

THE ROLE OF THE INTERNATIONAL FINANCIAL DIGITAL PLATFORM TO SUPPORT THE NATIONAL FOOD ESTATE (FE) FOOD BARN PROGRAM

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Abstract

This study aims to (1) determine the right and ideal financial platform model for farmers in the Humbang Hasundutan Food Estate (FE) area (2) increase the planting area and production of shallots, garlic and potatoes and strengthen cooperation and synergy between farmers and related stakeholders thanks to the financial digital platform and (3) determine the upstream-downstream industry model including post-harvest so that there will be a market place like a modern market. To analyze, an appropriate dimensional model of the role of the financial digital platform for the Food Estate (FE) area was developed with Structural Equation Modeling (SEM) Smart PLS 3.3. The method used in data collection is a primary data survey in the Food Estate (FE) area in Humbang Hasundutan Regency, North Sumatra, Indonesia. The results show that there is an influence of the Post-Harvest variables, the Process of Increasing Planted Area, Production and Market Place on the Financial Digital Platform. All variables have an influence which shows that the development of the Food Estated Area must be supported by the development and support of the Financial Digital Platform.

Introduction

To improve food sovereignty in 2020 by launching a food land expansion program through large-scale food development (food estate). Humbang Hasundutan Regency, North Sumatra is one of the areas selected and used as a pilot target for the development of the program. Humbahas is the location of the horticulture-based food estate, because it has various advantages including agro-ecosystems, high rainfall and vast expanses of land. The purpose of the horticulture-based food estate is to build an integrated horticulture area that is

competitive, environmentally friendly and modern, encourage synergy with stakeholders in the development of horticulture-based food estates, and encourage the formation of corporate-based farmer institutions. For Humbahas Regency, the planned area of the second phase of the food estate is 747 ha and 406.7 ha of AOI for the proposed botanical garden area. In connection with AOI, the Regent of Humbahas has submitted a letter No. 600/HH/III/2021 dated March 5, 2021 to the Minister of Environment and Forestry to change the function of the botanical garden to a food estate [1]. In Humbahas Regency, there are three food estate areas with a total area of 785 ha, namely in Hutajulu 120.5 ha, in Ria Ria Village 411.5 ha and Parsingguran 253 ha. However, the area used for planting Phase I commodities is only 215 ha in Ria Ria Village, Pollung District. This is presented in Figure 1 below:



Figure 1. Humbang Hasundutan Food Estate (FE) Area

Banks' internal mobile banking applications can be described as platforms as well as the customer-facing online interfaces of payment institutions. The structural implications arising from platformization, especially new forms of interconnection between credit institutions, payment institutions and e-money institutions and non-financial institutions. Digital innovation can drive a variety of industry organizational outcomes [2]. On the one hand, digital technologies enable

niche providers to reach a basic and economically viable customer base. On the other hand, customer acquisition, funding, assembly and switching costs tend to favor larger providers of digital financial services. One possibility is a few large players and many. Large multi-product players may include traditional financial institutions, fintechs and large technology both incumbents and new entrants. Smaller players may include fintechs as well as geographically focused or sector incumbents. The COVID-19 pandemic has accelerated digital transformation. In particular, the need for digital connectivity to replace physical interactions between consumers and providers, and in the process that generates financial services, will be even more important as economies, financial service providers, businesses and individuals navigate the pandemic and ultimately the post-COVID-19 world. The pandemic has accelerated the shift to digital payments. In addition, it has also intensified e-commerce which can provide great benefits for transaction actors including farmers in the Food Estate (FE) area. Entities involved in the Food Estate related to the receipt and payment process must use many digital platform instruments. The stricter COVID-19 conditions have given birth to many policies and lower community mobility has experienced a greater increase in financial applications.

