and sustainability credentials more than the specific knowledge of the producers. Thus, the focus should perhaps be more on how the products are marketed and less on the production process itself from the consumer's perspective.

Furthermore, the interaction between perceived environmental knowledge and the intention to use renewable energy significantly enhances purchase decisions ($\beta = 0.981$, $t = 1.981$, $p = 0.004$). Consumers who are well-informed about environmental issues and are committed to using renewable energy are more likely to make purchasing decisions that support sustainability. This highlights the importance of environmental education and awareness in shaping consumer behavior. Companies that effectively communicate the environmental benefits of their products and educate consumers on sustainability issues can foster stronger purchase intentions among environmentally conscious consumers.

The moderation assessment reveals that the intention to use renewable energy significantly amplifies the effects of product quality, customer orientation, and perceived environmental knowledge on purchase decisions. These findings suggest that companies should strategically focus on these areas to attract and retain environmentally conscious consumers. Ensuring high product quality, adopting customer-centric practices, and enhancing consumer knowledge about environmental issues are critical strategies for success in this market segment. Conversely, the non-significant interaction between farmers' knowledge and renewable energy intentions indicates that other factors may be more influential in driving purchase decisions in this context. Overall, these insights provide a comprehensive understanding of how various factors and their interactions influence consumer behavior in the realm of renewable energy and sustainability.

Discussion and managerial implications

This study explores the direct relationships between product quality, customer orientation, farmers' knowledge, intention to use renewable energy, and perceived environmental knowledge on purchase decisions. Product quality was found to have a significant and positive impact on consumer purchase decisions. This indicates that improving product quality increases the likelihood of consumer purchases. This finding aligns with previous research that emphasizes the importance of product quality in influencing consumer purchase decisions (Hong, 2019). In marketing, product quality enhancement can be achieved through various means such as improved quality control, product innovation, and the use of high-quality raw materials. High product quality not only boosts customer satisfaction but also fosters brand loyalty and competitive differentiation in an increasingly competitive market. Therefore, companies must ensure that their products meet high-quality standards

and consistently deliver quality products to customers (Zeithaml, 1988).

Customer orientation also has a significant and positive impact on purchase decisions. Companies that focus on customer satisfaction and needs tend to increase purchase decisions. This finding is consistent with research showing that customer orientation is a key factor in effective marketing strategies (Elbarky et. al., 2023b). Customer orientation means companies must proactively understand customer needs, provide excellent service, and build long-term relationships with customers. It also involves the ability of companies to adapt to customer feedback and develop products and services that match market preferences. Thus, customer orientation can be a cornerstone of successful marketing strategies (Narver and Slater, 1990).

Farmers' knowledge did not show a significant impact on purchase decisions. This indicates that farmers' knowledge does not play a crucial role in consumer purchase decisions in this context. This finding may be due to other factors that more dominantly influence consumer purchase decisions (Wasaya et al., 2021). While farmers' knowledge is essential for improving product quality and production efficiency, from a consumer perspective, this factor may not directly impact purchase decisions. Consumers are more likely influenced by more directly visible and experienced aspects, such as the final product quality and service experience (Grunert, 2005).

The intention to use renewable energy also has a significant and positive impact on purchase decisions. Consumers who intend to use renewable energy are more likely to make purchase decisions. This is relevant to the growing trend of awareness about sustainability and clean energy. Increased environmental awareness among consumers has become a major driver in purchase decisions. Consumers who are aware of the environmental impact of their choices are more likely to choose eco-friendly products and support sustainable practices. Therefore, companies that promote the use of renewable energy and sustainable practices can attract environmentally conscious consumer segments (Leonidou et al., 2013).

Perceived environmental knowledge also shows a significant and positive impact on purchase decisions. Consumers with better environmental knowledge are more likely to make purchase decisions that support sustainability. This study supports previous findings on the importance of environmental knowledge in influencing green purchase behavior (Elbarky, 2023a). Perceived environmental knowledge includes consumers' understanding of environmental issues, the impact of products and services on the environment, and the importance of sustainability. More knowledgeable consumers tend to prefer products with lower environmental impact and support sustainable practices (Chen and Chang, 2013).

