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Factors Influencing Farmer's Behavior in the Development of Sago Agroindustry in Riau Province (Indonesia)

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ABSTRACT

The research examines the factors that influence farmers' behavior in the development of the sago agroindustry. The development of the sago agroindustry offers significant potential for improving farmers' welfare and contributing to national income. This study employs a mixed-method approach with a sequential explanatory model. The sample location was purposively selected, involving 100 farmers who also engage in agroindustrial activities. The data were analyzed using statistical methods, specifically Partial Least Square Structural Equation Modeling (PLS-SEM) with SmartPLS 4.0 software. PLS-SEM provides more accurate results and deeper interpretations compared to traditional regression in situations where the constructs being measured are abstract, where mediation effects need to be explored, and where more flexibility is required for complex models. The variables used in this study include Partnership, Attitude, Subjective Norms, and Behavioral Control as independent variables, Intention as a mediating variable, and agroindustrial behavior as the dependent variable. Each variable has a different number of indicators. The findings of the study indicate that the concepts of the Theory of Planned Behavior (TPB) applied in this research show that the dimensions of attitude, social norms, and behavioral control play a crucial role in shaping farmers' intentions to develop the sago agroindustry. The addition of the partnership variable posi-

tively contributes to the success of product diversification in the sago agroindustry. However, this study also found that partnership does not significantly influence farmers' behavioral intentions. These findings recommend the need to strengthen partnerships and adopt a more inclusive and participatory approach in planning agroindustrial development programs.

Keywords: Agroindustry; Partnership; Behavior; TPB (Theory of Planned Behavior)

1. Introduction

For many countries, agriculture is a national security priority. The agricultural sector has significantly contributed to economic growth for sustainable development, rural areas, job creation, and food safety, as well as being a crucial solution for poverty reduction, particularly in developing countries. This indicates that the agricultural sector remains in demand, with its quality and safety continuing to be global priorities [1–4].

Overall, the field of agriculture encompasses components such as food crops, horticulture, livestock, fisheries, and plantations [5]. One of Indonesia's leading plantation commodities with development prospects is the sago plant. In the development of supported commodities, the government is making various efforts to increase the productivity of people's plantations and their competitiveness in the international market [6]. This policy aims to establish sago as a source of national revenue through exports, while also increasing the income of farmers and business actors in agro-industrial activities [7–9].

Indonesian sago is exported to five countries: Malaysia, Japan, China, Singapore, and Hong Kong. The majority of Indonesian sago exports go to Malaysia, accounting for up to 60.07% of the national total. However, it is currently exported only in the form of starch and sago flour [6]. Developed, sago could serve as an alternative solution to alleviate or even resolve national food security issues [10]. However, the potential for diversifying sago-derived products has not been fully optimized. The sago plantation sector holds great potential, which can be leveraged to improve community welfare. According to Rumalean et al. [11] Local potential refers to the power, strength, capability, and capacity possessed by a region and developed to improve public welfare. The development of the sago agro-industry does not solely rely on technology and product innovation but also in farmers' behavior as key players in the production chain. Farmers' practices in cultivating, processing, and marketing sago-based products play a crucial role in determining the success of agro-industry development.

One of the challenges faced by sago farmers is the low adoption of modern technology in the sago cultivation and processing process [9]. Many farmers still use traditional methods, limited access to business capital [12, 13] wider market reach is also an obstacle in the development of the sago agroindustry. One effective approach to encouraging changes in farmers' behavior toward greater productivity and innovation is through partnerships with various stakeholders. Partnerships in the sago agroindustry play a very important role in increasing farmer capacity, expanding market access, and providing more modern technological assistance.

The concept of behavior has been widely studied by experts across various disciplines, such as psychology, sociology, and economics. One of the behavioral concepts used to understand an individual's actions is the Theory of Planned Behavior (TPB). The theory proposed by Shi et al. [14] argues that the intention to adopt a new behavior depends on attitudes, social norms, behavioral control and intentions leading to the adoption of the behavior. Several studies have extended the TPB by adding demographic and social variables [15, 16]. In the agricultural sector, TPB has also been developed to support the diversification of agricultural products [17]. Adding psychological factors that influence farmers' intentions to diversify. The expansion is carried out by integrating other theories, particularly in the adoption of entrepreneurial intentions [18]. The original TPB framework integrates the social environment or farmers' context (measured through farmers' participation in social networks related to partnerships established by farmers) [17]. The social environment or context of farmers

is created by social networks that serve as platforms for interaction and communication, and these interactions influence farmers' beliefs, decisions and behaviors [18].

This research contributes by adding a new variable to the Theory of Planned Behavior (TPB) framework to understand and predict individual behavior. The addition of the partnership variable is based on a preliminary survey conducted by the researcher, which indicates a phenomenon of behavioral change in the development of the sago agro-industry by farmers Thus, by adding the partnership variable, it is expected that effective solutions can be found for the development of the sago agro-industry. Therefore, research on the factors influencing farmers' behavior in agro-industry development becomes a necessity.

2. Materials and Methods

The research design employs a Mixed Method approach using a sequential explanatory model. Mixed Method research integrates both quantitative and qualitative approaches, starting with quantitative exploration and followed by data collection that is structured based on the weight or priority given to the quantitative data [19, 20]. In this study, quantitative data is used to assess the influence of partnerships, attitudes, subjective norms, behavioral control, and intentions on agroindustry behavior, while qualitative data is used to explain the factors influencing farmers' behavior in agroindustry development. This approach is considered relevant to the study as it aims to determine the impact of independent variables on the dependent variable based on the available data.

