

SUSTAINING FOOD SECURITY: EXAMINING INDIGENOUS MAIZE CULTIVATION DECISION AMONG MADURESE FARMERS

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Abstract

Growing indigenous maize instead of the more expensive hybrid types on the market has been a tradition in Madura for a long time. We aim to analyze how a farmer's socioeconomic status, the added value of indigenous maize varieties, the farmer's economic environment, and motivation will influence the farmer's decision to select indigenous maize varieties and also the farmer's family's food security. We also aim to identify the mediating influence of coping mechanisms on the indigenous maize cultivation decision and the fulfillment of food security. The population in this study consisted of 400 local maize farmers from four districts in Madura. SEM-PLS analysis was employed in this study. The findings of this study indicate that all the external variables affect the indigenous maize cultivation decision, thus the indigenous maize cultivation decision holds great significance in ensuring the fulfillment of their family's food security, whether directly or indirectly via a coping mechanism. The study verifies that Madurese's decision to cultivate local corn is based on tradition and coping mechanisms that ensure food & economic security.

Keywords: Indigenous Maize, Cultivation Decision, Economic Environment, Motivation, Coping Mechanism.

1. BACKGROUND

Maize is prominent in local agricultural commodities, primarily food self-sufficiency (Kamaludin et al., 2021). This multifaceted agricultural product exemplifies the 4F paradigm (food, feed, fuel, and fiber). Over time, maize has undergone a significant transformation, emerging as a fundamental dietary component within the Madurese. According to a report published by the Ministry of Agriculture in 2020, it is worth noting that Madura emerged as the primary maize-producing region in East Java. More precisely, around 360,000 hectares of land on the island of Madura were allocated for the growth of maize. Nevertheless, a concern arises over the present yield of maize cultivation in Madura. According to Amzeri and Badami (2019), the average maize yields per hectare are consistently poor, with an average of 2.2 metric tonnes.

Notwithstanding these limitations, Madura demonstrates considerable potential for the development of maize due to its advantageous agro-biological system potential. However, the earlier data illustrates that maize output in Madura has exhibited variations and a declining trajectory during the previous five-year period. One of the main focal points of Madura's maize cultivation revolves around its dependence on indigenous varieties. A significant proportion of agricultural practitioners have yet to exhibit hesitancy in transitioning from indigenous varieties of maize to more advanced hybrid cultivars. Unfortunately, the cultivation of native maize varieties in Madura has frequently led to unsatisfactory crop yields (Sugiarti & Hayati, 2009). Farmers are subject to the effects of a combination of internal and external forces when

formulating decisions. Mangesti (2021:43) explained that farmers' decision making in choosing varieties is influenced by individual factors, environmental factors and economic factors. Farmers' economic conditions are identified as a critical element in welfare and operate as influencing variables regarding household food security (Hendrarini et al., 2018). Adopting new types among farmers is sometimes driven solely by economic profitability (Koundouri et al., 2009). Farmers make decisions regarding crop selection based on their rationales and motivations. The production of indigenous maize is influenced by its additional value, which contributes to farmers' desire for this particular crop. The degree to which Madura culture classifies a specific item as a staple food is closely linked to the level of acceptance among customers of its specific characteristics. Individuals tend to have a predilection for meals with sweetness, softness, tenderness, and pungent textures.

The economic climate constitutes a significant determinant in the decision-making process of farmers. Farmers cultivate local maize based on perceived profitability, technical feasibility, and alignment with environmental circumstances. Economic pressures, including production facilities, market dynamics, price guarantees, and loan accessibility, exert a significant impact. Farmers in Madura are influenced by the economy when deciding to cultivate local grain, as stated by Susanto et al. (2003).

