



The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

JEL: Q10, Q12, Q13, Q18

*Joko Sutrisno, Sri Marwanti, Hilda Anugrah Putri,
Amalia Nadifta Ulfa, Indah Nurhidayati*

*Universitas Sebelas Maret
Indonesia*

MOTIVATIONAL EVALUATION OF FOOD SECURITY PROGRAMS IN CENTRAL JAVA, INDONESIA

Purpose. This research aims to determine the level of motivation of the target audience (group, farmer associations (Gapoktan) or farm) and factors that influence motivation in participating in the implementation of the Toko Tani Indonesia (TTI) program.

Methodology / approach. This research was conducted by direct interview method with all Farmer Shops and Gapoktan / Poktan in three regions in Central Java, namely Semarang City, Sukoharjo Regency, and Grobogan Regency. Data collection is carried out using a questionnaire with a Likert scale measurement. The methods used for analysis are descriptive statistics and inferential statistics using the partial least squares structural equation modeling (SEM-PLS).

Results. The results show that the motivation level of TTI actors is high, meaning that program implementers in the field have a substantial boost from social, economic, and socio-economic factors. These results indicate that this food security program can be implemented well because field implementers can feel the overall positive impact. Furthermore, in SEM analysis, factors influencing motivation show that mediating variables for capacity and perception significantly correlate with motivation. Meanwhile, the government support and characteristics variables have a significant relationship with the mediation variables.

Originality / scientific novelty. The novelty of this study is the analysis of research conducted on the motivation of food security program actors with the object of study that is rarely used as research, namely the PUPM Program through the Indonesian Farmer Shop (TTI). This program aims to stabilise prices and solve supply chain problems in Indonesia. This is so that rice prices do not harm farmers or the community. Therefore, the value of this study is that it attempts to answer the question of how to influence the motivation and sustainability of the program so that the government, together with the community and stakeholders, can ensure national food security.

Practical value / implications. The research results can be a recommendation for related parties and policymakers to continue implementing the TTI program to implement national food security. This study shows that the government can use these factors to maintain and increase motivation to maximise program implementation; so that the objectives of this program can be implemented and the program can be continued for the following periods.

Key words: agricultural policy, food security, motivation, supply chain, SEM-PLS.

1. INTRODUCTION

Food security is a vital global issue related to people's welfare. According to data from The Food and Agriculture Organization of the United Nations (FAO), in 2021, 107 countries were affected by the crisis, and 345 million were at risk of food shortages due to hunger. The food crisis is the scarcity or non-fulfilment of food for the community. The main components of food security are food availability, food accessibility, and food safety [1]. In Indonesia, rice is a staple food [2] and is vital to

food security [3]. The increase in average population growth in Indonesia increases food needs [4].

Farmer problems related to the management of inter-supply chain actors with sustainable food production [5]. In particular, agro-food supply chains have many problems with culprits [6]. Because the practices of actors in the supply chain affect food sustainability issues [7; 8]. The problem with food supply is local and global [9]. Several alternative food supply chains have been increasingly considered appropriate for global chains [10; 11]. The perspective of supply chain issues expands the stakeholders [12]. Therefore, it is crucial for government intervention through programs to overcome supply chain problems [13].

Community Food Business Development (or PUPM in Indonesia) is a program from the government to implement food security to maintain supply stability and prices of strategic staple foods [14]. Farmers as producers play an important role in this program [15]. This program is carried out through *Toko Tani Indonesia* (abbreviated as TTI). TTI is a direct-distribution institution to consumers (the community) [16]. The main objective of the TTI program is to cut the food supply chain to provide a balanced level of profit between farmers and consumers [17]. TTI acts as a retail rice trader, packaging and labels according to the association's origin as a rice distributor [18]. In implementing government policy programs, they discuss farmers' autonomy in food production, processing, and marketing [19]. Farmers are decision-makers in agriculture [20]. Most of the commodities farmers produce cannot meet economies of scale in farmer welfare, where farmer response is critical [21]. A partnership pattern is needed to increase farmers' income [22]. Some of them are creating partnerships through government programs, namely PUPM. In implementing this program, LUPM in the form of Farmer Groups (*Poktan*) or Association Farmer Groups (*Gapoktan*) buy farmers' crops.

The general description of the program implementation is that the rice supply chain still involves 6–9 actors. Among them are farmers, collecting traders, rice milling units (large, medium, small), wholesalers (districts / cities), retailers, and consumers (households, institutions). Meanwhile, in the supply chain, the TTI food security program consists of 4 supply chains (farmers–Gapoktan–TTI–consumers) [23]. This LUPM acts as a community business institution engaged in the food sector as a distributor of supplies to Indonesian Farmer Shops in the form of Association Farmer Groups or Farmer Groups. LUPM is implemented to maintain the stabilisation of food supply and prices. *Toko Tani Indonesia* is a shop / stall / kiosk owned by food commodity traders, both individuals and institutions that have experience in the food sector. TTI is set to sell staple and strategic food commodities from LUPM at prices according to the provisions. A TTI food product in Indonesia that has become widespread is fresh rice.

The systematic implementation of this program is that the Association of Farmer Groups in Indonesia obtained funding in the first year, so the farmers who are members of the program participate in the implementation of the program. Usually, each association has members ranging from 100 to 300 farmers. Farmers who are members

of the selected association will sell their crops to the group directly through milled dry grain. Therefore, this makes it easier for farmers to sell their agricultural products. In addition, farmers get prices according to the market, meaning that they profit because they do not sell prices below the market. The problem of the supply chain in Indonesia is that agricultural products obtained by farmers are sold collectively through mediators known as slashing. This is the problem for farmers who cannot make a profit. However, with the help of this program, farmers can be facilitated in accessing markets to sell agricultural products. Furthermore, agricultural products received from the farmers who have incorporated are collected, processed, and packaged into goods that are ready to be sold. Then after the agricultural products are prepared for circulation, the Gapoktan immediately sells to TNI stores that have partnered and agreed as marketers so that this program can streamline the supply chain from farmers to consumers, where consumers can get low prices in meeting food needs while farmers are not harmed.

Rice sold in partnered farmer shops is highly competitive in the market because the price offered is below market price. Under certain conditions, this programme will discourage unscrupulous farmers who want to store and grow food where price competition prevails. When they increase food prices, buyers will leave and prefer TTI products, so the existence of this program in the field can already help stabilise prices in the market when food prices experience dynamics to become more stable.

The implementation of TTI has spread and developed in various regions in Indonesia. One potential area is Central Java Province. This province is one of the rice production centres in Indonesia and had the highest production in 2019 and second in 2021 and 2022 [24]. In addition, Central Java has an enormous distribution volume and a budget target for TTI activities in 2021 [14; 25]. It is expected that food insecurity in Indonesia will be overcome with the help of this programme [26].

Practice participation of each individual or group affects the program's success [27]. Therefore, participation is crucial to the program's success [28]. In addition, the characteristics of farmers will play a role in adopting a program [29]. Farmer behavior involves other actors (such as local communities and government) [30]. Farmer education influences the formation of peasant characteristics [31]. Farmer experience is also needed in making decisions [32]. Studies [33] found that years of agricultural experience increase farmers' demand and use of agricultural program services.

Motivation is one of the drivers of sustainability in adopting innovation [34]. Meanwhile, according to [35], individual motivation is the main obstacle to implementing government programs. Motivations include age, gender, preparation, and service use [36]. Internal and external motivations influence farmers' decisions, external motivation – in the form of economic and social, while internal one is related to farmers' goals and values [37]. Consumer experience finding alternatives influences policymakers/governments to stimulate transformative action [10]. Thus, buying behavior is driven by various factors or motivations [38]. Based on the description above, a strategy is needed to improve performance by managing actors in TTI [39].

The urgency of this research comes from the importance of national food security, one of which is manifested in this program. So, from this research, it is hoped that all

program actors can collaborate to improve program performance through the results of the level of motivation that policymakers can maximise. This article aims to determine the motivation level of TTI program actors, from the association / LUPM to the store, in providing food for the community / consumers. The study results can be a recommendation for related parties and policymakers to continue implementing the TTI program to implement national food security. So that when national food security is implemented, the community will be prosperous.

2. LITERATURE REVIEW

Motivation in agriculture drives farmers to grow crops because of unmet needs, which include both economic and social aspects. Economic motivation drives farmers to meet their financial needs, which include such aspirations as supporting family livelihoods, increasing income, purchasing luxury goods, accumulating savings and striving for a better standard of living. Social motivation, on the other hand, compels farmers to satisfy social needs and engage in communal interactions, including fostering relationships, collaborating with peers, fostering harmony, exchanging viewpoints, and seeking assistance from external sources [40].

Farmers can be defined as using biological resources carried out by humans to produce food, industrial raw materials, or energy sources, as well as to manage their environment to meet the needs of life by using traditional and modern equipment. Agriculture is generally defined as human activity that includes farming, animal husbandry, fisheries, and forestry. Farmer groups or farmer group combinations are institutions at the farmer level that are formed to directly organise farmers in terms of farming. The Ministry of Agriculture defines a farmer group as a collection of farmers / ranchers / planters formed based on shared interests, similar environmental conditions (social, economic, resources), and familiarity to improve and develop member groups. Farmer groups are formed by and for farmers to overcome common problems in farming and strengthen farmers' bargaining position, both in the facilities market and the agricultural product market [23].