The selection of the sample location was conducted purposively, considering that Kepulauan Meranti Regency is the largest sago industry center in Riau Province .This area is considered capable of reflecting efforts to develop the sago agro-industry in the analysis of factors influencing farmers' behavior in agro-industry development. Two districts are considered representative, namely Tebing Tinggi Timur District and Tebing Tinggi Barat District.

The farmer samples were taken using the simple random sampling technique, where each farmer who is also involved in the sago agro-industry had an equal chance of being selected as a sample. The sample size was determined based on the number of indicators in the study, calculated as 5 × 20, resulting in a total of 100 respondents [21, 22]. According Ghozali [23] states that in the Structural Equation Modeling (SEM) method, an appropriate sample size ranges from 100 to 200 respondents. According to Hair et al. [21] the guideline for determining the sample size in SEM is five times the number of parameters in the model, which is equivalent to five times the total number of indicators representing all variables. In this study, there are 20 indicators; therefore, the sample size is determined using the formula 5 × 20, resulting in a total of 100 respondents.

The variables used in the study are Partnership, Attitude, Subjective Norms, and Behavioral Control as independent variables. Intention serves as the mediating variable, while agro-industry behavior is the dependent variable. Each variable has a different number of indicators. The partnership variable includes indicators such as farmer contracts, social capital, local wisdom, profit sharing, and productivity. The attitude variable consists of cognitive, affective, and conative indicators. The subjective norm variable includes indicators such as normative beliefs and motivation to comply. The behavioral control variable is measured using control beliefs and perceived control. The agro-industry behavior variable consists of four indicators: production, marketing, human resources, and technology, as presented in **Figure 1**. Each indicator is assessed using a Likert scale (1. Strongly disagree, 2. Disagree, 3. Somewhat disagree, 4. Agree, 5. Strongly agree). The data was analyzed using the statistical method Partial Least Squares-Structural Equation Modeling (PLS-SEM) with SmartPLS 4.0 software. This method is used to solve complex problems and estimate relationships between variables. It is highly flexible as it can be applied to various measurement scales and small sample sizes [23]. PLS-SEM provides more accurate results and deeper interpretation compared to traditional regression in situations where measured constructs are abstract, mediation effects need to be explored, and it is more flexible for complex models [21].
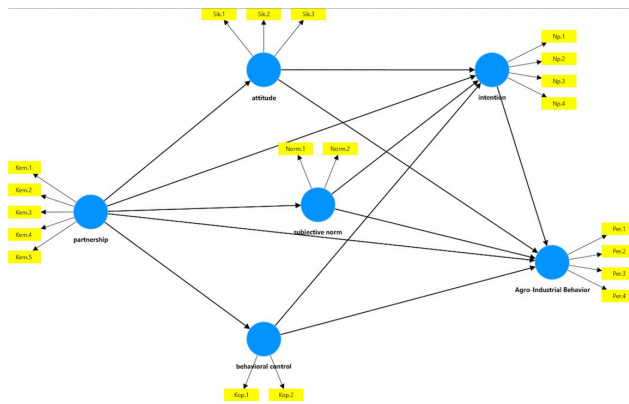
Figure 1. Path Diagram.

3. Results

3.1. Evaluation of Measurement Model (Outer Model)

There are six latent variables in this study. The latent variables consist of partnership, attitude, subjective norm, behavioral control, intention, and agroindustry behavior. Measurement model evaluation is used to determine the effect of partnership on agroindustry behavior, testing convergent validity, discriminant validity, and construct reliability.

Convergent validity test is used to ensure that the indicators or measurements of latent variables are valid. According to Ghozali[23] A correlation can be said to meet convergent validity if it has a loading value greater than 0.5 to 0.6. The validity test shows that the indicators meet the requirements for convergent validity because they have a factor loading value of <0.60. The study found that the factor loading values ranged from 0.623 to 0.913. An indicator is considered acceptable if it has an AVE value > 0.5. Based on **Table 1**, the AVE values in the study range from 0.690 to 0.823, indicating that the study is valid and acceptable. If the AVE value is greater than the correlation between latent variables, then discriminant validity can be considered fulfilled. Discriminant validity is achieved if the AVE value is greater than 0.5[21]. Reliability testing in the SEM-PLS model is used as one of the evaluations for the measurement model (outer model). A latent variable can be considered to have good reliability if the composite reliability value is between 0.6–0.7 and the Cronbach's alpha value is greater than 0.7[21]. The Cronbach's alpha value

in the study ranged from 0.764 to 0.933, indicating that the latent variables in the study had good reliability.