Farmers are heavily influenced by their social environments, which include family, friends, and farmer groups while making judgments about what and how to grow. Farmers also have a great need for government assistance on the social front and in the form of technical advice for those still in the prime of their lives for farming (Soedarto et al., 2020). Motivation is identified as the fourth determinant influencing farmers' decision-making. The continued cultivation of local Madura maize by farmers, despite the availability of higher-yielding hybrid alternatives, highlights the importance of motivation. This study categorizes five motivational indicators, drawing inspiration from Maslow's Hierarchy of Needs. These indicators are physiological, safety, social, esteem, and self-actualization.

In summary, Madura's agricultural practices mostly revolve around subsistence, with a strong emphasis on fulfilling the requirements of individuals and families. The extensive areas of land allocated to the cultivation of maize indicate its significant appropriateness for this particular crop. However, the limited possibility for income growth within Madura society persists due to cultivating low-yielding native maize varieties.

2. THEORETICAL FOUNDATION

The theory of planned behavior is the main basis for this research. We think the three types of planned behavior in the TPB are suitable for the situation of this research, namely beliefs about possible outcomes and evaluations of these behaviors (behavioral beliefs), beliefs about expected norms and motivation to fulfill desired expectations (normative beliefs), and beliefs about factors that can support or hinder behavior and awareness of the strength of these factors (control beliefs). We will try to observe these three types when farmers make the decision to cultivate local Madurese corn, the coping mechanisms they use, and the food security of local corn farming families in Madura.

Lewin's (1951) theory which emphasizes that behavior is a function of personal and environmental characteristics is the second basis for this research. Individual characteristics in this study are represented by variables of Socioeconomic status and farmer motivation, and environmental characteristics are represented by economic environmental variables and value-added of local Madurese corn.

According to Eisenfuhr (in Lunenburg, 2010), decision-making is the process of making choices from a number of alternatives to achieve the desired results. In more detail, Fahmi, (2018) defines the decision-making process as involving exploring problems starting from the background of the problem, identifying the problem to forming conclusions or recommendations. According to Mardikanto & Soebiato, (2013), generally, the decision-maker is the person who has the greatest influence in a group. In the case of farming families, the head of the family is the individual who makes the largest economic contribution to the family Galbraith (Mardikanto & Soebiato, 2013).

Mangesti (2021:43) explains that farmers' decision-making in choosing varieties is influenced by economic factors, environmental factors, and individual factors. It cannot be denied that a person's Socioeconomic status can have an influence on them in social life, work, and even education; and the higher a person's position, the easier it is to obtain the necessary and desired facilities. Socioeconomic status according to Mayer (Soekanto, 2007:207) means the position of an individual and family based on economic elements. Apart from being determined by material possessions, a person's Socioeconomic status can be based on several elements of human interests in his life, status in social life, namely employment status, status in the kinship system, position status, and religious status. By having status, a person can interact well with other individuals (both of the same status and different status), in fact in many daily interactions a person does not know someone individually, but only knows that individual's status.

Hypothesis 1: Farmers' Socioeconomic Status influences farmers' decisions to choose local Madurese corn.

According to Jauch & Glueck (1999), the internal environment is a process where strategic planning examines internal factors to determine where individuals or farmers have significant strengths and weaknesses so that they can manage opportunities effectively and face threats that exist in the environment. Meanwhile, according to Pearce et al. (2000), internal environmental analysis is the understanding of matching internal strengths and weaknesses with external opportunities and threats.

Hypothesis 2: The economic environment influences farmers' decisions to choose local Madurese corn

According to Schiffman & Kanuk in Fauziah, (2012), one of the factors that influences consumer decisions in consuming a product is the attributes attached to the product. Madurese people like food that has a sweet taste and a soft and chewy texture. added value to local Madurese corn cultivation, so that corn farming is profitable (Sunanta, 2000). Apart from the relatively stable price of local corn - compared to rice plants, it is also easier to maintain and more resistant to risks and attacks by pests and diseases.

Hypothesis 3: Value Added Cultivation influences farmers' decisions to choose local Madurese corn

According to Hernanto (2013), farming profits are important for motivation for carrying out farming. Gray and Frederic (in Winardi, 2004), motivation is the result of processes that are internal or external to an individual, which give rise to an enthusiastic attitude and persistence in following the direction of certain actions. Motivation is a process or factor that causes someone to act in a certain way.