Toko Tani Indonesia is one of the government's efforts to cut the food supply chain. With the supply chain getting shorter, the price of goods is also expected to fall. In *Toko Tani Indonesia*, the food supply chain, initially 8–9 participants, became only 3–4 (Figure 1). With the presence of TTI, it is hoped that consumers aimed at the general public can enjoy the benefits of the presence of the Community Food Business Development program through the TTI program [14].

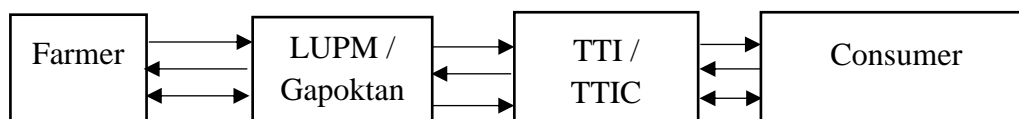


Figure 1. Rice supply chain structure of Toko Tani Indonesia

Note. —> : Product flow (rice);

←— : Financial flow;

↔ : Information flow;

Source: based on data from [25].

The implementation of the TTI program is carried out through 4 levels [23]:

1. Levels of expansion. This stage is the initial stage of the implementation of this TTI program. The government appoints groups elected from various regions. So, in this program, not all LUPM / Gapoktan or a combination of farmer groups that shelter farmers in the area or village are involved, but only Gapoktan meet the requirements for smooth administration and good organisational management patterns. This year, the funds given to the association to implement the program amounted to Rp. 160 mln, consisting of Rp. 100 mln used for the procurement of machine tools (including installation, driving machines, and shipping costs) in the form of Husker or rice polisher and Rp. 60 mln was used for operational funds. In the form of cash of work (HOK) (labour for loading and unloading, packaging, grinding power, and others), (2) plastic packaging, (3) transportation costs, and (4) milling fuel.

2. Development stages. The second phase, or second year, is when the Gapoktan / LUPM implements this TTI program. Where groups that meet the criteria for the development stage were given government assistance funds in the form of operational funds of Rp. 60 mln.

3. Stages of construction. In the third year, the selected group will implement the program. At this stage, the Association was given government assistance funds in the form of operational funds of Rp. 60 mln.

4. Stage of independence. This stage is the final stage, with no more subsidy or funding assistance. The implementation of the 4th year of this independent stage, where the association is expected to be independent and can streamline the supply chain with the system that has been built from the previous stages [23].

From all stages, it can be defined that selected groups, such as those starting in 2016, experienced the 2016 growth stage, 2017 development stage, 2018 development stage, and 2019 independence stage, while selected groups in 2017 experienced the 2020 independence stage and so on.

Structural equation modeling (SEM) is an evolution of multiple equation models developed from econometric principles and combined with regulatory principles from psychology and sociology; SEM has emerged as an integral part of academic managerial research. Unlike ordinary multivariate analyses, SEM can test together Structural models: relationships between independent and dependent constructs. Model measurement: the relationship (loading value) between the indicator and the construct (latent variable). The combination of structural model testing and measurement allows researchers to determine measurement error and perform factor analysis as well as hypothesis testing simultaneously [41].

The partial least squares structural equation modeling (PLS-SEM) presents benefits with limited sample sizes, such as enhanced estimation and statistical power. Nonetheless, some researchers take advantage of this by using extremely small samples compared to the target population. Moreover, the more diverse the population under scrutiny, the greater the necessity for observations to attain an acceptable level of sampling error. Disregarding fundamental sampling principles leads to outcomes without significance, irrespective of the methodology employed. PLS-SEM is

esteemed for its specialised sampling capabilities, which distinguish it from other multivariate analysis tools. However, akin to different statistical methods, meaningful statistical inference with PLS-SEM necessitates a representative sample. Therefore, researchers are warned to exercise caution in sampling methods – this recommendation applies to all studies using different analysis methodologies – and to carefully assess the statistical power of their analyses [42].

Based on the previous, it is necessary to assess motivation and how to influence TTI program actors in implementing food security. This evaluation assessment will help identify what motivations are still lacking and what is potential in the field to determine steps and policymakers to maximise and evaluate personal motivations for the success of this food security program.

To answer this research question, there are a few things to do:

1. Determine what types of motivation affect the running of this program, namely in the form of social, economic, and socio-economic integration motivations;
2. Determine the factors influencing motivation from farmers, farmer groups, and stores that sell TTI products.
3. Measure the significance level of factors that influence motivation to determine potential and weak factors for stakeholders.

Based on the description of the research problem, the following hypothesis is proposed:

- H1: Characteristics has a significant influence on capacity;
- H2: Characteristics has a significant effect on perception;
- H3: Government policy has a significant effect on capacity;
- H4: Government policy has a significant effect on perception;
- H5: Capacity has a significant influence on motivation;
- H6: Perception has a significant influence on motivation;
- H7: Capacity moderates the influence of characteristics on motivation;
- H8: Perception moderates the influence of characteristics on motivation;
- H9: Capacity moderates the influence of government policy on motivation;
- H10: Perception moderates the influence of government policy on motivation.

3. METHODOLOGY

The research location was chosen, Central Java Province, because it is one of the rice production centres in Indonesia. Based on BPS data in 2021, Central Java is the province with the highest production in 2019, which is 9,655,653.98 tons, followed by East Java and West Java. In comparison, in 2020 and 2021, Central Java was in second place after East Java, followed by West Java [24]. The population of research data in Central Java province includes 35 regencies and cities. The total number of program implementers is 716 TTI and LUPM / Gapoktan. Among them consist of 182 LUPM / Gapoktan and 534 TTI. The samples used in this study were all Farmer Shops in three regions of Central Java, namely Semarang City, Grobogan Regency, and Sukoharjo Regency.

The reason for the sample selection in Semarang City is that it is the capital of

Central Java Province, which is the centre of the implementation of the Indonesian Farmer Shop program. In Semarang City, the Toko Tani Indonesia Center collects food supplies, including rice, to implement the TTI program carried out by the government. Semarang also acts as a representative of the overall population in Central Java. The number of TTI program implementers in Semarang City is 16 TTI and 2 LUPM. The selection of the Grobogan Regency is due to its being the area with the most significant rice production in Central Java. Based on BPS data, Grobogan Regency became the largest area of rice production from 2018–2020, with a total output of 805,889.27 tons in 2021. This is why the region with the highest production represents the inventory characteristics obtained in the province. The number of TTI program implementers in Grobogan Regency is 21 consisting of 15 TTI and 6 LUPM. Sukoharjo Regency was selected because it has the most TTI program implementers in Central Java, with 60 implementers consisting of 49 TTI and 11 LUPM. In addition, Sukoharjo Regency is one of the areas that is a supplier to the Central TTI.

Data sources are based on primary and secondary data. Data collection is carried out by interviewing respondents directly. Data collection is carried out using a questionnaire with a Likert scale measurement. Each answer was scored as follows: 5 for very high / very supportive, 4 for high / support, 3 for medium, 2 for low / support statements, and 1 for very low / very unsupportive. In the measurement of total motivation (Total indicator / variable score), the answers in the questionnaire were calculated using the Sevilla formula [43]:

$$\text{Total indicator} = \frac{\text{Number of scores an achieved} - \text{Minimal number of scores}}{\text{Max number of scores} - \text{Minimum number of scores}}. \quad (1)$$

The minimum total indicator / variable score is achieved when all indicator parameters score 1 for minimum and 5 for maximum. Each distribution of total variable/indicator scores ranged from 0–100. The total score in this study is grouped into three categories, namely: the low category if the total score is in the range of 0–33.33 values; the medium category if the total score is in the range of 33.34–66.66 and the high category if it is in the range of 66.67–100.

The PLS-SEM technique was implemented with SmartPLS software version 3.0. PLS-SEM is known to be reliable in sample distribution and small sample size [44]. SEM is commonly used to explain multiple statistical relationships simultaneously through visualisation and model validation [45]. This research model is used to empirically analyse the data using PLS-SEM because it is reliable in sample distribution and small sample size [46]. In addition, SEM does not require normally distributed data; theory development and categorical variables are the main motives for using PLS-SEM [47]. The analysis is used in 2 stages: (1) the structural model was assessed using the PLS Bootstraps path model; (2) the measurement model is evaluated with the PLS algorithm [48; 49].

SEM analysis performs outer model testing by measuring validity and reliability [50], where convergent validity is measured by outer loading and AVE. The outer loading results on each dimension with their respective indicators give a loading factor value of >0.6 or >0.7. The load factor of the experimental value 0.50–0.60 is still

considered sufficient. The next concurrent validity test is AVE. The AVE value is at least 0.5. On the validity of the discriminant with Fornell lacker and cross loading, Fornell lacker criteria AVE roots for > construction from its correlation with all other constructs. Cross-loading criteria are where the value of all indicators in each variable has a loading factor > of the variable it forms. In other words, all loading indicators against the construct > cross loading. Cronbach alpha reliability testing > 0.6, where an alpha value of 0.7 is considered accurate and appropriate, and an alpha of 0.9 is regarded as the mainstay attribute of Cronbach alpha [51].