3.2. Structural Model (Inner Model)

After conducting the evaluation of the measurement model (outer model), where the convergent validity, discriminant and composite reliability have met the requirements, the next stage is to conduct a structural evaluation (inner model). Inner model testing is a model development based on theoretical concepts in order to analyze the relationship between exogenous and endogenous variables that have been described in the framework of the research concept. Testing of the inner model is done by looking at the R-value which is a goodness-fit model test. The stages of testing carried out are as follows:

a) R-square Value

The R-square value is a goodness-fit model test. The second test can be seen from the R-square results for endogenous variables, namely as follows:

The R-square value for the behavioral control variable is 0.624 (62.4%), the intention variable is 0.816 (81.6%), the subjective norm variable is 0.635 (63.5%), the agro-industrial behavior variable is 0.898 (89.8%), and the attitude variable is 0.666 (66.6%). The R-square values of 0.75, 0.50, and 0.25 are categorized as high, moderate, and low, respectively. The R-square results in **Table 2** illustrate the proportion of variance in the variables explained by the model. The R-square value of the agro-industrial behavior variable, which is 89.8%, can be explained by the attitude, subjective norm, and behavioral control variables, while the remaining variance is explained by other variables not included in the model.

b) Goodness of Fit Model

The structural Goodness of fit Model in the inner model uses the predictive-relevance (Q^2) value. A Q-square value greater than 0 indicates that the model has predictive relevance. The R-square values for each endogenous variable in this study can be seen in the following calculation: The predictive relevance value is obtained using the following formula:

$$Q^2 = 1 - (1 - R1^2)(1 - R22)(1 - R32)(1 - R42)(1 - R52)$$
$$Q^2 = 1 - (1 - 0.62422)(1 - 0.63522)(1 - 0.66622)(1 - 0.81622)(1 - 0.89822)$$

Table 1. AVE Values, and Composite Reliability.

Laten Variable	AVE	Composite Reliability	Cronbach's Alpha	Keputusan
Partnership	0.703	0.889	0.889	Reliable
Attitude	0.723	0.809	0.808	Reliable
Subjective norms	0.732	0.645	0.635	Reliable
Behavioral control	0.823	0.787	0.785	Reliable
Intention	0.690	0.850	0.849	Reliable
Agro-industrial behavior	0.747	0.889	0.886	Reliable

Table 2. R^2 Results of Endogenous Variables.

Variable	R-Square	R-Square Adjusted
Behavioral control	0.624	0.621
Intention	0.816	0.808
Subjective norms	0.635	0.631
Agro-industrial behavior	0.898	0.892
Attitude	0.666	0.662

$Q^2 = 1 – (0.611)\,(0.597)\,(0.556)\,(0.334)\,(0.194)$

$Q^2 = 1 – 0.013$

$Q^2 = 0.987$

These results indicate that 98.7% of the variation in the agro-industrial behavior variable is explained by the variables used in the model, while the remaining 1.3% is explained by other factors outside the model.

c) Hypothesis Testing

The estimated value for the relationship between paths in the structural model must be significant. This significance value is obtained through the bootstrapping procedure. The significance of the hypothesis is determined by examining the parameter coefficient value and the significance of the t-statistic value in the bootstrapping report. The significance value is assessed based on:

1) The t-statistic value, which is compared with the t-table value to determine whether the exogenous variable significantly influences the endogenous variable. The t-table value at an alpha level of 0.05 (5%) is 1.985.

2) The p-value, which is compared to determine whether it is below or above the significance level, for example, below 0.05 or above 0.05, to decide whether to accept or reject the null hypothesis or the alternative hypothesis.

3) The original sample, which is used as the regression coefficient value to complete the regression equation.

Based on the criteria, the results of the path coeffi-cient testing are obtained in **Figure 2** and **Table 3**.
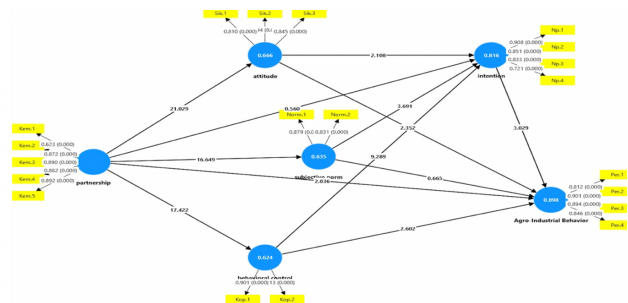
Figure 2. Path of Hypothesis Testing Results.

The Effect of Partnership on Farmers' Attitudes obtained a t-value of 21.029 > t-table 1.985, with a P value of 0.000 <0.05, then the original sample value (O) was obtained at 0.816 and was positive, so the hypothesis in this study was accepted, meaning that Partnership has a positive and significant effect on Farmers' Attitudes. Then a coefficient value of 0.816 was obtained, which means that there is a very strong relationship or influence from Partnership on Farmers' Attitudes. The Influence of Partnership on Subjective Norms obtained a t-value of 16.649 > t-table 1.985, with a P value of 0.000 < 0.05, then the original sample value (O) was obtained at 0.797 and was positive, so the hypothesis in this study was accepted, meaning that Partnership has a positive and significant effect on Subjective Norms. Then a co-efficient value of 0.797 was obtained, which means that there is a very strong relationship or influence from Partnership on Subjective Norms. The effect of Partnership

Table 3. Results of Path Coefficient Testing (Direct Effect).