Hypothesis 4: Farmer motivation influences farmers' decisions to choose local Madurese corn

The concept of food security in Indonesia is contained in Law Number 18 of 2012 which defines food security as a condition of fulfilling food for the country and individuals, which is reflected in the availability of sufficient food, both in quantity and quality, safe, diverse, nutritious, equitable and affordable as well as does not conflict with religion, beliefs and community culture, to be able to live a healthy, active and productive life sustainably. Since the early 1980s, the global discourse on food security has been dominated by the right to food, risk, and vulnerability. Food security is a new policy concept that emerged in 1974 during the World Food Conference. The definition of food security changes in each context, time, and place, there are more than 200 definitions of food security (Maxwell & Slater, 2003) and there are at least 450 indicators of food security (Hoddinott, 1999). Chung et al. in Aminah (2015: 255) suggest three main pillars of food security, namely availability, access, and utilization of food.

Hypothesis 5: The farmer's decision to choose local Madurese corn influences the fulfillment of family food security

In the view of Haber and Runyon (1984), coping is all forms of behavior and thoughts (negative or positive) that can reduce conditions that burden the individual so as not to cause stress. Lazarus & Folkman (1984) said that the stress experienced by a person will have unfavorable effects both physiologically and psychologically. Individuals will not allow these negative effects to continue to occur, they will take action to overcome them. The actions taken by individuals are called coping strategies. According to Stuart & Sundeen (1991), there are two types of coping mechanisms used by individuals, namely problem-focused form of coping mechanism/direct action and emotion-focused form of coping/palliative form. Which type of coping will be used and what impact it will have, really depends on the type of stress or problem being faced (Evans & Kim, 2013). In situations that can still change constructively (such as experiencing hunger due to a disaster) the strategy used is problem-focused, and in situations that cannot be changed - such as the death of a partner, the coping strategy used is emotion-focused.

Hypothesis 6: The farmer's decision to choose local Madurese corn influences the fulfillment of family food security through the Coping Mechanism.

3. RESEARCH METHODS

This study aims to investigate maize production in specific districts in Madura (Sampang, Bangkalan, Pamekasan, and Sumenep). The selection of these specific regions was deliberate, as they have been identified for their substantial impact on the production of maize in the region, thereby demonstrating promising prospects for agricultural development in East Java.

The study utilizes a quantitative methodology, employing subjective data assessed using a Likert scale. The research follows a methodical and rigorous scientific approach. The study focuses on empirical and quantifiable evidence, investigating cause-and-effect connections between variables through numerical data and statistical analysis.

The study population included 228,496 maize farmers residing in the specified regions, while the sample size of 400 respondents was chosen using the Slovin algorithm. The data analysis utilizes the SEM-PLS approach, a viable alternative to the Structural Equation Model (SEM). SEM-PLS is renowned for its substantial prediction accuracy and ability to validate hypotheses and incorporate reflective or formative latent variables. PLS demonstrates enhanced precision as a forecasting technique in this situation.