The framework of thought used in this study is shown in Figure 2.

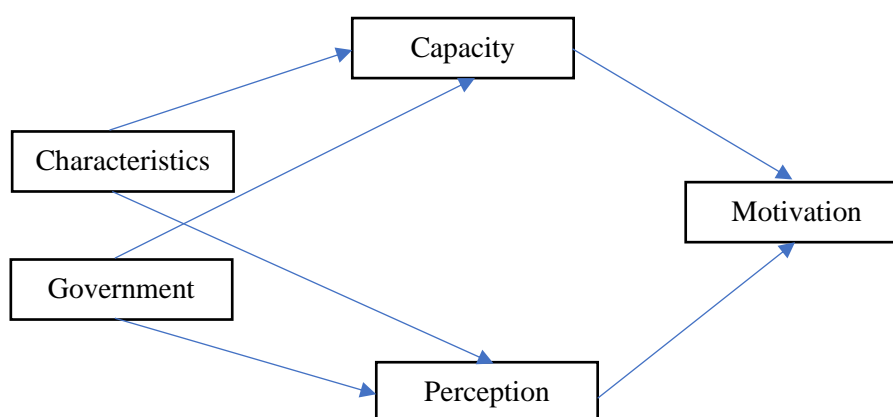


Figure 2. Conceptual framework

Source: built by the authors.

Motivation variables are divided into three categories: social, economic, and socio-economic integration. Factors that influence social motivation are: 1) Encouragement of the environment / surrounding community; 2) Encouragement to help the community, and 3) Encouragement to want to help consumers. Factors that influence economic motivation are: 1) Ease of access and facilities; 2) Benefits obtained, and 3) Additional data collection. Factors influencing socio-economic integration motivation are: 1) Maintaining good relations with associations and food offices, 2) Desire to sell TTI types of rice, and 3) High interest (demand) makes it quickly sell out.

In the literature review, the motivation of program implementers is influenced by several factors, namely government characteristics and policies. In addition, there are mediating variables in capacity and perception (Figure 2). Variable capacity consists of managerial LUPM, managerial TTI, technical, and social variables. Perception consists of advantage, conformity, and ease of use. Characteristic variables include information, formal education, non-formal education, farmer experience, and consumer experience. Meanwhile, government policy encourages easy access to cheap and quality food, stabilises supply and prices, and creates distribution chain efficiency.

4. RESULTS

The characteristics of respondents in this study were more women than men, with percentages of 56 and 46 % of 96 respondents, respectively (Table 1). In addition, most

respondents were 41–50 years old and 51–60 years old, with a percentage of 34 and 39 %. This is because the dominant farmers/combinations of farmer groups and TTI implementers are senior and experienced people. Meanwhile, in a study [28] most of the respondents who participated in the TTI program were 50 years old.

Table 1

Respondents' characteristic in this study

Description	Classification	Number of respondents	Percentage, %
Gender	Male	54	56
	Female	44	46
Age	21–30 years old	3	3
	31–40 years old	9	9
	41–50 years old	33	34
	51–60 years old	37	39
	61–70 years old	11	11
	>70 years old	3	3
Institutions in the supply chain	Gapoktan / Poktan / Farmer	17	18
	Retail / Farmer's shop	79	82
Length of farming	1–10 years	5	29
	11–20 years	3	18
	21–30 years	4	24
	31–40 years	2	12
	>40 years	3	18
Length of retail / Store business	1–5 years	25	32
	6–10 years	23	29
	11–15 years	9	11
	16–20 years	7	9
	>20 years	15	19

Source: developed by the authors.

The total respondents in this study consisted of implementers of all TTI and Gapoktan in the sample area, with percentages of 82 and 18 %, respectively. TTI (farmer shop) has a vital role in the supply chain of this program because TTI is the estuary that bridges consumers directly. The number of TTI respondents is high because each group can distribute 3–5 TTI in each region. Furthermore, the percentage of Gapoktan in Indonesia is only one because, in the field, the data involved in the program is with that number. In addition to the association's representative as the chief manager of farmers, each association has an average of 100 members and some even more than 300 farmers. Each association in the supply chain collects agricultural products from farmers and distributes food to farmer stores. The total number of respondents representing farmers/associations was 17 people (Table 1). Gapoktan respondents have the characteristics of the most farming experience in the range of 1–10 years, with a percentage of 29 %. Meanwhile, TTI, as a place to sell food / rice to respondents, has retail / store business experience characteristics. The most experienced are in the range of 1–5 years, with a percentage of 32 %. This is because some store locations are opened when this program runs as a distribution centre.

Level of motivation in participating in the implementation of the TTI program. The results of the descriptive analysis of the variables and indicators constituent of motivational variables are shown in Table 2. The total score obtained by the farmer motivation variable in participating in the TTI program is 76.83, which is in the high category because of the range of 66.67–100.

Table 2

Motivation for participation in the TTI program in Central Java

Variables / indicators	Total score	Categories
<i>Motivation</i>	76.83	<i>High score</i>
Social motivation 1	75.00	High score
Social motivation 2	83.51	High score
Social motivation 3	77.32	High score
Economic motivation 1	80.15	High score
Economic motivation 2	65.72	Medium score
Economic motivation 3	69.33	High score
Motivation for socio-economic integration 1	79.38	High score
Motivation for socio-economic integration 2	78.09	High score
Motivation for socio-economic integration 3	82.99	High score

Source: developed by the authors.

Motivational categories are divided into several types. Extrinsic motivation has separable outcomes, whereas intrinsic motivation is beyond self-interest [37]. This makes the value of the constituents of motivational variables, whether social, economic, or socio-economic motivation, high (Table 2). This is because most of the implementers of the TTI program, both at the Gapoktan / Poktan level and shops, participate in the program with social considerations because the selling price offered by TTI is meagre so that it can not help the community. In addition, because of the influence of obtaining profits and meeting needs even though the profits are small. Furthermore, there is motivation to establish good relations with the official and between TTI and Gapoktan / Poktan.

Factors affecting motivation. Capacity is the first factor that directly affects motivation. Based on the Table 3, it can be seen that the total score is 81.31, with the high category because it is in the range of 66.67–100.

Table 3

Variable capacity

Variables / indicators	Total score	Categories
<i>Capacity</i>	81.31	<i>High score</i>
Managerial LUPM	87.63	High score
Managerial TTI	86.34	High score
Technical	76.55	High score
Social	74.74	High score

Source: developed by the authors.

The research [52] proves the influence of farmers' participation in participating in the TTI-PUPM program because of the influence of material benefits or economic benefits with the ease of assets in the form of agricultural machinery such as rice milling unit, compost processing (chopper), rice transplanter, combine harvester,

handtractor, and water pump. In addition, other benefits obtained are due to social influences to help the community meet the needs of food / rice cheaply and with quality.

Perception is the second factor that directly affects motivation. Based on the Table 4, it can be seen that the total score is 79.98, with the high category because it is in the range of 66.67–100.

*Table 4***Variable perception**

Variables / indicators	Total score	Categories
<i>Perceptions</i>	79.98	<i>High score</i>
Advantage	80.15	High score
Conformity	76.55	High score
Ease	83.25	High score

Source: developed by the authors.

Characteristics are the first factor that indirectly affects motivation. It can be seen that the total score is 72.01, with the high category, since, again, it is in the range of 66.67–100 (Table 5).

*Table 5***Characteristic variables**

Variables / indicators	Total score	Categories
<i>Characteristic</i>	72.01	<i>High score</i>
Information	80.93	High score
Formal education	54.90	Medium score
Non-formal education	61.60	Medium score
Farmer experience	79.38	High score
Consumer experience	83.25	High score

Source: developed by the authors.

Government support is the second factor that indirectly influences motivation. As in the previous case, it was established that the total score is 79.98, that is, it belongs to the high category, as it is in the range of 66.67–100 (Table 6).

*Table 6***Government support variables**

Variables / indicators	Total score	Categories
<i>Government support</i>	82.21	<i>High score</i>
Support 1	84.02	High score
Support 2	79.38	High score
Support 3	83.25	High score

Source: developed by the authors.

Outer Model (Evaluation of Model Measurements). Convergent validity is established when items of a given size converge to represent the underlying construct. Convergent testing can assess validity based on outer loadings or loading factors and Average Variance Extracted (AVE). In the outer loading results table on each dimension, indicators give a loading factor value of >0.6 or >0.7 (Table 7). Some variables that did not pass the validity test or had values of <0.7 and <0.6 were not used in the following analysis, namely formal education indicators on the characteristics of ease indicators of perception. Other indicators are social on capacity variables,

indicators 2 and 3 on economic motivation and indicator 2 on socio-economic variables; indicators that have a value that does not meet the standards in this test are abolished, such as research conducted by [48], where indicators that have poor loading are removed from the analysis. Such indicator is the formal education of farmers on the characteristic variables and the ease indicators on the perception variable. In addition, there are indicators of economic motivation 2 and 3.