Relationship between Variables	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Status
Partnership -> Intention	0.060	0.055	0.107	0.560	0.575	Hypothesis rejected
Partnership -> Subjective norms	0.797	0.797	0.048	16.649	0.000	Hypothesis accepted
Partnership -> Agro-industrial behavior	0.201	0.207	0.099	2.036	0.042	Hypothesis accepted
Partnership -> Attitude	0.816	0.816	0.039	21.029	0.000	Hypothesis accepted
Behavioral control	0.795	0.799	0.086	9.289	0.000	Hypothesis accepted
Behavioral control	0.348	0.350	0.134	2.602	0.009	Hypothesis accepted
Intention -> Agro-industrial behavior	0.243	0.236	0.080	3.029	0.002	Hypothesis accepted
Subjective norms -> Intention	0.327	0.335	0.089	3.691	0.000	Hypothesis accepted
Subjective norms -> Agro-industrial behavior	−0.044	−0.041	0.067	0.665	0.506	Hypothesis rejected
Attitude -> Intention	−0.248	−0.254	0.118	2.108	0.035	Hypothesis accepted
Attitude -> Agro-industrial behavior	0.263	0.258	0.112	2.352	0.019	Hypothesis accepted

on Behavioral Control obtained a t-value of 17.422 > t-table 1.985, with a P value of 0.000 < 0.05, then the original sample value (O) was obtained at 0.790 and was positive, so the hypothesis in this study was accepted, meaning that Partnership has a positive and significant effect on Behavioral Control. The Influence of Partnership on Intention obtained a t-value of 0.560 < t-table 1.985, with a P value of 0.575 > 0.05, then the original sample value (O) was obtained at 0.060 and was positive, so the hypothesis in this study was rejected, meaning that Partnership does not have a significant effect on Intention. Then a coefficient value of 0.060 was obtained, which means that there is a very weak relationship or influence of Partnership on Intention. The Influence of Partnership on Agro Behavior t-value 2.036 > t-table 1.985, with P-value 0.042 < 0.05, then the original sample value (O) is obtained at 0.201 and is positive, then the hypothesis in this study is accepted, meaning that Partnership has a positive and significant effect on agro-industry behavior. Then a coefficient value of 0.201 is obtained, which means that there is a weak relationship or influence of Partnership on agro-industry behavior. The Influence of Attitude on Farmer Intentions, the calculated t value is 2.108 > t-table 1.985, with P values of 0.035 < 0.05, then the original sample value (O) is -0.248 and is negative, so the hypothesis in this study is rejected, meaning that Attitude has a negative and significant effect on Intentions. Then the coefficient value is −0.248 which means that there is a weak relationship or influence from Attitude on Intentions. The Influence of Subjective Norms on Farmers' Intentions The t-value is 3.691 > t-table 1.985, with a P value of 0.000 < 0.05, then the original sample value (O) is 0.327 and is positive, so the hypothesis in this study is accepted, meaning that Subjective Norms have a positive and significant effect on Intentions. Then the coefficient value is 0.327 which means that there is a fairly strong relationship or influence from Subjective Norms on Intentions. The Effect of Behavioral Control on Intention The t-value obtained is 9.289 > t-table 1.985, with P-values of 0.000 > 0.05, then the original sample value (O) is 0.795 and is positive, so the hypothesis in this study is accepted, meaning that Behavioral Control has a positive and significant effect on Intention. Then the coefficient value is 0.795 which means that there is a very strong relationship or influence from Behavioral Control on Intention. The Influence of Attitudes on Agro-Industry Behavior The t-value is 2.352> t-table 1.985, with P values of 0.019 <0.05, then the original sample value (O) is 0.263 and is positive, so the hypothesis in this study is accepted, meaning that Attitudes have a positive and significant effect on Behavior. Then the coefficient value is 0.263 which means that there is a weak relationship or influence from Attitudes on Agro-Industry Behavior. The Influence of Subjective Norms on Agro-Industry Behavior The t-value obtained was 0.665 < t-table 1.985, with P values of 0.506 > 0.05, then the original sample value (O) was obtained at 0.006 and was positive, so the hypothesis in this study was rejected, meaning that Subjective Norms did not affect Agro-Industry Behavior. Then a coefficient value of 0.044 was obtained, which means that there is no relationship or influence of Subjective Norms on Agro-Industrial Behavior. The Effect of Behavioral Control on Agro-Industry Behavior The t-value is

2.602 > t-table 1.985, with a P value of 0.009 < 0.05, then the original sample value (O) is 0.348 and is positive, so the hypothesis in this study is accepted, meaning that Behavioral Control has a positive and significant effect on Behavior. Then the coefficient value is 0.348 which means that there is a fairly strong relationship or influence from Behavioral Control on Agro-Industry Behavior. The Influence of Intention on Agro-Industry Behavior The t-value is 3.029 > t-table 1.985, with a P value of 0.002 < 0.05, then the original sample value (O) is 0.243 and is positive, so the hypothesis in this study is accepted, meaning that Intention has a positive and significant effect on Behavior. Then the coefficient value is 0.243 which means that there is a weak relationship or influence from Intention on Agro-Industry Behavior.

4. Discussion

4.1. The Influence of Partnerships on Farmers' Attitudes

The results of the hypothesis test that show the influence of partnerships on farmers' attitudes can be interpreted that the relationship built through partnerships, for example between farmers and external parties such as the government, institutions, or companies, has a significant impact on farmers' attitudes. This can be in the form of attitudes towards agricultural methods, the use of technology, or views on collaboration with external parties. The influence of partnerships on farmers' attitudes is highly dependent on how the partnership is built and managed. If the partnership provides real and profitable benefits, then farmers' attitudes tend to be positive and proactive towards change. However, if the partnership is perceived as detrimental or unfair, then farmers' attitudes can turn negative.