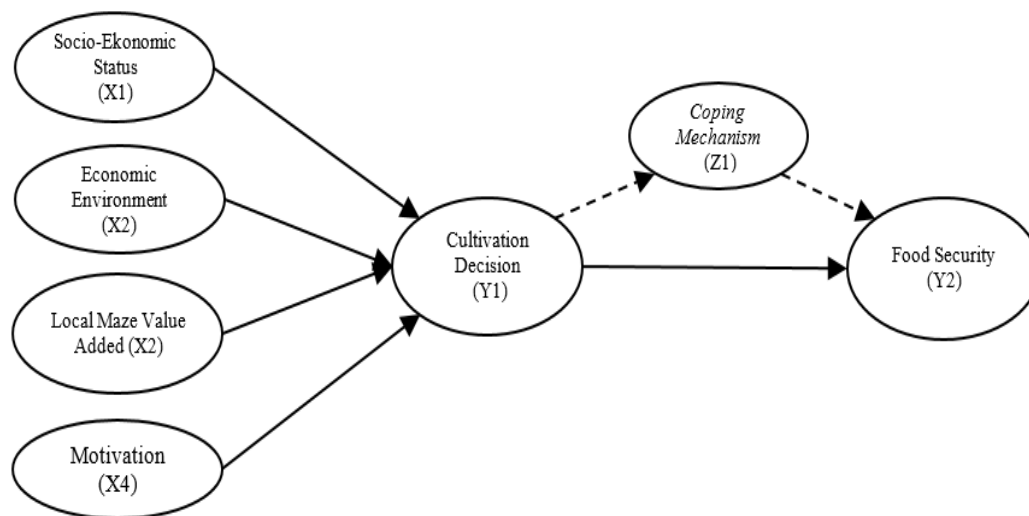


Figure 1: Conceptual framework

4. RESULTS

4.1. Respondents Characteristics

Table 1 provides information that the percentage of male respondents is much greater than females because farmers in Madura Regency are dominated by men. The more active women are usually single and widowed. Meanwhile, farmers aged 36-45 years dominate, meaning that there are many farmers of productive age. This indicates that farmers in dry land crop farming have the potential to manage their farming business with optimal work productivity.

Table 1: Respondent characteristics

Characteristics	Item code	Sample Size (N)	Frequency
Sex	Male	400	278
	Female	400	59
Age	≥ 56	400	98
	46-55	400	87
	36-45	400	105
	25-35	400	24
	< 25	400	23
Latest Education	Undergraduate	400	0
	Senior High school	400	5
	Junior High school	400	16
	Primary School	400	152
	Uneducated	400	164
Farming Experience (years)	≥ 31	400	114
	21-30	400	56
	11-20	400	84
	5 -10	400	66
	< 5	400	17

However, when compared with the combined number of respondents over 45 years old, the number of respondents of productive age is only two-thirds, meaning there is a decrease in people's desire to work as farmers. It was then found that the educational background of the respondents was still low, dominated by those who had not attended school - or at least had attended primary school. It is a common belief among the people that the term "ango' langsong alakoh tembeng gik continue agi a sakolah" which means it is better to go straight to work rather than continuing with school. The Madurese people's beliefs about education encourage them to choose to go straight to work rather than continue to school. Finally, the majority of respondents have worked as corn farmers for quite a long time, namely more than 30 years (average 35 years).

4.2. Descriptive Statistics

Table 2: Descriptive Statistics

Variables	Indicator code	Sample Size (N)	Mean	Total Mean
Socioeconomic Status	X1-1	400	3.87	3.93
	X1-2	400	3.90	
	X1-3	400	4.07	
	X1-4	400	3.90	
	X1-5	400	3.99	
	X1-6	400	3.87	
Economic Environment	X2-1	400	3.42	3.44
	X2-2	400	3.44	
	X2-3	400	3.47	
Value Added	X3-1	400	3.95	3.95
	X3-2	400	4.01	
	X3-3	400	3.89	

Variables	Indicator code	Sample Size (N)	Mean	Total Mean
	X3-4	400	3.93	
Motivation	X4-1	400	3.25	3.69
	X4-2	400	3.19	
	X4-3	400	4.03	
	X4-4	400	4.02	
	X4-5	400	3.96	
Cultivation Decission	Y1-1	400	3.90	3.79
	Y1-2	400	3.70	
	Y1-3	400	3.76	
Food Security	Y2-1	400	4.18	4.11
	Y2-2	400	3.99	
	Y2-3	400	4.16	
Coping Mchanism	Z1-3	400	3.80	3.78
	Z1-2	400	3.69	
	Z1-3	400	3.86	

Based on **Table 2**, the experience indicator (X1-3) from the Socio-Economic Status variable is dominantly perceived as good, meaning that the longer experience in farming will have a good effect on the socio-economic status of a farmer. Farming communities in Indonesia, who generally have low education, tend to respect others who have higher education. In the case of farming communities that have equal levels of education, farmers who have farming experience can be put on a par with people who have more knowledge. On Economic Environment variables, the market guarantee indicator is perceived to be the highest. Assurance that the harvest will be purchased at a competitive price and payment system.