Table 7

PLS algorithm test results

Indicators	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Capacity	0.749	0.751	0.856	0.665
Characteristics	0.749	0.751	0.842	0.572
Government	0.804	0.812	0.884	0.718
ME	1.000	1.000	1.000	1.000
MS	0.665	0.890	0.804	0.583
MSE	0.635	0.642	0.845	0.732
Motivation	1.000	1.000	1.000	1.000
Perception	0.356	0.388	0.749	0.603

Source: authors' development via SMART-PLS.

The composite reliability value can be used to test each indicator's reliability value on a variable. The work [42] states that the composite reliability value should be >0.70 , although a value of 0.60 is still acceptable (Figure 3). This is in line with research [53], which performs SEM-PLS reliability analysis. The next convergent validity test is AVE. The AVE value is at least 0.5. This value illustrates sufficient convergent validity, which means that one latent variable can explain more than half of the variance of its indicators in the mean [54]. The values obtained have passed the validity and reliability tests so that they can perform further analysis (Table 7).

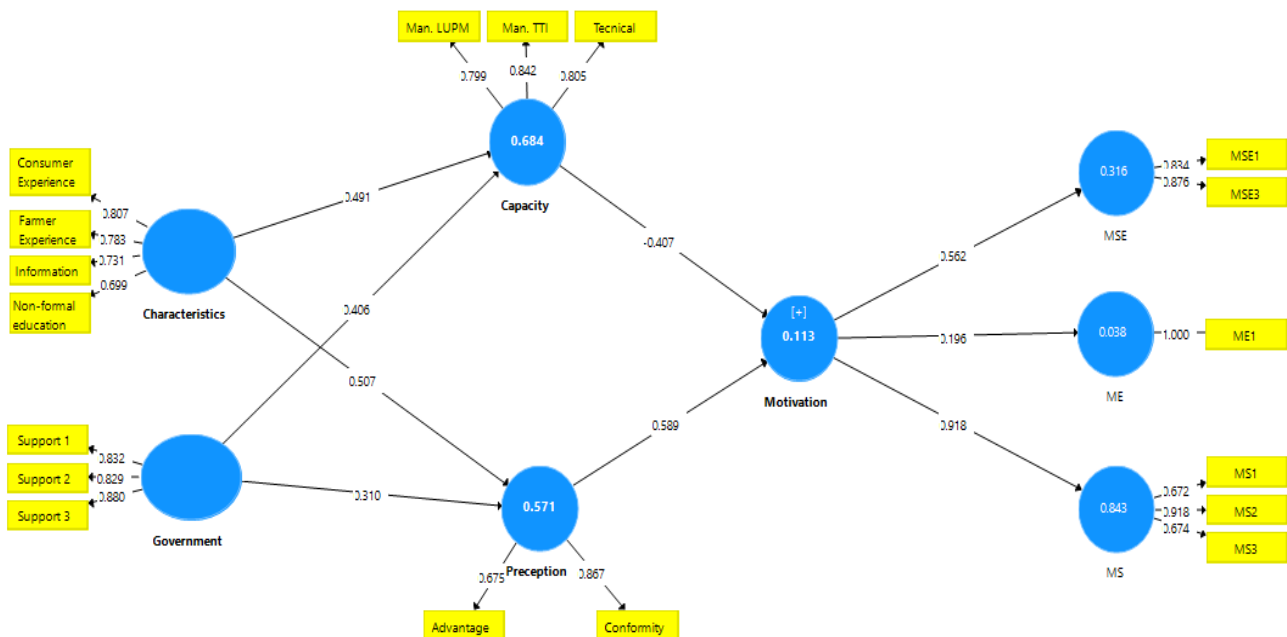


Figure 3. Results of structural equation model's analysis

Source: authors' development via SMART-PLS.

The validity of the discriminant was established to ensure the distinctiveness of the construct in the study. This shows that the constructs in this study have their own identities and are not highly correlated with other constructs [55]. The validity of discriminants in SMART-PLS was determined using three different techniques, but those used in this study were Fornell and Larcker criterion and Cross Loadings.

The results of the calculations regarding the Fornell and Larcker criterion are presented in the Table 8. A loading difference of less than 0.10 indicates that the item crossroads into another construct and may threaten the discriminant's validity [56].

Table 8

Fornell and Larcker criterion PLS test results

Indicators	Capacity	Characteristics	Government	ME	MS	MSE	Motivation	Perception
Capacity	0.816							
Characteristics	0.774	0.756						
Government	0.748	0.696	0.847					
ME	0.215	0.148	0.106	1.000				
MS	0.104	0.156	0.202	0.232	0.764			
MSE	0.203	0.258	0.251	0.366	0.572	0.855		
Motivation	0.085	0.123	0.176	0.196	0.918	0.562	1.000	
Perception	0.834	0.722	0.662	0.102	0.220	0.253	0.250	0.777

Source: authors' development via SMART-PLS.

Table 8 shows that the square root value of AVE is greater than the correlation between latent constructs; this shows that the validity of the discriminant is well shown from the square root of the AVE for each construct greater than the correlation between constructs in the model. In correlation, the motivation variable with the highest influence is social motivation in program implementers (TTI and Gapoktan). The factors influencing social motivation are encouragement of the environment / surrounding community, encouragement to help the community, and encouraging the desire to help consumers. In addition, a second motivating influence is economic factors, which are contributed by the ease of access and facilities because the cost of transportation between one supply chain to another is cheap and not harmful. In general, the most influential motivation for implementers to be involved with the program is to help the community by providing cheap and quality food.

Structural Test (Inner Model). After testing the measurement model, the structural model test (inner model) is then carried out by displaying the results of the R-squares value for each endogenous latent variable as the predictive force of the structural model. Changes in the value of R-squares can be used to explain the influence of certain exogenous latent variables on endogenous latent variables and whether they have a substantive influence [57].

According to Chin's theory [58], the criteria of R-square (R^2) values of 0.67, 0.33,

and 0.19 are considered strong, moderate, and weak, respectively. The R-square for capacity is 0.684 and perception is 0.571. Based on the Chin's classification [58], shows that 68.4 % of the variance in the capacity variable and 57.1 % in the perception variable can be explained by the joint model of characteristics and government variables on motivation (Table 9). All values are included in previously identified ranges above the minimum standard [51]. This indicates a strong effect size for the capacity variable and a moderate effect for the perception variable.

Table 9

Structural Model Parameters R-squares

Indicators	R-square	R-square Adjusted
Capacity	0.684	0.677
ME	0.038	0.028
MS	0.843	0.841
MSE	0.316	0.309
Motivation	0.113	0.094
Perception	0.571	0.562

Source: authors' development via SMART-PLS.

The second-order analysis in the SMART-PLS statistical analysis of this study, makes the influence of the dependent variable divided into three latent variables. The R-square value shows 84.3 % of the variance in the social motivation variable and 31.6 % of the variance in the social-economic motivation variable. The low motivation value of the second-order measurement factor in the economic motivation variable (ME) is 11.3 %. This is because only one indicator of economic motivation passes the test in this analysis, so it affects the R-square value. The effect in the field is also where the ME value on the motivation level score is the lowest among other motivations. Furthermore, in the influence test, the ME variable is insignificant to the motivation variable, so the R-square value is low. The low R-square value on economic motivation indicates that the single indicator is not strong enough to explain the variance in economic motivation. This could be due to the limitations of a single indicator that may not fully represent a complex construct such as economic motivation. The addition of relevant indicators in future research could improve the reliability and validity of the construct, as well as provide a more complete picture of how perceptions and capacities affect specific dimensions of motivation.

The Estimated Model value on the Standardized Root Mean Square Residual (SRMR) model Fit Test assesses the average magnitude of the difference between observed and expected correlations. The condition used is that the SRMR value below 0.08 indicates a Fit model, while the SRMR value between 0.08 and 0.10 is still acceptable [59]. SRMR is defined as the difference between the observed correlation and the implied correlation matrix model. Thus, assessing the average magnitude of the difference between the observed and expected correlations is possible as an absolute measure of the Fit criteria. A value less than 0.10 is considered suitable [60]. Based on the SRMR value, a value of $0.075 < 0.10$ is obtained, meaning that the SRMR value can be good and avoid model specification errors (Table 10). For exact match criteria (Squared Euclidean Distance or d_ULS), the original value can be compared

with the confidence interval created from the sampling distribution. With a confidence level of 0.05 that can be seen in the Z distribution, the value of d_ULS is declared good.

*Table 10***Fit Model**

Indicators	Analysis results
Standardized Root Mean Square Residual (SRMR)	0.097
Squared Euclidean Distance (d_ULS)	1.806

Source: authors' development via SMART-PLS.

A model is suitable if the difference between the correlation matrix implied by model and the empirical correlation matrix is so tiny that it can be purely attributed to sampling error. This means that the smaller the d_ULS result, the less error in sampling. The Squared Euclidean Distance explains that a good research model must have a value greater than 0.05 (because it uses a confidence interval of 95 %). This means that with a d_ULS value of 1.806, the model in this study has an excellent residual distribution (Table 10).