The partnership between farmers and companies, whether in the agribusiness sector or other sectors related to agriculture, has become one of the key strategies in improving farmers' productivity and well-being. This partnership model continues to evolve in response to farmers' growing need for greater support in technical, financial, and market access aspects. Moreover, partnerships also influence farmers' attitudes in managing their businesses.

Farmers involved in partnership programs tend to have a more positive, optimistic attitude and be more open to innovation in sago farming development. This is evident from their increased confidence in adopting better agricultural practices and their willingness to collaborate with relevant stakeholders such as the government, private sector, and non-governmental organizations. Additionally, partnerships play a role in raising farmers' awareness of the importance of environmental sustainability and the economic value of sago commodities. With support from their partners, farmers feel more valued and motivated to expand their businesses, ultimately leading to improved well-being and productivity.

The findings of this study align with the theory presented by Rogers[24], in his diffusion of innovation theory, which states that the success of innovation adoption is greatly influenced by social support and collaboration among stakeholders. In this context, partnerships serve as a medium to accelerate the diffusion of innovation, including in sago management. According to Pretty[25], a strong partnership between farmers, the government, and the private sector can create synergy that promotes the adoption of innovation and sustainable agricultural practices. This is consistent with the findings of this study, where partnerships have a positive impact on the attitudes of sago farmers in the Meranti Islands.

The study by Ahmed et al.[17] found that decision-making results from the interaction between cognitive factors (such as TPB constructs) and environmental factors (such as the technological network in which farmers operate). Therefore, these external factors should be considered in promoting agricultural digitalization across various contexts. Meanwhile, research by Wibisono et al.[26] highlight that entrepreneurial attitudes, such as entrepreneurial networking, skills, and competencies to start a new business and identify business opportunities, significantly influence an individual's decision to start a business and invest in others' businesses. According to the research findings of Ashari et al.[27] ,the ability to build relationships or networks with various stakeholders is one of the key variables determining an entrepreneur's attitude.

A recent study by Sutrisno[28] on sustainable agriculture development in Indonesia also supports these

findings. The study indicates that partnerships between farmers, the government, and the private sector significantly enhance farmers' positive attitudes toward sustainable agricultural practices. Additionally, research by Bere et al.[29] on the impact of partnerships on oil palm farmers in Sumatra found that partnerships not only increase productivity but also transform farmers' attitudes, making them more proactive and innovative.

Partnerships have been proven to bring many positive influences on farmers' attitudes. From increased confidence to shifts in mindset regarding risk, discipline, productivity, and collaboration, all of these contribute to a more positive attitude in managing agricultural businesses. Through effective partnerships, farmers not only gain economic benefits but also acquire valuable insights into sustainable agricultural management. In the future, well-established partnership models will continue to be a key factor in advancing and modernizing the agricultural sector.

These findings reinforce the importance of expanding and strengthening partnership programs in the Meranti Islands. The government, private sector, and non-governmental organizations need to collaborate to create a sustainable, inclusive, and farmer-centered partnership model. By doing so, sago farmers will not only develop a more positive attitude but also contribute more significantly to the regional economy and environmental conservation.

4.2. The Influence of Partnerships on Subjective Norms

The hypothesis testing results in this study indicate a significant influence between partnerships and subjective norms. Strong partnerships, whether in the form of cooperative relationships between individuals or organizations, contribute positively to the formation of subjective norms. Subjective norms refer to an individual's belief about what important people around them expect regarding a particular action or behavior.

This study reveals that effective partnerships can shape an individual's perception of what is considered good or right by their social environment. This occurs because, within partnerships, communication, collaboration, and mutual trust influence a person's view of so-

cially accepted standards or norms. Consequently, when partnerships function well, individuals are more likely to adhere to existing norms as they feel supported by their social network.

Data analysis shows that farmers involved in partnerships tend to have stronger subjective norms for adopting better agricultural practices. This occurs because partnerships provide social support, knowledge, and legitimacy from influential entities such as the government, private institutions, or farmer groups. With partnerships in place, farmers feel supported and recognized by their social environment, which motivates them to follow the recommendations or guidance provided.

Several experts and recent studies have revealed the importance of partnerships in shaping farmers' subjective norms and behavior. According to Ajzen[12] in the Theory of Planned Behavior (TPB), subjective norms are one of the key factors influencing a person's intentions and behavior. In this context, partnerships can strengthen subjective norms by providing social support and legitimacy from entities considered important by farmers.

According to research result Pretty[25] in his book Social Capital and the Collective Management of Resources, states that partnerships and collaboration between parties can strengthen social bonds and collective norms in society. This aligns with the findings of this study, where partnerships play a role in reinforcing the subjective norms of sago farmers in the Meranti Islands. Recent research by Bere et al.[29] on the impact of partnerships on oil palm farmers in Sumatra also supports these findings. Their study shows that partnerships not only increase productivity but also strengthen farmers' subjective norms through social support and legitimacy from business partners. Additionally, research by Sutrisno[28] on sustainable agricultural development in Indonesia found that partnerships between farmers, the government, and the private sector significantly strengthen farmers' subjective norms for adopting sustainable farming practices.