Local corn attributes (taste and texture) are the highest perceived indicators in the added value variable of cultivation. This shows that the attributes of Madurese corn are a priority in choosing to consume local varieties of corn compared to other varieties. The main attributes considered by the Madurese people in consuming local varieties of corn are the sweet taste and texture of the corn which is thick and not hard, compared to hybrid corn.

Indicators of good social relations between the government, extension workers, farmer groups, and local corn farmers have the highest frequency of respondents' answers in the Farmer Motivation variable. This shows that the motivation of corn farmers in Madura is maintained through the interaction that exists between agricultural instructors - in the form of extension activities, meetings, agricultural training; and with government attention through direct assistance programs facilitated by farmer groups.

Meanwhile, in the Cultivation Decission variable, the indicator of confidence in the decision to plant local corn to be able to meet the family's food needs has the highest frequency of respondents' answers. Respondents' beliefs are based on knowledge - not emotions. From this belief, a firm attitude arises in making decisions about which corn varieties to plant.

The Food Security variable is best appreciated in the indicator of the availability of food savings as a reserve to meet the family's food needs. Every farming household has a food barn as a reserve for the farming household's food supply. Apart from that, every village has a village

barn which has a social function, where management is carried out jointly and not only as a food reserve for the community which is always available for distribution and consumption whenever needed. The Coping Mechanism variable with the indicator of reacting by seeking support from outside parties to meet the family's food needs has the highest frequency of respondents' answers. This shows that farming households that have a low level of food security will look for solutions for food availability from outside parties.

4.3. SEM-PLS Analysis

4.3.1. Path Analysis

Figure 1 shows the path analysis performed in SmartPLS indicating that all indicators are valid to represent their variables. It can be seen from the loading factors value that every indicator is over 0.7.