Table 10 follows the provisions of the descriptive conformity measure of the model so that the data can be accepted and fit can be concluded that the alignment model or relationship criteria between constructs can be tested. Goodness of Fit is used to validate the overall model, for evaluation of measurement models and structural models. Goodness of Fit Test is also one of the non-parametric tests to determine how precise the observed frequency is with the expected frequency. From the results of the calculation, a Goodness of Fit (GoF) value of 0.295 was obtained (Table 11). According to [42], the value of Commonalities are determined by squaring the loading value with criteria of 0.10 (GoF small), 0.25 (GoF moderate), and 0.36 (big). Thus, the combined performance between the measurement model (outer model) and the structural model (inner model) is declared valid with a big size. The results of GoF testing show the feasibility and accuracy of this research model in the highest category, where empirical data can explain the measurement model at a big match level.

*Table 11***Goodness of Fit**

Indicators	Loading	R ²
Capacity	0.816	0.684
Motivation	1.000	0.113
Perception	0.771	0.571
Average values	0.862	0.442

Source: authors' development via SMART-PLS.

PLS model evaluation is done through Q² predictive relevance. Q-square is predictive relevance, measuring whether a model has predictive relevance or not. Furthermore, Q² establishes the predictive relevance of endogenous constructions. This technique is used to present synthesis from cross-validation and fitting functions with predictions of observed variables and estimation of construct parameters using blindfolding procedures [41]. Q² > 0 indicates that the model has predictive relevance, and Q² < 0 indicates that the model lacks predictive relevance. Q² predictive relevance values show 0.02 weak, 0.15 moderate, and 0.35 strong [41]. The Table 12 shows the

Q-square values above zero, indicating that the values are well reconstructed and that the model has predictive relevance. Of the three variables with strong predictive relevance, namely capacity, the perception of moderate category is moderate motivation has a weak category, but not lower standards. Although there are different levels, the three variables tested meet the criteria because the model formed has predictive relevance.

*Table 12***Construct Cross-Validated Redundancy**

Indicators	SSO	SSE	Q ² (=1-SSE:SSO)
Capacity	288.000	164.623	0.428
Motivation	96.000	88.315	0.080
Perception	192.000	131.561	0.315

Source: authors' development via SMART-PLS.

The magnitude of the t-statistic value is used to test the proposed hypothesis. The significance of the estimated parameters provides valuable information regarding the relationship between the research variables. The limit for rejecting or accepting the proposed hypothesis is ± 1.98 . If the value of t is in the range from -1.98 to 1.98, the hypothesis will be rejected, or, in other words, the null hypothesis (H_0) will be accepted. Based on Table 13, it can be explained that there is an influence of characteristics on capacity, which is indicated by the value possessed in the t-statistic of 7.015, where the value exceeds 1.98. The original sample value of 0.491 indicates a positive direction, and the resulting p-value is 0.000 (<0.05). This suggests that hypothesis 1, which states that characteristics has a significant influence on capacity, is acceptable. The value of t-statistics obtained on the Characteristic variable on the perception variable is 5.818 (>1.98); thus, hypothesis 2 in this study is accepted. Namely, characteristics have a significant effect on perception. The original sample value of 0.507 indicates a positive direction, and the resulting p-value is 0.000 (<0.05). This means that when characteristics are improved, capacity and perception increase.

Based on the analysis, it is possible to explain the effect of government policy on capacity, as indicated by the value possessed in the t-statistic of 5.437, where the value exceeds 1.98 (Table 13). The original sample value of 0.406 indicates a positive direction, and the resulting p-value is 0.000 (<0.05). This suggests that hypothesis 3, which is that government policy significantly affects capacity, is acceptable. The value of t-statistics obtained in the government policy variable on the perception variable is 3.171 (>1.98); thus, hypothesis 4 in this study is accepted. Namely, government policy has a significant effect on perception. The original sample value of 0.310 indicates a positive direction, and the resulting p-value is 0.002 (<0.05). This means that when government policies are improved, capacity and perception increase.

The analysis results explain capacity's effect on motivation as indicated by the value possessed in the t-statistic of 2.070, where the value exceeds 1.98. The original sample value of -0.407 indicates a negative direction, and the resulting p-value is 0.039 (<0.05). This suggests that hypothesis 5, i.e., capacity significantly influences motivation, is acceptable. The value of t-statistics obtained on the perception variable

of the motivation variable is 3.598 (>1.98); thus, hypothesis 6 in this study is accepted. Namely, perception has a significant influence on motivation. The original sample value of 0.589 indicates a positive direction, and the resulting p-value is 0.000 (<0.05). This means that motivation will increase when the perception variable increases and capacity decreases.

*Table 13***Significance test results**

Indicators	Original sample	Sample mean	Standard deviation	Statistics	P-values
Characteristics -> Capacity	0.491	0.492	0.070	7.015	0.000
Characteristics -> Perception	0.507	0.516	0.087	5.818	0.000
Government -> Capacity	0.406	0.408	0.075	5.437	0.000
Government -> Perception	0.310	0.311	0.098	3.171	0.002
Capacity -> Motivation	-0.407	-0.386	0.196	2.070	0.039
Characteristics -> Capacity -> Motivation	-0.144	-0.143	0.064	2.269	0.024
Characteristics -> Perception -> Motivation	-0.256	-0.253	0.105	2.434	0.015
Government -> Capacity -> Motivation	-0.209	-0.210	0.097	2.162	0.031
Government -> Perception -> Motivation	0.367	0.368	0.135	2.713	0.007
Perception -> Motivation	0.589	0.579	0.164	3.598	0.000
Motivation -> ME	0.196	0.211	0.111	1.760	0.079
Motivation -> MS	0.918	0.922	0.009	98.143	0.000
Motivation -> MSE	0.562	0.569	0.089	6.309	0.000

Source: authors' development via SMART-PLS.

The analysis of hypothesis test 7 showed a t-statistical value of 2.269 (>1.98), meaning that capacity acts as a moderating characteristic of motivation. Then, the resulting significance value seen from the p-value is 0.024, smaller than the alpha value of 0.05. Furthermore, the original sample value of -0.144 indicates a negative direction. This means motivation will decrease if the characteristic increases but the capacity variable decreases. Then, it can be concluded that hypothesis 7 is accepted: capacity can moderate the influence of characteristics on motivation. Test hypothesis 8 shows a t-statistic value of 2.434 (>1.98), meaning that perception acts as a moderating characteristic of motivation. Then, the resulting significance value from the p-value is 0.015 (<0.05). Furthermore, the original sample value of -0.256 indicates a negative direction. This means that motivation will decrease if the perception variable increases but capacity decreases. Then, it can be concluded that hypothesis 8 is accepted; that is, perception can moderate the influence of characteristics on motivation.

The hypothesis 9 test analysis results show a t-statistic value of 2.162 (>1.98), meaning that capacity moderates government policies on motivation. Then, the resulting significance value seen from the p-value is 0.031 (<0.05) and the original sample value of -0.209 indicates a negative direction. This means motivation will decrease if the government policy variable increases but capacity decreases. So, it can be concluded that hypothesis 9 is accepted, namely the capacity moderates the influence of government policies on motivation. Hypothesis test 10 shows a t-statistic value of 2.367 (>1.98), meaning that perception moderates government policy on

motivation. Then, the resulting significance value from the p-value is 0.007 (<0.05). The original sample value of 0.367 indicates a positive direction, which means that the higher the perception and government policy, the more motivation increases. So, it can be concluded that hypothesis 10 is accepted, namely, perception moderates government policy on motivation.

In the analysis of the significance of latent variable motivation in order II analysis, it was obtained that motivation variability had a significant effect on social motivation and socioeconomic motivation because the p-value <0.005 and the original value of the sample was positive. That is, the motivation of program actors increases when social motivation and socioeconomic integration increase. However, motivation has no significant effect on economic motivation because the p-value >0.05 is 0.079 (see Table 13). This is because the program implementers (TTI and Gapoktan) still need to feel the real benefits of this program. Some groups sometimes have to increase personal funds due to the lack of need to meet the selling price target. So, that economic motivation does not affect the motivation of actors to implement this program.

5. DISCUSSION

The study's implications were obtained where the level of motivation of TTI actors was high, indicating that this food security program could be implemented well because field implementers could feel the positive impact in general. Furthermore, in the SEM analysis, factors that influence motivation show perception with indicators of ease of implementation, profit of products sold, and smooth access to products that the government can use in maintaining and increasing motivation to maximize program implementation. This is in line with research [61], which found a real relationship between farmer participation and success in a program. For the government to maximise the products sold, it can still provide a fair profit for each actor in the program and the suitability of what they expect by holding regular meetings and monitoring.

Acceptance of the first hypothesis that states the influence of characteristics has a significant influence on the capacity to interpret when the variables information, formal education, non-formal education, farmer experience, and consumer experience increase, the capacity of farmers, associations, and farmer shops as program implementers also increases. Another study [62] found that previous adopters of innovation or best management practices were more likely to have formal agricultural education. The characteristics of farmers in terms of education affect capacity management in conducting agricultural business.

Acceptance of the second hypothesis whereby characteristics have a significant effect on perception, means that when the characteristic variable increases, the perception of program implementation in advantage, conformity, and ease also increases. In this context, we agree with other research [63], which suggests areas for future research to improve understanding of risk perceptions held by farmers and to support efforts to manage and mitigate these risks.