Subjective norms in partnerships can also lead to the development of more ethical and responsible business behavior. For instance, if a larger partner upholds high ethical business standards, they may expect the

same from smaller partners. Over time, smaller partners will begin to align their behavior with these standards, recognizing that meeting these expectations is crucial for sustaining the partnership. In a partnership, expectations of loyalty, integrity, and honesty become stronger due to the influence of more dominant partners. Individuals involved in such partnerships will feel that maintaining a good relationship requires them to adhere to the moral values expected by their partners. This can have a positive impact on the overall corporate culture.

4.3. The Influence of Partnerships on Behavioral Control

Hypothesis testing results indicate a significant influence of partnerships on behavioral control within organizations. This analysis was conducted using data from various companies engaged in strategic partnerships. Partnerships can enhance behavioral control within organizations by fostering closer collaboration among involved parties. When two or more entities work together, they tend to motivate and monitor each other, creating a more disciplined environment. This not only improves productivity but also ensures that every team member clearly understands their responsibilities. Additionally, partnerships play a role in establishing shared norms and values. In this context, individual behavior becomes more regulated due to the influence of colleagues and business partners. As a result, a positive work culture is formed, where each individual feels engaged and responsible for collective success.

Based on data analysis, it was found that farmers involved in partnerships tend to have a higher level of discipline in implementing environmentally friendly agricultural practices. They are also more open to innovations and new technologies introduced through partnership programs. This aligns with Pretty[25] in the Diffusion of Innovation. Theory, which states that the adoption of innovation by individuals or groups is influenced by social interactions and support from external networks.

Apart from that, recent research by Bere et al.[29] revealed that partnerships between farmers and the private sector or government can increase farmers' capacity to manage natural resources sustainably. The study emphasizes the importance of mentoring and training provided through partnerships to build farmers' awareness and skills.

In the Meranti Islands, partnerships have facilitated farmers' access to markets, capital, and technology. For example, partnership programs initiated by the local government together with sago processing companies have helped farmers improve productivity and quality of sago products. This is also supported by the opinion of Sutrisno[28] who stated that good partnerships can create synergy between various stakeholders, thus encouraging positive behavioral changes at the farmer level.

However, challenges remain. Some experts such as Chambers[30] remind that the sustainability of partnerships is highly dependent on long-term commitment from all parties involved. Without this commitment, partnerships risk becoming merely short-term programs that do not provide significant impact. Overall, the results of this study strengthen the evidence that partnerships are a key factor in improving the behavioral control of sago farmers in the Meranti Islands. With the right support, partnerships can be a catalyst for transformation towards more sustainable and productive sago farming.

Strong partnerships often involve mutual agreements to achieve specific goals. This encourages each party to be more committed and disciplined in reaching those objectives. With mutually reinforcing partnerships, individuals or organizations are more motivated to control their behavior to stay focused on achieving desired outcomes.

Furthermore, influential partnerships often involve the exchange of knowledge and experiences that can reshape individuals' perspectives and actions. By gaining new information, individuals tend to update their ways of controlling behavior to align with the insights or strategies they learn from their partners.

4.4. The Influence of Partnership on Farmers' Behavioral Intentions

The results of the hypothesis testing in this study indicate that there is no significant influence between partnerships and farmers' behavioral intentions in the Meranti Islands. This finding indicates that although partnerships have been implemented between farmers

and various parties, such as companies, governments, or non-governmental organizations, this does not directly affect farmers' intentions to adopt certain behaviors, such as implementing new agricultural technologies, increasing production, or participating in agricultural development programs.

Some experts state that the success of partnerships in influencing farmers' behavioral intentions is highly dependent on supporting factors, such as the level of trust, effective communication, and the suitability of the program to farmers' needs. According to Rogers[24], the adoption of innovation or behavioral change is influenced by individual perceptions of the benefits, suitability, and complexity of the innovation. If the partnership is not perceived as providing direct benefits or is considered too complicated, then farmers' intentions to behave in a certain way may not be formed.

Recent research Rogers[24], also found that partnerships that are not accompanied by intensive mentoring and farmer empowerment tend to fail to create sustainable behavioral changes. This is in line with findings in the Meranti Islands, where partnerships may not have touched on crucial aspects that can motivate farmers to change their behavior.

In addition, cultural and social factors in the Meranti Islands may also play a role in these findings. According to research conducted by Persada et al.[31] communities in the island region often have strong traditional values, so behavioral change requires a more holistic and participatory approach. Partnerships that are top-down or do not involve farmers in the decision-making process tend to be less effective.

Thus, these findings provide important implications for stakeholders. To improve the effectiveness of partnerships, a more inclusive, participatory, and farmer-oriented approach is needed. Partnership programs should be designed by considering the local context, including cultural and social values that apply in the community.

4.5. The Influence of Partnerships on Agro-Industry Behavior

Partnerships, in this context, refer to collaboration between farmers and various parties such as the government, private companies, non-governmental organizations (NGOs), and research institutions. This collaboration has been shown to influence farmers' mindsets, attitudes, and actions in managing their farming businesses. Based on data analysis, partnerships have a positive impact on the adoption of agricultural technology, increased knowledge, and changes in farmers' attitudes in facing challenges such as climate change and markets. Farmers involved in partnerships tend to be more open to innovation and more adaptive in implementing sustainable agricultural practices. This is in line with Pretty[25] which states that partnerships can be a catalyst for changes in farmer behavior through the transfer of knowledge and resources.