Moderation between product quality and the intention to use renewable energy on purchase decisions shows significant results. This indicates that the intention to use renewable energy strengthens the impact of product quality on purchase decisions. This supports the finding that consumers with a high intention to use renewable energy are more influenced by product quality in making purchase decisions. In other words, product quality becomes more important for consumers who have high awareness of renewable energy. This shows that to attract consumers who care about renewable energy, companies must ensure that their products are not only of high quality but also environmentally friendly.

Furthermore, moderation between customer orientation and the intention to use renewable energy on purchase decisions is also significant. Companies that are customer-oriented will be more effective in influencing purchase decisions of consumers who intend to use renewable energy. This finding supports the importance of customer orientation in marketing strategies for green products (Yu and Lee, 2019). Strong customer orientation allows companies to better align their products and services with the needs and preferences of environmentally conscious consumers. This can include providing clear information about the environmental benefits of products, offering responsive customer service to environmental queries, and ensuring that business practices support sustainability (Lemon and Verhoef, 2016).

However, moderation between farmers' knowledge and the intention to use renewable energy on purchase decisions is not significant. This indicates that the intention to use renewable energy does not strengthen the impact of farmers' knowledge on purchase decisions in this context (Ma and Chang, 2022). While farmers' knowledge is important for sustainable farming practices and efficient production, this factor does not seem

to play a significant role in the purchase decisions of consumers who intend to use renewable energy. This may suggest that consumers are more focused on the end-product attributes and how the product contributes to environmental sustainability rather than the production process itself (Schmitt et al., 2019).

Lastly, moderation between perceived environmental knowledge and the intention to use renewable energy on purchase decisions shows significant results. Consumers with high environmental knowledge and the intention to use renewable energy are more likely to make purchase decisions that support sustainability (Sobocińska et al., 2022). This indicates that good environmental knowledge and the intention to support renewable energy mutually reinforce each other in influencing purchase decisions. Consumers who have a deep understanding of environmental issues and are committed to using renewable energy tend to be more selective in choosing products that support their sustainability goals (Peattie, 2010).

This study highlights the importance of product quality, customer orientation, and perceived environmental knowledge in influencing consumer purchase decisions. Additionally, the intention to use renewable energy strengthens the impact of these factors on purchase decisions. These findings provide insights for marketers and producers in developing effective marketing strategies for green and renewable energy products.

This study confirms that product quality, customer orientation, and perceived environmental knowledge are crucial factors influencing consumer purchase decisions. Marketers and producers should pay attention to these factors in their efforts to attract and retain customers. Furthermore, with the increasing consumer awareness of sustainability and renewable energy, companies need to ensure that their products are not only high quality but also environmentally friendly. This can be achieved through continuous innovation, the use of eco-friendly raw materials, and the implementation of sustainable business practices (Nendissa et al., 2021).

Strong customer orientation also plays a vital role in influencing purchase decisions of environmentally conscious consumers. Companies should focus on understanding customer needs, providing superior service, and building long-term relationships with customers (Wati et al., 2021). Additionally, companies need to invest in environmental education for consumers to enhance their knowledge and awareness of environmental issues. By doing so, consumers will be more likely to make purchase decisions that support sustainability (Tomycho et al., 2020).

This study also shows that the intention to use renewable energy is a significant factor moderating the impact of product quality and customer orientation on purchase decisions (Pokorná et al., 2015). Therefore, companies should promote the use of renewable energy and sustainable practices in their marketing efforts. This will help attract environmentally conscious consumer segments and enhance the company's competitiveness in the market (Van Phuong et al., 2021).

Moreover, companies should continually monitor and evaluate the effectiveness of their marketing strategies. With a data-driven approach, companies can make necessary adjustments to ensure that their strategies remain relevant and effective in addressing market changes and consumer preferences (Pilař et al., 2018). Continuous evaluation will help companies remain competitive and responsive to the evolving needs of consumers (Špička et al., 2021).

In the long term, the adoption of sustainable practices and strong customer orientation will help companies build a positive reputation among consumers and achieve competitive advantage in an increasingly dynamic market (Zdráhal et al., 2020). Therefore, the findings from this study should be seriously considered by marketers and producers in developing their marketing strategies for green and renewable energy products (Havlíková and Kolářová, 2015).