Acceptance of the third and fourth hypotheses states that government policies significantly affect capacity and perception. This means that when support for

government policies is increased, LUPM managerial, TTI managerial, technical, and perception increases. Similar results, but on a different issue, were recorded in a study [64] that states that farmers with low levels of intrinsic motivation are highly dependent on the policy program to adopt sustainable agricultural practices. The policy instruments can influence behaviour directly and indirectly, influencing it through perceived values [65].

Acceptance of hypotheses five and six, which mention capacity and perception, significantly influences motivation. This means that when managerial LUPM, managerial TTI, technical and social concepts, and perceptions of program implementers are improved, motivation to participate in program implementation increases. A study [66], indirectly related to our topic, concluded that the entrepreneurial capacity of youth is mainly included in the medium classification; the motivation and role of agricultural extension workers influence capacity. The study [67] showed that the variables of perceived severity, response cost, and perception of self-efficacy significantly affected motivation to use conservation agriculture.

Acceptance of hypotheses seven and eight can be concluded that capacity and perception can moderate motivational variables' characteristics. The mediation variable is an interrupting or intermediate variable that lies between the independent and dependent variables so that the independent variable does not directly affect the change or emergence of the dependent variable. In addition, hypotheses nine and ten prove that capacity and perception variables can moderate government policies on motivational variables. The study [68] found that the validity of perceived content mediates the relationship between intrinsic motivation to apply acquired knowledge and training transfer.

The analysis results through mediation variables, namely characteristics with indicators of information fluency, formal education, non-formal education, farmer experience, and consumer experience, show an influence on motivation. In addition, government support also has a positive influence and value. This states that the characteristics of farmers and consumers and government support can increase motivation. This is consistent with research [69], according to which the success of the implementation of a program cannot be separated from several factors, including the level of knowledge of farmers about the program, the role of agricultural extension workers, government support, and the participation of farmers / associations in the implementation of the program. The government can improve non-formal training through agricultural extension workers to increase the information and knowledge of farmers. In addition, the government can take advantage of social motivation to help the community meet their needs and help farmers sell rice / grain. The government can also maintain the motivation of socio-economic integration, namely good relations between stakeholders and program actors. This is in line with research [70], which states that stakeholders significantly contribute to strategy development, including suppliers, companies, and other groups such as local communities, governments, or competitors. However, the government should also pay attention to the economic motivation of actors by readjusting the subsidy, profit, and revenue funds obtained by

TTI and Gapoktan.

The results of this study are about several factors that affect program implementers' motivation to support the program's success. A study [71] found that the supporting actors for the running of a program are human resources with the assumption that the knowledge, attitudes, and skills possessed and values embraced by stakeholders, including the government, then these activities will impact the success of the program. Hopefully, this point of focus will make this program helpful for farmers as producers, associations as managers, and the community as consumers. Thus, the program's goals of national food security can be implemented, and the program's existence can be continued for the following periods.

6. CONCLUSIONS

The aim and outcome of this study is to determine the level of motivation of TTI program participants, from the association / LUPM to the store, in providing food to the community / consumers. Food security is a vital global problem related to people's welfare from the factor of food availability. Community Food Business Development is a government program to maintain the stability of supply and prices of strategic staple foods carried out through Toko Tani Indonesia (is a shop / kiosk that directly markets rice / staple food to consumers from the association). This program aims to meet cheap and quality community food. From the data analysis, it was obtained that the level of motivation of TTI actors was high, meaning that program implementers in the field had a substantial boost from social, economic, and socio-economic factors. These results indicate that this food security program can be implemented well because field implementers can feel the overall positive impact.

Furthermore, in SEM analysis, factors influencing motivation show that mediating variables for capacity and perception significantly correlate with motivation. Meanwhile, the government support and characteristics variables have a significant relationship with the mediation variables. This shows that the government can use the perceptions with indicators of ease of implementation, profits of products sold, and smooth access to products to maintain and increase motivation to maximise program implementation. In addition, the government can take advantage of social motivation to help the community meet their needs and help farmers sell rice / grain. The government can also maintain the motivation of socio-economic integration, namely good relations between stakeholders and program actors. However, the government should also pay attention to the economic motivation of actors by readjusting the subsidy, profit, and revenue funds obtained by TTI and Gapoktan. So, that the objectives of this program can be implemented and the program can be continued for the following periods.

7. LIMITATIONS AND FUTURE RESEARCH

This study provides an overview of the motivation of food security program implementers (TTI), factors that influence motivation in the form of government characteristics and policies, and capacity and perception mediation variables. The study

has some limitations. The study did not analyse institutional service and agricultural extension factors and programs. This research will be better if it is elaborated more broadly and the analysis is associated with aggregate economic influences. In addition, further research can be added with the expansion of areas and samples into countries in Indonesia. This study offers recommendations to the Indonesian government through the sample areas. However, it does not go deep into existing policies and institutional frameworks that can facilitate or hinder the running of the food security program through this TTI. This research may be better if it analyses the inhibiting factors of the program's progress so that the government can anticipate and reduce these factors. These limitations highlight potential areas for future research that can improve our understanding of supporting food security programs that can help farmer's and people's food availability.

Funding: the authors would like to thank Universitas Sebelas Maret for funding the publication of this article.

Acknowledgments: the authors would like to thank the 2 reviewers who provided valuable recommendations and suggestions to improve the writing of this paper.

Conflicts of interest: the authors declare no conflict of interest.

REFERENCES

1. Rozaki, Z. (2021). Food security challenges and opportunities in Indonesia post COVID-19. *Advances in Food Security and Sustainability*, 6, 119–168. <https://doi.org/10.1016/bs.af2s.2021.07.002>.
2. Anggraeni, W., Mahananto, F., Sari, A. Q., Zaini, Z., Andri, K. B., & Sumaryanto (2019). Forecasting the price of Indonesia's rice using hybrid artificial neural network and autoregressive integrated moving average (hybrid NNS-ARIMAX) with exogenous variables. *Procedia Computer Science*, 161, 677–686. <https://doi.org/10.1016/j.procs.2019.11.171>.
3. Khairulbahri, M. (2021). Analyzing the impacts of climate change on rice supply in West Nusa Tenggara, Indonesia. *Heliyon*, 7(12), e08515. <https://doi.org/10.1016/j.heliyon.2021.e08515>.
4. BPS (2021a). *Luas Panen dan Produksi Padi di Indonesia 2021*. Badan Pusat Statistik. Available at: <https://www.bps.go.id/id/publication/2022/07/12/c52d5cebe530c363d0ea4198/luas-panen-dan-produksi-padi-di-indonesia-2021.html>.
5. Tuni, A., & Rentizelas, A. (2022). Improving environmental sustainability in agri-food supply chains: evidence from an eco-intensity-based method application. *Cleaner Logistics and Supply Chain*, 5, 100081. <https://doi.org/10.1016/j.clscn.2022.100081>.
6. Köhler, S., Bager, S., & Pizzol, M. (2022). Sustainability standards and blockchain in agro-food supply chains: Synergies and conflicts. *Technological Forecasting and Social Change*, 185, 122094. <https://doi.org/10.1016/j.techfore.2022.122094>.
7. Kouhizadeh, M., & Sarkis, J. (2018). Blockchain practices, potentials, and

perspectives in greening supply chains. *Sustainability*, 10(10), 3652. <https://doi.org/10.3390/su10103652>.

8. Schmitt, E., Galli, F., Menozzi, D., Maye, D., Touzard, J. M., Marescotti, A., Six, J., & Brunori, G. (2017). Comparing the sustainability of local and global food products in Europe. *Journal of Cleaner Production*, 165, 346–359. <https://doi.org/10.1016/j.jclepro.2017.07.039>.

9. Galli, A., Giampietro, M., Goldfinger, S., Lazarus, E., Lin, D., Saltelli, A., Wackernagel, M., & Müller, F. (2016). Questioning the ecological footprint. *Ecological Indicators*, 69, 224–232. <https://doi.org/10.1016/j.ecolind.2016.04.014>.

10. Benos, T., Burkert, M., Hüttl-Maack, V., & Petropoulou, E. (2022). When mindful consumption meets short food supply chains: empirical evidence on how higher-level motivations influence consumers. *Sustainable Production and Consumption*, 33, 520–530. <https://doi.org/10.1016/j.spc.2022.07.028>.

11. Giampietri, E., Verneau, F., Del Giudice, T., Carfora, V., & Finco, A. (2018). A theory of planned behaviour perspective for investigating the role of trust in consumer purchasing decision related to short food supply chains. *Food Quality and Preference*, 64, 160–166. <https://doi.org/10.1016/j.foodqual.2017.09.012>.

12. Fritz, M. M. C., Rauter, R., Baumgartner, R. J., & Dentchev, N. (2018). A supply chain perspective of stakeholder identification as a tool for responsible policy and decision-making. *Environmental Science and Policy*, 81, 63–76. <https://doi.org/10.1016/j.envsci.2017.12.011>.