In addition, recent research by Mangallo[32] revealed that partnerships between farmers and plantation companies in remote areas, such as the Meranti Islands, can increase farmer productivity and welfare. This study confirms that technical support, market access, and mentoring provided through partnerships can change farmer behavior from traditional to more modern and profit-oriented.

However, Veronica[33] reminds us that the success of a partnership heavily depends on the equality of the relationship between the involved parties. If one party, such as a private company, dominates the partnership, it may create a dependency that could ultimately restrict farmers' independence. Therefore, it is crucial to establish partnerships based on the principles of mutual benefit and sustainability.

4.6. Influence of Attitude on Farmers' Intention

The results of the hypothesis testing conducted in this study indicate a significant influence of attitude on farmers' intention. Attitude, which is an individual's evaluation of an object, action, or concept, plays an important role in shaping a person's intention to act. This study indicates that a positive attitude tends to increase an individual's intention to carry out a particular behavior. For example, in the context of agriculture, if farmers have a positive attitude towards sustainable agricultural practices, they are more likely to intend to implement the method. This reflects that a positive attitude can mo-

tivate individuals to take the desired action.

This hypothesis testing is also in line with existing behavioral theories, such as the Theory of Planned Behavior, which emphasizes that attitudes, subjective norms, and behavioral control contribute to an individual's intention to behave. In this case, attitude is one of the main factors influencing farmers' intentions. These findings highlight the importance of developing positive attitudes in society, especially in the context of better decision-making and action. Therefore, efforts to increase awareness and education about the benefits of a behavior can contribute to changes in attitudes and, ultimately, intentions to behave more effectively and productively.

A farmer's intention refers to an individual's tendency to take action based on prior beliefs or evaluations. This intention typically arises from the belief that a particular action will lead to the desired outcome. If someone has a positive attitude toward a behavior such as recognizing its benefits they are more likely to develop a strong intention to engage in it. Conversely, a negative attitude can diminish a person's intention to act. Attitude plays a crucial role in shaping a farmer's intention; a positive attitude tends to strengthen the intention to act, while a negative attitude can serve as a barrier.

The results of the study are in line with the research conducted Ashari et al[27]. Behavioral intentions are significantly influenced by attitudes, subjective norms, moral obligations, and perceived behavioral control[34]. The results of the study obtained from the three factors are attitudes, subjective norms, and behavioral control have a positive effect on farmers' intentions to use Combine Harvester technology. The study's Lastrilla and Indrajaya[35] attitudes towards behavior and knowledge have a positive and significant relationship with farmers' intentions to adopt BSF agricultural technology.

However, research conducted by Waluyo.[36] found that the test results did not support the influence of attitude, subjective norms, and behavioral control key components of the Theory of Planned Behavior on farmers' intentions to finance machinery through banks. Similarly, Widagda[37] reported that these attitudes do not significantly impact the intention to become a farmer.

A person's attitude plays an important role in de-

termining the intentions and behaviors taken in everyday life. Attitude can be defined as the feelings, thoughts, and judgments that a person has towards an object, situation, or other individual. In psychology, attitude is considered one of the main factors that influence a person's farmer's intention. Farmer's intention is a person's desire to do or not do a certain action. This intention usually arises based on thoughts and feelings that are influenced by attitude. For example, if a person has a positive attitude towards an action such as exercising, then they are likely to have a greater intention to exercise regularly. Conversely, a negative attitude can inhibit the intention to act.

4.7. Influence of Subjective Norms on Farmers' Intentions

The results of hypothesis testing in this study indicate that there is a significant influence of subjective norms on farmers' intentions. Subjective norms, which refer to an individual's perception of social pressure or expectations of others regarding a particular behavior, play an important role in determining a person's intention to act. When individuals feel that their social environment, such as family, friends, or community, expects or supports an action, they tend to be more motivated to take that action. For example, if a farmer believes that his friends and family encourage the use of sustainable agricultural practices, then he will be more likely to intend to apply those methods in his farming business.

This study supports the theory of planned behavior, which states that the intention to behave is not only influenced by personal attitudes but also by the social norms that exist around the individual. In other words, subjective norms function as a driver that strengthens the individual's intention to perform a certain behavior. These results emphasize the importance of the role of society and the social environment in shaping individual behavior. Therefore, to encourage positive behavioral change, it is important to create a culture and environment that supports the desired behavior. Effective education and communication about social norms can be an effective strategy to improve farmers' intentions in various contexts, including agriculture, health, and the environment.

The results of the study are in line with the research conducted [27]. Behavioral intention is significantly influenced by attitudes, subjective norms, moral obligations, and perceived behavioral control [34]. The results of the study obtained from the three factors are attitudes, subjective norms, and behavioral control have a positive effect on farmers' intentions in using Combine Harvester technology. However, research [35] subjective norms and perceived behavioral control do not show a significant effect on behavioral intentions [38]. Normative beliefs and subjective norms have a relatively weaker effect on farmers' intentions, Ejigu& Yeshitela [39] subjective norms do not significantly affect farmers' intentions.