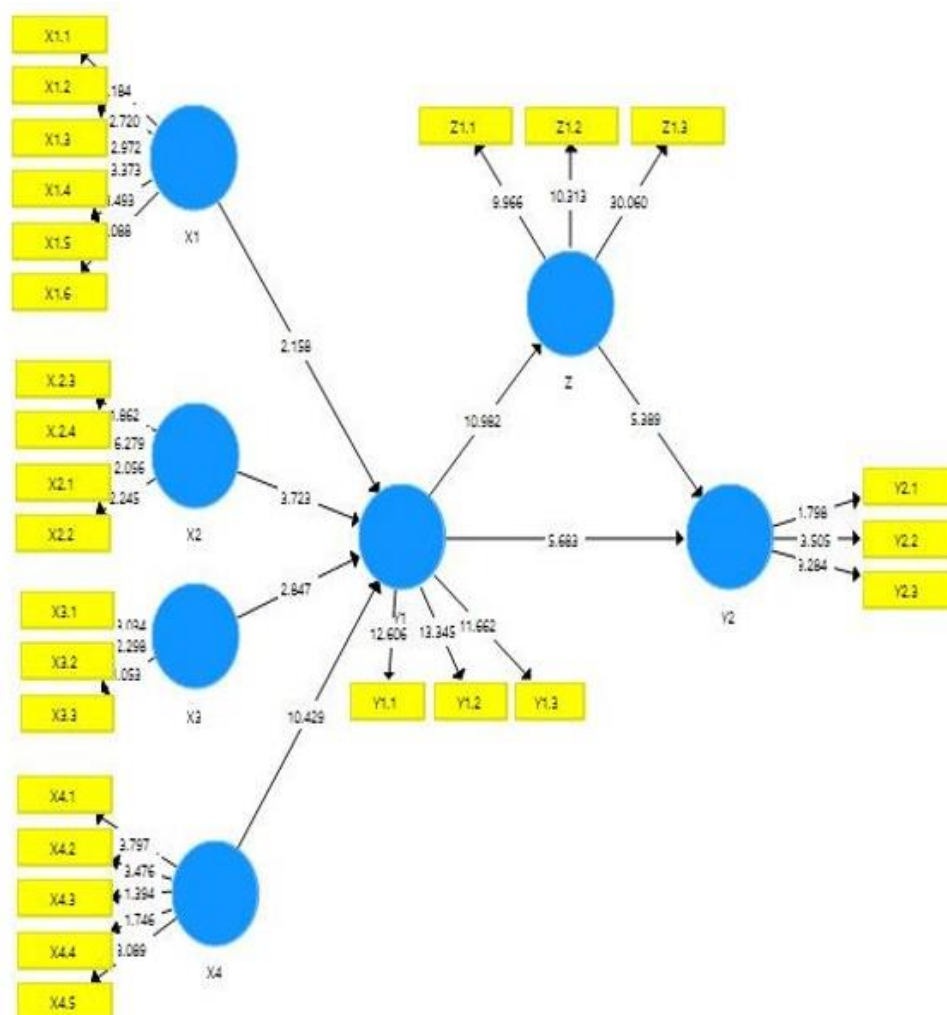


Figure 1: Path Analysis Result using SmartPLS

4.3.2. Hypotheses Testing

Six hypotheses were tested in this study, with five direct hypotheses and one mediating hypothesis. Smart-PLS 3.28 bootstrapping method was employed to test these hypotheses. A one-tailed test with a confidence level of 0.05 was used to generate these hypotheses. To be considered statistically significant, the p-value must be less than 0.05 (Hair et al., 2019).

Table 3: Result of Direct Effect Hypotheses Testing

Hypotheses	Path	Original Sample (OS)	Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Decision
H1	X1 -> Y1	0,164	0,156	0,076	2,158	0,031	Supported
H2	X2 -> Y1	0,249	0,297	0,079	2.847	0,007	Supported
H3	X3 -> Y1	0,267	0,259	0,072	3,723	0,000	Supported
H4	X4 -> Y1	0,421	0,420	0,040	10,429	0,000	Supported
H5	Y1 -> Y2	0,279	0,287	0,049	5,683	0,000	Supported

Table 3 presents the results of the directional hypotheses. Hypothesis 1, which predicts that there is an impact of farmers' Socioeconomic status on local maize cultivation decisions is accepted as the relationship between the two variables is positively significant (O = +0.164 and p-value = 0.031). Hypothesis 2, which predicts that there is an impact of the economic environment on local maize cultivation decisions is also accepted as the relationship between the two variables is positively significant (O = +0.249 and p-value = 0.007). Hypothesis 3, which predicts that there is an impact of local maize value added on local maize cultivation decisions is also accepted as the relationship between the two variables is positively significant (O = +0.267 and p-value = 0.000). Hypothesis 4, which predicts that there is an impact of farmer's motivation on local maize cultivation decisions is also accepted as the relationship between the two variables is positively significant (O = +0.421 and p-value = 0.000). And the fifth hypothesis, which predicts that there is an impact of local maize cultivation decisions on farmer's food security is also accepted as the relationship between the two variables is positively significant (O = +0.279 and p-value = 0.000).

Table 4: Result of Mediating Effect Hypotheses Testing

Hypotheses	Path	Original Sample (OS)	Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P value	Decision
H6	Y1 -> Z -> Y2	0,056	0,055	0,024	2,359	0.019	Supported

As for the mediating hypothesis (H6), which predicts that coping mechanism mediates the impact of local maize cultivation decisions on farmers' food security is also accepted as the relationship between the two variables is positively significant (O = +0.056 and p-value = 0.019). Thus, H6 is accepted in this study.