Technology adoption is nothing new in the financial sector, but a number of constraints have defined the operating environment to date. In the late 20th century, the industry was already characterized by an increasing reliance on computerized processes. Payment processes often required cash or checks, and onboarding new products and services often required face-to-face or paper-based processes. Still, reaching and connecting to customers routinely required physical infrastructure such as branches and automated teller machines (ATMs). Customers who wanted to transact with counterparties who used other banks had to use expensive and sometimes slow or risky methods. Even with the advent of digital payment systems, connectivity remains a barrier to entry, and institutions typically must be licensed and part of a consortium of banks

or brokerage houses to participate in transactional networks. Furthermore, data processing and storage are expensive, requiring bespoke operations—mainframes and data centers. This limits the volume of information that can be collected, stored, analyzed, and exchanged to improve efficiency, better price risk, and tailor products to customer needs. Several studies related to the benefits and implementation of this digital financial platform include [3] who stated that the financial technology ecosystem can change and promote lifestyles, including in the health sector. [4] stated that anesthesia politics are not affected in realizing the work of unsafe digital platforms. [5] concluded that in forming a financial portfolio, a digital financial platform is still needed. [6] states that the entrepreneurial spirit is shaped by digital platforms today. Other research related to this research includes [6,7,8,9,10,11,12, 13, 14,15, 16,17, 18, 19]. Research related to the importance of Food Estate (FE) which supports food security on an economic scale includes [20] who concluded that there is price asymmetry in food demand in the world today. [21] who examined the food security factor due to the high consumption of food by the world community so that food commodities are an important aspect on an economic scale. In addition, this research also refers to other research, namely [22. 23. 24, 25, 26, 27, 28, 29 & 30].

In addition, Food Estate (FE) in its implementation is a pilot project for agricultural cooperatives from upstream to downstream. This model has been studied by [31, 32, 33, 34, 35]. The problems in this study are (1) How is the development of the International Financial Digital Platform in Humbang Hasundutan Regency? (2) How is the development of the National Food Estate (FE) Food Barn Program?

Literature Review

Theoretical Review

Financial Digital Taxonomy of Platforms

A similar level of collaboration was observed between financial institutions and third parties in the development of digital platforms. This included collaboration with technology and e-commerce companies in the development and/or enhancement

of digital platforms [36]. In some cases, financial institutions invested in technology companies, including start-ups, with the aim of developing platform solutions. In some cases, platform development by one or more technology companies was observed for the sole or primary use by the financial institution. Overall, size and business model appear to play a significant role in determining how financial institutions approach the development and use of digital platforms.

Go-To-Market Activities

Is an action plan or strategy for how a company will acquire customers and achieve its competitive objectives. Go To Market (GTM) objectives are a strategic blueprint that is a determining factor in pricing and distribution. GTM can be equated with a Business Plan although in terms of scope and coverage it adds the funding factor [37]. Organizations can use GTM as an activity including launching new products or services. When a new product is introduced, brand recognition is carried out. GTM can explain why product introduction must be done because it will support relationships with customers regarding products and services.

Platform Services Model In Relation To Products/Services Contracted As A Result Of Interactions Via The Platform

Financial institutions may receive fees (usually paid by relevant third-party companies) for providing access to platform services or related to products/services contracted as a result of interactions via the platform or may facilitate access to third-party products and services without receiving fees as a means to build customer loyalty or improve customer experience. The conceptual framework of this study is:

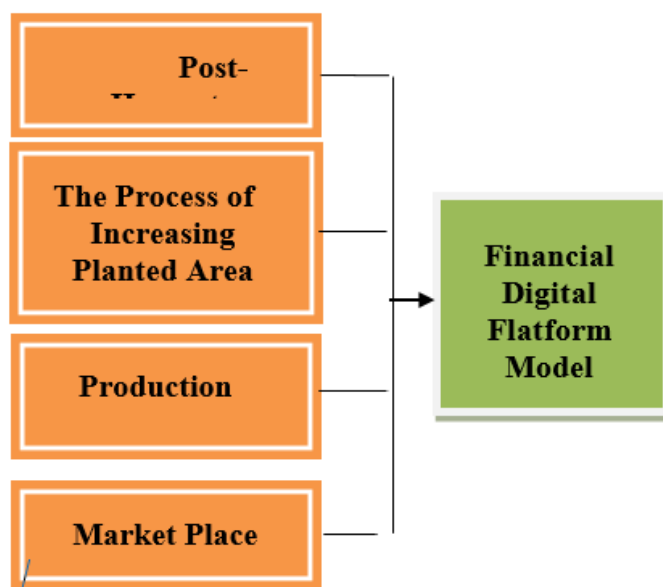


Figure 2. Research Framework

Methods

This study uses quantitative. Quantitative methods are carried out using SEM analysis. The population of this study were farmers who supported the Food Estate (FE) program in Humbang Hasundutan as many as 76 respondents. The sampling method used was the Purposive Sampling method. The data collection needed to test in this study used a questionnaire that was addressed directly to each selected sample member. The target respondents of the questionnaire were farmers who supported or were involved in the digital platform. Thus, the data source is primary data. The data analysis technique in this study used Structural Equation Modeling (SEM).