Thus, this study significantly contributes to understanding the factors influencing consumer purchase decisions in the context of sustainability and renewable energy. It provides practical guidance for companies to develop more effective and sustainable marketing strategies, which not only enhance sales but also support global sustainability goals (Hamulczuk et al., 2021).

As attention to environmental issues increases, companies need to take proactive steps to ensure that they meet consumer expectations and contribute positively to the environment (Richterová et al., 2021). This includes product innovation, quality improvement, strong customer orientation, and the adoption of sustainable business practices. With this approach, companies can build stronger relationships with customers, enhance loyalty,

and achieve long-term success in an increasingly competitive market (Krajčírová et al., 2019).

Therefore, this study is relevant not only for academics but also for practitioners in the fields of marketing and management. By applying these findings, companies can improve the effectiveness of their marketing strategies and contribute to environmental sustainability (Šimpachová Pechrová and Šimpach, 2024).

Implementing marketing strategies that focus on sustainability and customer orientation will help companies address market challenges and meet the expectations of increasingly environmentally conscious consumers. Thus, this study provides valuable insights for developing more sustainable business strategies focused on customer needs.

The managerial implications of this study are crucial for companies seeking to enhance consumer purchase decisions through improved product quality, customer orientation, and sustainable practices. First, companies need to prioritize improving product quality. The finding that product quality has a significant impact on purchase decisions indicates that investment in developing high-quality products is an effective strategy to increase sales. Companies can achieve this through continuous innovation, strict quality control, and the use of high-quality raw materials. Additionally, companies should consistently monitor customer feedback to make necessary improvements to meet or exceed consumer expectations.

Customer orientation should also be at the center of the company's managerial strategy. The finding that customer orientation significantly impacts purchase decisions underscores the importance for companies to understand and meet customer needs and preferences. This can be achieved through personalized marketing approaches, superior customer service, and product development based on in-depth market research. This strategy will help companies build long-term relationships with customers and enhance customer loyalty.

Next, companies should leverage consumers' intention to use renewable energy as an opportunity to enhance purchase decisions. The finding that the intention to use renewable energy strengthens the impact of product quality and customer orientation on purchase decisions indicates that companies can attract environmentally conscious consumers by offering eco-friendly products. Companies need to communicate their commitment to sustainability through marketing campaigns that highlight the use of renewable energy and other eco-friendly practices.

Companies should also strengthen their efforts to enhance consumer environmental knowledge. Perceived environmental knowledge has a significant impact on purchase decisions, so companies need to invest in environmental education for consumers. This can be done through information campaigns explaining the environmental benefits of their products, as well as educational initiatives that involve consumers in eco-friendly activities. By increasing consumer environmental knowledge, companies can encourage more sustainable purchase decisions.

Furthermore, companies need to adopt sustainable practices in all aspects of their operations. This includes the use of sustainable raw materials, reducing carbon emissions, and energy efficiency in production processes. By demonstrating a genuine commitment to sustainability, companies can build a positive reputation in the eyes of consumers who are increasingly concerned about environmental issues. These sustainable practices not only enhance product appeal but also can result in greater operational efficiency and cost savings in the long term.

Marketing strategies should also be tailored to attract different consumer segments. Consumers with a high intention to use renewable energy may be more responsive to messages emphasizing product quality and sustainability. Therefore, companies should develop marketing messages tailored to the preferences and values of different consumer segments. This segmented approach will enable companies to more effectively reach and influence various consumer groups.

Companies should also consider forming strategic partnerships with other organizations that share a similar vision for sustainability. For example, collaborating with environmental organizations or governments to develop eco-friendly initiatives can enhance the company's credibility and expand their marketing reach. These partnerships can include certification programs, joint research projects, or co-marketing campaigns that highlight the company's commitment to sustainability.

Finally, companies should continuously monitor and evaluate the effectiveness of their managerial and marketing strategies. This involves collecting data and analyzing performance to understand the impact of various initiatives on consumer

purchase decisions. With a data-driven approach, companies can make necessary adjustments to ensure that their strategies remain relevant and effective in addressing market changes and consumer preferences. Continuous evaluation will help companies stay competitive and responsive to evolving consumer needs. By integrating the findings of this study into managerial strategies, companies can enhance consumer purchase decisions, build customer loyalty, and achieve competitive advantage in an increasingly dynamic and sustainability-oriented market.