5. DISCUSSION

There is a significant positive effect on the Farmers' Socioeconomic Status and Local Maize Varieties Decisions

One of the determinants influencing the food and economic security of the Madurese population is the local maize cultivation choice. The Madurese population often sells approximately 20% to 30% of their indigenous maize variety, which exhibits a considerable shelf life of up to one year. The remaining portion is strategically preserved for subsequent commercial transactions, primarily when substantial financial resources are required. This behavior serves as a coping mechanism that consistently leads to an annual grain price increase within the local market. The decision to engage in local maize cultivation is influenced by various factors, including the motivation of farmers, their Socioeconomic status (including educational, financial, and social background), the prevailing economic conditions, and the perceived value contributed by utilizing local maize varieties as practiced by the Madurese population.

The Economic Environment and Local Maize Varieties Decisions have a significant positive effect

These findings demonstrate that the economic environment, which consists of farming credit, input suppliers, and market guarantees, leads farmers to believe that growing indigenous varieties of maize is more economically advantageous, in addition to being simple to grow, appropriate for Madura's natural environment, and meeting their needs.

The economic context, particularly the influence of monetary resources, can influence farmers directly or indirectly, hence shaping their decision-making processes regarding indigenous maize planting. The economic environment encompasses various factors, including production facilities, market guarantees, cost guarantees, and access to financing for farmers. Among these factors, the market certainty component holds the most significant influence on the overall economic environment.

These results corroborate those of Wongkar et al. (2016), who found that economic factors like cosmopolitan level, formal education, income, and land area significantly affect the adoption of innovations in rice cultivation, while non-formal education and age do not. Consistent with Ratulangi et al. (2019) findings that economic factors, including family size, land area, facilities and infrastructure, income, spending, and pricing, affect farmers' decisions about the cultivation of sweet corn and local corn.

The Local Maize Added Value and Local Maize Varieties Decisions have a significant positive effect

The justification for a community's decision to select a specific crop as their primary food source is intricately linked to their inquisitiveness about the inherent attributes of the chosen commodity. The critical evaluation criteria the Madurese community utilizes in their consumption of maize encompass flavor, texture, dimensions, and cost. The Madurese population exhibits a preference for dietary dishes that include a noticeable sweetness as well as a smooth and tender consistency.

The flavor profile of indigenous maize types is notably sweeter than hybrid maize, and their processing yields a relatively low quantity of powder. Despite farmers' widespread development of

hybrid maize, there is a preference among individuals for locally sourced maize to fulfill their consumption requirements. The coexistence of hybrid maize varieties cannot alter the significance of indigenous maize varieties.

It demonstrates that the choice to cultivate indigenous maize is predicated upon the augmented worth attributed to indigenous maize strains. These results corroborate the conclusions reported by Mangesti et al. (2021) that value-added crop variety affects cultivation decisions.

Farmers' Motivation and Local Maize Varieties Decisions have a significant positive effect

The findings of this study suggest a positive correlation between the motivation levels of maize farmers and their inclination to plant indigenous varieties of maize. This link indicates a positive correlation between the level of motivation among farmers and their inclination to plant indigenous varieties of maize. This result aligns with Maslow's theory, which posits that human motivation is inherently intertwined with the external world, encompassing situational factors and interpersonal dynamics. To comprehensively address this phenomenon, any motivational theory must incorporate the influential impact of culture within its contextual framework.

The Local Maize Varieties Decisions and Family Food Security have a significant positive effect

This result demonstrates that the indigenous maize cultivation decision is fundamental in establishing food security for Madurese families. The most important source of sustenance for Madurese people is the long-lasting nature of indigenous maize varieties, which can endure for up to one year. Typically, a mere 20%–30% of the overall harvest is sold, while the remaining portion is retained for future sale in the local market, serving as a financial resource when needed.