13. Amrillah, A. (2020). Pengendalian harga pada program Toko Tani Indonesia center provinsi Sumsel dalam perspektif ekonomi Islam. *Ekonomika Sharia: Jurnal Pemikiran Dan Pengembangan Perbankan Syariah*, 5(2), 1–12. <https://doi.org/10.36908/esha.v5i2.120>.

14. Kementan (2021). *Juknis fasilitas distribusi pangan 2021*. The Ministry of Agriculture of the Republic of Indonesia. Available at: <http://repository.pertanian.go.id/handle/123456789/12040>.

15. Nona, R. V., & Mea, M. H. C. D. (2021). Performance model of community food business development in East Nusa Tenggara Province. *E3S Web of Conferences*, 306(18), 02003. <https://doi.org/10.1051/e3sconf/202130602003>.

17. Soniansi, S. D., & Setiawan, I. (2020). Tingkat kesiapan (e-readiness internal) kelompok tani provinsi Jawa Barat dalam menerapkan penggunaan e-commerce Toko Tani Indonesia. *Jurnal Perilaku Dan Strategi Bisnis*, 8(1), 17. <https://doi.org/10.26486/jpsb.v8i1.1000>.

18. Wahyuni, S., Hestina, J., Setiajie, I. A., & Suryani, E. (2021). Enhancing red onion agribusiness development: e-planting calendar and production allocation. *IOP Conference Series: Earth and Environmental Science*, 653(1), 012006. <https://doi.org/10.1088/1755-1315/653/1/012006>.

19. Reina-Usuga, L., Parra-López, C., de Haro-Giménez, T., & Carmona-Torres, C. (2023). Sustainability assessment of territorial short food supply chains versus large-scale food distribution: the case of Colombia and Spain. *Land Use Policy*, 126, 106529. <https://doi.org/10.1016/j.landusepol.2022.106529>.

20. Zheng, S., Yin, K., & Yu, L. (2022). Heliyon factors in influencing the farmer's chemical fertilizer reduction behavior from the perspective of farmer differentiation. *Heliyon*, 8, e11918. <https://doi.org/10.1016/j.heliyon.2022.e11918>.
21. Salman, D., Yassi, A., & Bahsar-demmallino, E. (2022). Heliyon climate change impacts and the rice farmers' responses at irrigated upstream and downstream in Indonesia. *Heliyon*, 8, e11923. <https://doi.org/10.1016/j.heliyon.2022.e11923>.
22. Sjaf, S., Aulia, A., Ray, A., Gandi, R., Elson, L., Hakim, L., Ardinal, Z., ... & Aria, D. (2022). Heliyon partnership 4.0: smallholder farmer partnership solutions. *Heliyon*, 8, e12012. <https://doi.org/10.1016/j.heliyon.2022.e12012>.
23. Hilda Anugrah, P., Sutrisno, J., Marwanti, S., Amalia Nadifta, U., & Indah, N. (2023). Analysis of rice supply chain management related to performance and sustainability of food security program in Central Java. *Universal Journal of Agricultural Research*, 11(3), 525–536. <https://doi.org/10.13189/ujar.2023.110303>.
24. BPS (2021b). *Luas panen dan produksi padi di Jawa Tengah 2021*. <https://doi.org/https://jateng.bps.go.id>.
25. Kementan (2020). Petunjuk teknis kegiatan pengembangan usaha pangan masyarakat (PUPM) Melalui Toko Tani Indonesia. *Badan ketahanan pangan Kementerian Pertanian 2019* (pp. 1–55). Badan ketahanan pangan Kementerian Pertanian Republik Indonesia. Available at: <https://badanpangan.go.id/storage/app/media/Bahan%202020/JUKNIS%20PUPM-TTI%20TAHUN%202020.pdf>.
26. Nona, R. V., & Mea, M. H. C. D. (2021). Performance model of community food business development in East Nusa Tenggara Province. *E3S Web of Conferences*, 306, 02003. <https://doi.org/10.1051/e3sconf/20213060200>.
27. Antika, A. Y., Nikmatullah, D., & Prayitno, R. T. (2017). Tingkat partisipasi anggota P3a dalam program Pengembangan Jaringan Irigasi (Pji) di kelurahan Fajar Esuk kecamatan Pringsewu kabupaten Pringsewu. *Jurnal Ilmiah Ilmu Agribisnis*, 5(3), 304–311. <https://doi.org/10.23960/jiia.v5i3.1647>.
28. Anggraini, R., Ranga, K. K., & Hasanuddin, T. (2019). Partisipasi petani dan keberhasilan program pengembangan usaha pangan masyarakat (PUPM) di kecamatan Palas kabupaten Lampung Selatan. *Jiia*, 7(1), 113–119. <https://doi.org/10.23960/jiia.v7i1.3339>.
29. Derks, M., van Werven, T., Hogeveen, H., & Kremer, W. D. J. (2013). Veterinary herd health management programs on dairy farms in the Netherlands: use, execution, and relations to farmer characteristics. *Journal of Dairy Science*, 96(3), 1623–1637. <https://doi.org/10.3168/jds.2012-6106>.
30. Mati, B. (2023). Farmer-led irrigation development in Kenya: characteristics and opportunities. *Agricultural Water Management*, 277, 108105. <https://doi.org/10.1016/j.agwat.2022.108105>.
31. Kreft, C. S., Huber, R., Wüpper, D. J., & Finger, R. (2020). Data on farmers' adoption of climate change mitigation measures, individual characteristics, risk attitudes and social influences in a region of Switzerland. *Data in Brief*, 30, 105410. <https://doi.org/10.1016/j.dib.2020.105410>.

32. Sumo, T. V., Ritho, C., & Irungu, P. (2022). Effect of farmer socio-economic characteristics on extension services demand and its intensity of use in post-conflict Liberia. *Heliyon*, 8(12), e12268. <https://doi.org/10.1016/j.heliyon.2022.e12268>.
33. Gido, E. O., Sibiko, K. W., Ayuya, O. I., & Mwangi, J. K. (2015). Demand for agricultural extension services among small-scale maize farmers: micro-level evidence from Kenya. *Journal of Agricultural Education and Extension*, 21(2), 177–192. <https://doi.org/10.1080/1389224X.2013.872045>.
34. Seufert, V., Austin, S. E., Badami, M. G., Turner, S., & Ramankutty, N. (2023). The diversity of organic farmer motivations and livelihoods in the Global South – a case study in Kerala, India. *Geoforum*, 138, 103670. <https://doi.org/10.1016/j.geoforum.2022.103670>.
35. Bodwitch, H., Polson, M., Biber, E., Hickey, G. M., & Butsic, V. (2021). Why comply? Farmer motivations and barriers in cannabis agriculture. *Journal of Rural Studies*, 86, 155–170. <https://doi.org/10.1016/j.jrurstud.2021.05.006>.
36. Soon, J. M., Vanany, I., Abdul Wahab, I. R., Abdullah Sani, N., Hamdan, R. H., & Jamaludin, M. H. (2022). Protection motivation theory and consumers' food safety behaviour in response to COVID-19. *Food Control*, 138, 109029. <https://doi.org/10.1016/j.foodcont.2022.109029>.
37. Jambo, I. J., Groot, J. C. J., Descheemaeker, K., Bekunda, M., & Tittonell, P. (2019). Motivations for the use of sustainable intensification practices among smallholder farmers in Tanzania and Malawi. *NJAS – Wageningen Journal of Life Sciences*, 89, 100306. <https://doi.org/10.1016/j.njas.2019.100306>.
38. Vázquez-Martínez, U. J., Morales-Mediano, J., & Leal-Rodríguez, A. L. (2021). The impact of the COVID-19 crisis on consumer purchasing motivation and behavior. *European Research on Management and Business Economics*, 27(3), 100166. <https://doi.org/10.1016/j.iedeen.2021.100166>.
39. Anugrah, I. S., & Wahyuni, S. (2019). Toko Tani Indonesia: National program for shortening rice supply chain. *Proceedings of the International Conference on Trade 2019 (ICOT 2019)*. <https://doi.org/10.2991/icot-19.2019.25>.
40. Lantarsih, R., Manggala, S., Kadarso, K., & Subeni, S. (2022). Motivation of farmer group members in cultivating organic vegetables. *Jurnal AGRISEP: Kajian Masalah Sosial Ekonomi Pertanian Dan Agribisnis*, 21(2), 349–366. <https://doi.org/10.31186/jagrisep.21.2.349-366>.
41. Ghozali, A., & Latan, H. (2020). *Partial least squares konsep, teknik dan aplikasi menggunakan program SmartPLS 3.0 untuk penelitian empiris*. Universitas Diponegoro. Available at: <https://onsearch.id/Record/IOS3107.UMS:57482/Preview>.
42. Hair, J. F., Ringle, C. M., & Sarstedt, M. (2013). Partial least squares structural equation modeling: rigorous applications, better results and higher acceptance. *Long Range Planning*, 46(1–2), 1–12. <https://doi.org/10.1016/j.lrp.2013.01.001>.
43. Suprayitno, A. R., Sumardjo, S., Gani, D. S., & Sugihen, B. G. (2015). Motivasi dan partisipasi petani dalam pengelolaan hutan Kemiri di kabupaten Maros provinsi Sulawesi Selatan. *Jurnal Penyuluhan*, 8(2), 182–196.