Results And Discussion

Research Results

Data Description

The number of questionnaires distributed to respondents was 115 copies and was carried out in one stage. Then according to the specified time, the questionnaires were collected again. All distributed questionnaires can be collected again and can be used as data in this study.

Table 1. Questionnaire Distribution

Notes	Amount	Percentage
Distributed questionnaires	229	100%
Returned questionnaires	205	84.87%
Unreturned questionnaires	14	15.13%
Questionnaires that can be used in research	205	84.87%

Table 2. Output Combined Loadings and Cross-Loading

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*****
* Combined loadings and cross-loadings *
*****
      PH_X1  PIPA_X2      P_X3  MP_X4
      FDFM_Y Type (aSE P value
ph1    0.749  0.272  -0.096  -0.108  0.132
      Reflect 0.061 <0.001
ph2    0.793  -0.258  0.084  0.112  0.054
      Reflect 0.060 <0.001
ph3    0.663  0.001  0.008  -0.013  -0.213
      Reflect 0.062 <0.001
pipa1   0.168  0.663  0.043  0.058  0.203
      Reflect 0.062 <0.001
pipa2  -0.010  0.807  -0.078  0.020  -0.109
      Reflect 0.060 <0.001
pipa3  -0.130  0.800  0.043  -0.068  -0.059
      Reflect 0.060 <0.001
p1     -0.027  -0.048  0.831  0.016  -0.067
      Reflect 0.060 <0.001
p2     -0.123  -0.094  0.808  -0.181  0.147
      Reflect 0.060 <0.001
p3     0.258  0.245  0.474  0.279  -0.132
      Reflect 0.064 <0.001
mp1    -0.059  0.021  0.095  0.802  0.113
      Reflect 0.060 <0.001
mp2     0.014  -0.178  0.060  0.773  -0.055
      Reflect 0.060 <0.001
mp3     0.045  0.151  -0.152  0.804  -0.060
      Reflect 0.060 <0.001
fdfm1  -0.087  0.021  0.120  -0.090  0.719
      Reflect 0.061 <0.001
fdfm2   0.059  -0.115  0.038  0.097  0.773
      Reflect 0.060 <0.001
fdfm3   0.021  0.091  -0.144  -0.012  0.805
      Reflect 0.060 <0.001

```

Notes: Loadings are unrotated and cross-loadings are oblique-rotated. SEs and P values are for loadings. P values < 0.05 are desirable for reflective indicators. Source: WarpPLS Test Results. (2022).

Analysis of Research Instrument Testing

From the results of the questionnaire trial distributed to 229 respondents who were respondents outside the research sample, the combined loadings and cross loading output was used as an indicator of convergent validity which is part of the measurement model in SEM-PLS. The output is expected to display the constructs in the columns and indicators in the rows, the following results are obtained:

Based on the test results, it shows that the outer model meets the convergent validity requirements for the reflective construct except for indicator p2 where the p-value is not significant. For this reason, a deduction is made for the p2 indicator. The loading value above 0.70 and the significant p-value (<0.05) indicate that the outer model meets the convergent validity requirements for the reflective construct [38]. With these results, the construct test meets the convergent validity requirements and the loading to other constructs is lower than that construct.

Reliability Test

To test the reliability of the instrument, a reliability test is carried out based on the WarpPLS 3.0 output as follows:

Cronbach's alpha coefficients

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PH_X1  PIPA_X2  P_X3  MP_X4  FDFM_Y
 0.676  0.630   0.622  0.706   0.648

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Source: WarpPLS Test Results. (2022).

Based on the results of the reliability test on the 4 (four) constructs, Cronbach's Alpha was obtained above 60% so that all questions were declared reliable.

Goodness of Fit Model Test

To test the suitability of the model using 3 (three) model fit indicators, namely the average path coefficient (APC), average R-Squared (ARS) and average variance inflation factor (AVIF). The p value is given for the APC and ARS indicators which are calculated by re-sampling estimation and Bonferroni like correction. The test results show:

Model fit indices and P values

Average path coefficient (APC)=0.206, P<0.001

Average R-squared (ARS)=0.382, P<0.001

Average adjusted R-squared (AARS)=0.369, P<0.001