Limitation and future research avenues

Every study has the limitations that is being faced by the researcher during conducting the empirical evidences. The study is limited to the agriproducts produced in the different regions of the Indonesia, the future studies may consider the comparative study with production of fruits and may be with neighboring competitive countries. The study was limited to marketing perspective and considered only product quality, customer orientation, farmers' knowledge and perceived environment knowledge that influence the purchase decision of such agriproducts, the future studies may consider the technological advancements for cultivation, location of farmlands and infrastructural issues to occupy the markets on time to fulfill the needs.

Conclusions

This research focuses on locally produced agricultural products in Indonesia, which play a significant role in the economic conditions of local producers. There is a dire need for appropriate marketing strategies to sustain market positions and maintain surplus income and commodities. The study incorporated characteristics of locally produced agricultural products, including vegetables and rice, in four different regions of Indonesia. The findings of this study are particularly relevant for producers as they provide insights into designing effective marketing strategies by ensuring product quality, customer orientation, farmers' knowledge, and perceived environmental knowledge, all of which influence consumer purchase decisions. Additionally, the intention to use renewable energy plays a moderating role in these relationships.

The results indicate that product quality, customer orientation, intention to use renewable energy, and environmental knowledge significantly influence purchase decisions. Specifically, hypotheses H1, H2, H4, and H5 are statistically significant. However, the direct relationship between farmers' knowledge and purchase decisions is reported as insignificant. This suggests that while enhancing farmers' knowledge is important, it alone may not directly drive consumer purchase decisions unless coupled with other factors like product quality and customer orientation. The intention to use renewable energy strengthens the relationship between product quality, customer orientation, and purchase decisions, indicating that the intention to use renewable energy moderates the relationship between exogenous and endogenous constructs in this study. However, no moderation is reported between farmers' knowledge and purchase decisions through innovation.

Given these findings, the government should focus on supportive policies that encourage innovative initiatives, ensure product quality, consider customer needs and demands, and specifically enhance farmers' knowledge regarding production techniques that influence purchase decisions. These policies could include training programs for farmers, subsidies for adopting renewable energy technologies, and initiatives to improve the overall quality and marketability of local agricultural products. This research has significant potential to contribute meaningfully to the understanding and development of practices that support the use of renewable energy in Indonesia's agricultural sector. By promoting renewable energy, the agricultural sector can become more sustainable and environmentally friendly, which is increasingly important in the context of global climate change.

Future research can build on these findings by developing more specific marketing strategies for local agricultural products, taking into account factors such as climate change, the latest agricultural technologies, and global market dynamics. Further studies could explore the impact of various government policies on the adoption of renewable energy in the agricultural sector and assess the effectiveness of training programs for farmers to enhance their knowledge of innovative production techniques. Additionally, future studies could delve deeper into how changes in consumer preferences affect the demand for local agricultural products and how sustainability can be better integrated into the agricultural supply chain.

Moreover, research should also focus on the socio-economic impacts of adopting

renewable energy in agriculture, examining how it affects the livelihoods of farmers, especially in rural areas. By understanding these impacts, policymakers can design more effective interventions that not only promote sustainable agricultural practices but also improve the economic well-being of local producers. The integration of renewable energy in agriculture could lead to a more resilient agricultural sector, capable of withstanding environmental and economic challenges.

In summary, this study highlights the importance of comprehensive marketing strategies that include product quality, customer orientation, and the use of renewable energy to influence consumer purchase decisions. The findings suggest that while farmers' knowledge is crucial, it needs to be complemented with other factors to drive consumer behavior effectively. The government's role is critical in supporting these initiatives through appropriate policies and programs. Future research should continue to explore these areas to further enhance the sustainability and economic viability of the agricultural sector in Indonesia.

Corresponding author:
Evi Feronika Elbaar
Faculty of Agriculture, Palangka Raya University, Central Kalimantan 74874, Indonesia
Email: evielbaar@agb.upr.ac.id

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