<https://doi.org/10.25015/penyuluhan.v8i2.9883>.

44. Kautsarina, Hidayanto, A. N., Anggorojati, B., Abidin, Z., & Phusavat, K. (2020). Data modeling positive security behavior implementation among smart device users in Indonesia: a partial least squares structural equation modeling approach (PLS-SEM). *Data in Brief*, 30, 105588. <https://doi.org/10.1016/j.dib.2020.105588>.

45. Dash, G., & Paul, J. (2021). CB-SEM vs PLS-SEM methods for research in social sciences and technology forecasting. *Technological Forecasting and Social Change*, 173, 121092. <https://doi.org/10.1016/j.techfore.2021.121092>.

46. Putro, P. A. W., Purwaningsih, E. K., Sensuse, D. I., Suryono, R. R., & Kautsarina (2022). Model and implementation of rice supply chain management: a literature review. *Procedia Computer Science*, 197, 453–460. <https://doi.org/10.1016/j.procs.2021.12.161>.

47. Kumar, R., Singh, K., & Jain, S. K. (2022). Assessment of agile manufacturing impact on business performance of Indian manufacturing industry: a PLS-SEM approach. *Sustainable Manufacturing and Service Economics*, 1, 100001. <https://doi.org/10.1016/j.smse.2022.100001>.

48. Nourallah, M. (2023). One size does not fit all: young retail investors' initial trust in financial robo-advisors. *Journal of Business Research*, 156, 113470. <https://doi.org/10.1016/j.jbusres.2022.113470>.

49. Wang, B. (2022). Comprehensive evaluation of urban garden afforestation based on PLS-SEM path. *Physics and Chemistry of the Earth. Parts A/B/C*, 126, 103150. <https://doi.org/10.1016/j.pce.2022.103150>.

50. Putri, H. A. (2023). *Analisis supply chain management beras terhadap kinerja dan keberlanjutan program Toko Tani Indonesia di Jawa Tengah*. PhD Thesis. Surakarta, Universitas Sebelas Maret.

51. Ammad, S., Alaloul, W. S., Saad, S., & Qureshi, A. H. (2021). Personal Protective Equipment (PPE) usage in construction projects: a systematic review and smart PLS approach. *Ain Shams Engineering Journal*, 12(4), 3495–3507. <https://doi.org/10.1016/j.asej.2021.04.001>.

52. Sariningrum, N. N., & Subekti, S. (2021). Participation of Gapoktan members in the Community Food Business Development Program (PUPM) through the Indonesian farmer shop (TTI) in Tulung Agung regency. *Suluh Pembangunan: Journal of Extension and Development*, 3(1), 17–27. <https://doi.org/10.23960/jsp.vol3.no1.2021.64>.

53. Kusnandar, Setyowati, N., & Riptanti, E. W. (2023). Creating an innovative culture in agribusiness of micro, small and medium-sized enterprises. *Agricultural and Resource Economics*, 9(2), 205–222. <https://doi.org/10.51599/are.2023.09.02.09>.

54. Hamid, R. S., & Anwar, S. M. (2019). *Structural equation modeling (SEM) konsep dasar dan aplikasi program SMART PLS 3.2.8 dalam riset bisnis*. Jakarta, PT Inkubator Penulis Indonesia. Available at: <http://digilib.stiem.ac.id:8080/xmlui/bitstream/handle/123456789/626/STRUKTUR%20EQUATION%20MODELING%20%28SEM%29%20-%20Berbasis%20Varian.pdf?sequence=1&isAllowed=y>.

55. Sarstedt, M., Hair, J. F., Pick, M., Liengaard, B. D., Radomir, L., & Ringle, C. M. (2022). Progress in partial least squares structural equation modeling use in marketing research in the last decade. *Psychology and Marketing*, 39(5), 1035–1064. <https://doi.org/10.1002/mar.21640>.
56. Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>.
57. Masruroh, I., Surjanti, J., & Sholikhah, N. (2021). Perceived usefulness, self-efficacy, and emotional engagement: does it affect student's satisfaction while using the platform? *Al-Ishlah: Jurnal Pendidikan*, 13(1), 617–629. <https://doi.org/10.35445/alishlah.v13i1.536>.
58. Chin, W. W. (1998). The partial least squares approach to structural equation modelling. In G. A. Marcoulides (Ed.), *Modern methods for business research* (pp. 295–336). Lawrence Erlbaum Associates Publishers. Available at: <https://www.taylorfrancis.com/chapters/edit/10.4324/9781410604385-10/partial-least-squares-approach-structural-equation-modeling-wynne-chin>.
59. Yamin, S. (2021). *SmartPLS 3, Amos & Stata: olah data statistik*. Dewangga Energi Internasional Publishing. Available at: <https://dewanggapublishing.com/product/buku-olahdata-statistik-smartpls-3-amos-stata>.
60. Dijkstra, T. K., & Henseler, J. (2015). Consistent partial least squares path modeling. *MIS Quarterly: Management Information Systems*, 39(2), 297–316. <https://doi.org/10.25300/MISQ/2015/39.2.02>.
61. Aria, R. A., Hasanuddin, T., & Prayitno, R. T. (2016). The roles of agricultural extension workers (AEW) towards the success of Rural Agribusiness Development Program (PUAP) in Sungkai district of North Lampung regency. *Jurnal Ilmu-Ilmu Agribisnis*, 4(4), 430–436. Available at: <https://jurnal.fp.unila.ac.id/index.php/JIA/article/view/1526/1380>.
62. Donoghue, C. O., & Heanue, K. (2018). The impact of formal agricultural education on farm level innovation and management practices. *The Journal of Technology Transfer*, 43, 844–863. <https://doi.org/10.1007/s10961-016-9529-9>.
63. Duong, T. T., Brewer, T., Luck, J., & Zander, K. (2019). A global review of farmers' perceptions of agricultural risks and risk management strategies. *Agriculture*, 9(1), 10. <https://doi.org/10.3390/agriculture9010010>.
64. Bopp, C., Engler, A., Poortvliet, P. M., & Jara-Rojas, R. (2019). The role of farmers' intrinsic motivation in the effectiveness of policy incentives to promote sustainable agricultural practices. *Journal of Environmental Management*, 244, 320–327. <https://doi.org/10.1016/j.jenvman.2019.04.107>.
65. Ma, Y., Wang, H., & Kong, R. (2020). The effect of policy instruments on rural households' solid waste separation behavior and the mediation of perceived value using SEM. *Environmental Science and Pollution Research*, 27, 19398–19409. <https://doi.org/10.1007/s11356-020-08410-2>.
-

66. Anwarudin, O., Sumardjo, S., Satria, A., & Fatchiya, A. (2019). Factors influencing the entrepreneurial capacity of young farmers for farmer succession. *International Journal of Innovative Technology and Exploring Engineering*, 9(1), 1008–1014. <https://doi.org/10.35940/ijitee.A4611.119119>.
67. Bazrafkan, K., Valizadeh, N., Khannejad, S., Kianmehr, N., Bijani, M., & Hayati, D. (2022). What drives farmers to use conservation agriculture? Application of mediated protection motivation theory. *Frontiers in Psychology*, 13, 991323. <https://doi.org/10.3389/fpsyg.2022.991323>.
68. Twase, I., Miro, R. F., Matsiko, F., Ndaula, S., & Ssamula, M. (2021). Mediation of perceived content validity on motivation and training transfer among smallholder farmers in Central Uganda. *International Journal of Training and Development*, 26(1), 55–68. <https://doi.org/10.1111/ijtd.12236>.
69. Hasanuddin, T., & dan Muhammad, D. (2013). Tingkat keberhasilan program pengembangan usaha agribisnis pedesaan (PUAP) dalam meningkatkan pendapatan dan keberdayaan masyarakat petani di pedesaan. *Aktivita*, 4(2), 151–167. Available at: <http://repository.lppm.unila.ac.id/14335/1/Tingkat%20keberhasilan%20program%20PUAP%20%28Aktivita%2Cvol4%2Cno2%2C2012%29.pdf>.
70. Fritz, M. M. C. (2022). A supply chain view of sustainability management. *Cleaner Production Letters*, 3, 100023. <https://doi.org/10.1016/j.clpl.2022.100023>.
71. Daraba, D. (2015). Factors affecting the success empowerment program of the poor. *Sosiohumaniora*, 17(2), 168–169. <https://doi.org/10.24198/sosiohumaniora.v17i2.7305>.

Citation:

Стиль – ДСТУ:

Sutrisno S., Marwanti S., Anugrah Putri H., Nadifta Ulfa A., Nurhidayati I. Motivational evaluation of food security programs in Central Java, Indonesia. *Agricultural and Resource Economics*. 2024. Vol. 10. No. 2. Pp. 116–142. <https://doi.org/10.51599/are.2024.10.02.05>.

Style – APA:

Sutrisno, S., Marwanti, S., Anugrah Putri, H., Nadifta Ulfa, A., & Nurhidayati, I. (2024). Motivational evaluation of food security programs in Central Java, Indonesia. *Agricultural and Resource Economics*, 10(2), 116–142. <https://doi.org/10.51599/are.2024.10.02.05>.