Average block VIF (AVIF)=1.476, acceptable if <= 5, ideally <= 3.3

Average full collinearity VIF (AFVIF)=1.495, acceptable if <= 5, ideally <= 3.3

Tenenhaus GoF (GoF)=0.467, small >= 0.1, medium >= 0.25, large >= 0.36

Simpson's paradox ratio (SPR)=1.000, acceptable if >= 0.7, ideally = 1

R-squared contribution ratio (RSCR)=1.000, acceptable if >= 0.9, ideally = 1

Statistical suppression ratio (SSR)=1.000, acceptable if >= 0.7

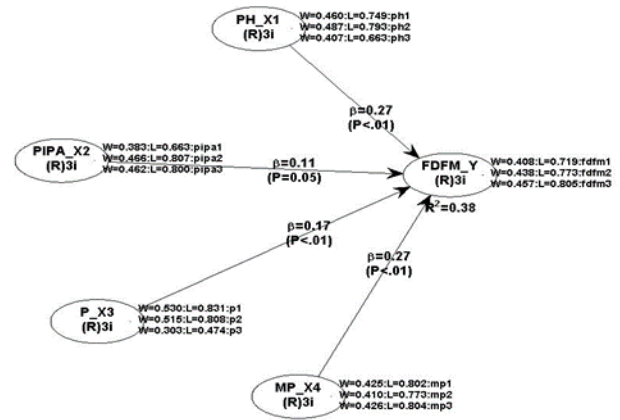
Nonlinear bivariate causality direction ratio (NLBCDR)=1.000, acceptable if >= 0.7

Source: WarpPLS Test Results. (2022).

Thus, both APC and ARS values are significant at the alpha level below 5% and the AVIF value is below 5. Thus, the model fits.

Hypothesis Testing

In the partial statistical test with a critical t value (critical value) at df = (n-k), where n is the number of samples and k is the number of independent variables including constants. To test the partial regression coefficient individually from each independent variable can be seen in the following Figure:



Source: WarpPLS Test Results. (2022).

Figure 1: WarpPLS 3.0 Test Results

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*****
* Block variance inflation factors *
*****
PH_X1  PIPA_X2  P_X3  MP_X4  FDFM_Y
FDFM_Y 1.318    1.724  1.331  1.531
P values
-----
PH_X1  PIPA_X2  P_X3  MP_X4  FDFM_Y
FDFM_Y <0.001  0.053  0.006  <0.001
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Source: WarpPLS Test Results. (2022).

From the Structural Equation Modeling Figure, the t-statistic test is obtained as follows:

1. Post-Harvest variable (X1) with a beta value of 1.318 and a p-value with a probability level of 0.001. Thus it can be concluded that the significance value = 0.001 < α = 0.05, so the conclusion is to reject the H0 hypothesis and accept the Ha hypothesis which states that Post-Harvest has an effect on the Financial Digital Platform Model.

2. Variable of the Planting Area Increase Process (X2) with a beta value of 1.724 and a p-value with a probability level of 0.005. Thus it can be concluded that the significance value = 0.05 = α = 0.05, so the conclusion is to reject the H0 hypothesis and accept the Ha hypothesis which states that the Planting Area Increase Process has an effect on the Financial Digital Platform Model.

3. Production variable (X3) with a beta value of 1.331 and a p-value with a probability level of 0.005.

Thus it can be concluded that the significance value = $0.001 < \alpha = 0.05$, then the conclusion is to reject the H0 hypothesis and accept the Ha hypothesis which states that Production has an effect on the Financial Digital Platform Model.

4. Market Place variable (X4) with a beta value of 1.531 and a p-value with a probability level of 0.001. Thus it can be concluded that the significance value = $0.001 < \alpha = 0.05$, then the conclusion is to reject the H0 hypothesis and accept the Ha hypothesis which states that Market Place has an effect on the Financial Digital Platform Model. From the description above, a multiple regression equation can be compiled which is sourced from the path coefficient as follows:

$$Y = 1.318 X_1 + 1.724 X_2 + 1.331 X_3 + 1.531 X_4 + e$$

Results of the Determination Coefficient (R^2) Test

The determination coefficient is used to test the goodness-fit of the regression model which can be seen from the Q-squared coefficients value. Q-squared coefficients only exist for endogenous constructs. For a set of latent predictor variables on the criterion variable, the Q-Squares indicator is used or another term is called the Stoner-Geisser Coefficient (Sholihin and Ratmono, 2013: 72). To determine the effect of the Post-Harvest variables, the Process of Increasing Planted Area, Production and Market Place on the Financial Digital Platform Model, it can be seen through the magnitude of the Q-squared coefficients of the warpPLS 8.0 output.

Q-squared coefficients

PH_X1	PIPA_X2	P_X3	MP_X4
DFDM_Y			
		0.387	

Source: WarpPLS Test Results. (2022).