Subjective norms are one of the important factors that influence a person's farmer's intention. In the context of social and behavioral psychology, subjective norms refer to an individual's perception of how people around him, such as family, friends, or colleagues, view an action. If a person feels that people around him expect or support a certain behavior, the individual is more likely to be motivated to do it.

4.8. The Influence of Behavioral Control on Farmers' Intentions

The results of the hypothesis testing indicate that behavioral control significantly influences farmers' intentions. This suggests that the stronger an individual's belief in their ability to control their behavior, the greater their intention to take action. Therefore, to effectively influence behavior, it is essential to strengthen individuals' confidence in their ability to manage factors relevant to the behavior.

In the theory of planned behavior, a farmer's intention is influenced by three main factors, namely attitude toward behavior, subjective norms, and behavioral control. Perceived behavioral control (PBC) is an individual's belief in their ability to carry out an action or behavior. Hypothesis testing results often show that behavioral control has a significant influence on farmer intentions.

The results of the study are in line with the research conducted Ashari et al. [27]. Behavioral intentions are significantly influenced by attitudes, subjective norms, moral obligations, and perceived behavioral control [34].

The results of the study obtained from the three factors are attitudes, subjective norms, and behavioral control have a positive effect on farmers' intentions to use Combine Harvester technology. However, the findings of Waluyo et al's study [36]. The test results show that the variables of attitude, subjective norms and behavioral control included in the theory of planned behavior are not proven to influence farmers' intentions to finance machines at the bank.

In social psychology, farmer intention refers to a person's tendency to perform a certain action. One factor that influences farmer intention is behavioral control. This behavioral control includes an individual's beliefs about their ability to perform a certain behavior, as well as beliefs about how much influence external factors will have on the behavior. Behavioral Control, which is often measured through the concept of "perceived behavioral control" (PBC), refers to an individual's perception of the ease or difficulty of performing a behavior. If someone feels they have high control over the behavior, they are more likely to commit to doing it. Conversely, if they feel they have no control, the intention to perform the behavior may decrease.

4.9. Influence of Attitude on Behavior

The results of the study indicate that attitudes do influence behavior, but this influence is often mediated by other factors such as social norms, farmer intentions, and self-control. For example, someone who has a positive attitude towards environmental cleanliness does not always act to maintain cleanliness if the norms around them do not support it or if they feel they have no control over the situation. However, in many cases, strong and consistent attitudes often lead to appropriate behavior. Therefore, it is important for organizations and institutions that want to influence people's behavior to not only focus on direct behavioral change, but also build underlying positive attitudes.

This finding aligns with social psychology theories, which state that attitude is a key predictor of human behavior. In other words, individuals with a positive attitude toward an object or situation are more likely to act accordingly. This conclusion is particularly significant in the development of marketing strategies, social cam-

paigns, and behavioral interventions aimed at influencing individual actions within society.

The results of this study are in line with the results of the study [40–43]. Results cannot validate the TPB framework which emphasizes the importance of perceived behavioral control for intentions and actual behavior, and the findings are much more in line with the Theory of Reasoned Action.

Attitude is one of the important aspects of human life that affects how a person interacts with the environment and other people. Attitude has a significant influence on behavior. When someone has a positive attitude towards something, they tend to show behavior that is in line with that attitude. Conversely, a negative attitude can lead to behavior that does not support or even rejects the object in question. A positive attitude tends to produce constructive actions, while a negative attitude can trigger detrimental behavior. Therefore, it is important to understand and manage our attitudes in order to create better behavior in everyday life. Efforts to form a positive attitude, whether through education, experience, or social environment, will contribute to improving the quality of individuals and society as a whole.

5. Conclusions

Based on the results of the study, it was found that the development of agro-industry at the farmer level is influenced by various interacting factors. The results of the study found that strong partnerships between farmers and various parties can increase farmers' motivation to diversify better products. Effective partnerships can help farmers get solutions to their problems such as market access, technology, production and other support needed to improve their ability to produce processed products/agro-industry that have high selling value and are in accordance with market needs.

The limitations of this study include the scope of agroindustry which only covers sago businesses/agroindustry, especially sago agroindustry developed by farmers. The number of samples is still small. The variables combined in the concept of Theory of Planned Behavior are still limited. For further researchers, they can still add other variables that have not been included in this study. Other studies can also incorporate variables from other theories such as social cognitive theory or diffusion of innovation theory to increase explanatory power. Since this study only covers sago agro-industry, its findings should not be generalized to all types of existing agro-industries, thus future studies should cover more agro-industries in different regions.

Author Contributions

Conceptualization, C.W.V., R.S., R.K. and V.I.M.; methodology, C.W.V.; software, C.W.V.; validation, C.W.V.; writing—original draft preparation, C.W.V.; writing—review and editing, C.W.V., R.S., R.K. and V.I.M. All authors have read and agreed to the published version of the manuscript.

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Data Availability Statement

The data collected for this study were primary data, obtained through face-to-face interviews with farmers as actors in the sago agroindustry in Kepulauan Meranti Regency, Riau Province. The data were then tabulated and analyzed using Sem-pls 4.0. While we encourage data sharing to enhance transparency and further research, it is important to note that, due to agreements made with participants regarding confidentiality, we were unable to share identifiable data with third par-

ties. Therefore, no new datasets are publicly available from this study.

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Conflicts of Interest

The authors declare no conflict of interest.

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