From the calculation of the Q-squared coefficients value is 0.387. This means that 38.7% of the Post-Harvest variables, Planting Area Increase Process, Production and Market Place affect the Financial Digital Platform Model can be explained by the two independent variables above, while the remaining 61.3% is explained by other causes. The model estimation shows good predictive validity of 38.7%.

Discussions

The hypothesis stating that the Post-Harvest variables, Planting Area Increase Process, Production and Market Place have an effect on the Financial Digital Platform Model can be accepted. Various technical constraints on farmers often make it difficult for farmers to market their products because the quality decreases. Another major problem is that they often do not get the optimal selling price. Based on these problems, the role of a digital ecosystem aggregator is needed to help them market their products digitally [39, 40]. In the digital era, namely the 4.0 era, there are now several supporting applications available to carry out marketing activities in the form of Fintek (Finance Technology) applications and Village Applications that are widely available on the Google Playstore which contain digital marketing and digital extension features. This can help with agricultural problems in marketing its products. It also requires the right regulatory format, a system that must be built properly, a profit margin that must be mutually agreed upon, and increased efficiency [41, 42, 43, 44]. The process of increasing the planting area is currently also experiencing many obstacles due to land ownership factors. Land is currently difficult to obtain and expensive. The efforts made are through a land rental pattern. The more land expansion, the higher the productivity of producing food. In addition, the production factor is one of the determinants of agricultural effectiveness [45]. The higher the production, the higher the output of the agricultural sector which will improve the economy in the region.

The agricultural sector marketplace is a means of providing access to sell agricultural products. One form of marketplace is Agromaret, Tanihub and

Limakilo which are information centers for farmers to find agricultural information. The existence of this marketplace is utilized by farmers so that they can market their own agricultural, livestock and fishery products in cyberspace to gain profits to improve family welfare [46, 47, 48, 49, 50]. Currently, this marketplace model is widely used by farmers in Java, so in the future it can be utilized by farmers in North Sumatra.

This study tested the effectiveness of the financial platform for farmers in the Humbang Hasundutan Food Estate (FE) area. In the future, it will be studied in other agricultural centers such as Tanah Karo, Dairi and Tanah Gayo. This needs to be done to support the government's program, namely encouraging the formation of corporate-based farmer institutions through the Food Estate model.

Conclusion And Suggestions

Conclusion

The conclusions in this study are:

1. There is an influence of Post-Harvest variables, Planting Area Increase Process, Production and Market Place on Financial Digital Platform. All variables have an influence which shows that the development of the Food Estate Area must be supported by the development and support of Financial Digital Platform.

2. The development of the National Food Estate (FE) Food Barn Program requires further handling in the long term and sustainably.

Suggestions

The suggestions for further activities in this study are:

1. To increase the selling price of agricultural products, the government needs to monitor the mechanism for forming agricultural selling prices.

2. The government needs to apply the Financial Digital Platform Model to farmers in the National Food Estate (FE) Food Barn area of Humbang Hasundutan Regency.

3. The government must utilize agricultural land that is not functioning to be used for the production of potential agricultural products.

4. The government must socialize the role of the Commodity Futures Exchange which is currently not known among farmers.

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