Maize mixed rice is a traditional culinary delicacy among the Madurese community, characterized by the utilization of indigenous maize types cultivated that exhibit petite sizes, a sweet flavor, and a tender consistency. In contrast, it has been observed that hybrid maize cultivars exhibiting more significant physical dimensions possess enhanced durability and are better suited for utilization as animal feed. These results corroborate Tefera and Tefera (2014), who concluded that crop decisions affect food security for 90% of food-secured families and 91.3% of non-food-secured families.

The Coping Mechanism mediates a positive correlation between Local Maize Cultivation Decisions and Family Food Security

The findings indicated that the farmer's decision to cultivate local maize was pivotal in bolstering the household's food security. Indeed, the productivity level of indigenous corn could be better when compared to hybrid corn. Farmer households tend to employ a more significant number of coping strategies aimed at reducing expenses rather than augmenting revenue, resulting in the experience of economic strain among farmers. Hence, farmers employ a strategic approach to augment revenue and minimize expenses. Consequently, the economic plan implemented involves acquiring debt, selling commodities, and utilizing accumulated savings. The findings align with the Theory of Reasoned Action, explicitly highlighting that farmers' choice to cultivate the local Madura maize variety is driven by the pursuit of food security while also considering the associated risks. This decision-making process is influenced by a conceptual framework reflecting individuals' behavioral intentions and subsequent implementation. The behavior under consideration is contingent upon the prevailing

attitude that influences it. The elements that propel or impede this behavior, which afterward manifests as risks in each decision, indicate the challenges farmers encounter when opting to cultivate indigenous maize varieties. This risk is mitigated by various techniques, including utilizing coping strategies and procedures.

6. CONCLUSION

One of the determinants influencing the food and economic security of the Madurese population is the indigenous maize cultivation choice. The Madurese population typically markets approximately 20%–30% of their indigenous maize cultivar, which exhibits a capacity for up to one year of preservation. The remaining portion is preserved for further sales, primarily during periods necessitating substantial financial resources. This behavior serves as a coping mechanism, resulting in an annual escalation of the price of maize in the local market. The decision to engage in local maize cultivation is influenced by various factors, including the motivation of farmers, their Socioeconomic status (educational, financial, and social background), the prevailing economic conditions, and the perceived value contributed by utilizing local maize varieties as practiced by the Madurese population.

Bibliography

- 1) Mediating Effect Results
- 2) Hypotheses Path Original Sample
- 3) (OS) Mean
- 4) (M) Standard Deviation
- 5) (STDEV) T Statistics (O/STDEV) P value Decision
- 6) H6 Y1 -> Z -> Y2 0,056 0,055 0,024 2,359 0.019 Supported
- 7) Note: one-tailed test, > t-value = p-value: > 2.58(***p<0.001), >1.96(**p<0.05), >1.65(*p<0.10)
- 8) As for the mediating hypothesis (H6), which predicts that coping mechanism mediates the impact of local maize cultivation decisions on farmers' food security is also accepted as the relationship between the two variables is positively significant (O = +0.056 and p-value = 0.019). Thus, H6 is accepted in this study.
- 9) 5.Discussion
- 10) There is a significant positive effect on the Farmers' Socioeconomic Status and Local Maize Varieties Decisions.
- 11) One of the determinants influencing the food and economic security of the Madurese population is the local maize cultivation choice. The Madurese population often sells approximately 20% to 30% of their indigenous maize variety, which exhibits a considerable shelf life of up to one year. The remaining portion is strategically preserved for subsequent commercial transactions, primarily when substantial financial resources are required. This behavior serves as a coping mechanism that consistently leads to an annual grain price increase within the local market. The decision to engage in local maize cultivation is influenced by various factors, including the motivation of farmers, their Socioeconomic status (including educational, financial, and social background), the prevailing economic conditions, and the perceived value contributed by utilizing local maize varieties as practiced by the Madurese population.
- 12) The Economic Environment and Local Maize Varieties Decisions have a significant positive effect.

- 13) These findings demonstrate that the economic environment, which consists of farming credit, input suppliers, and market guarantees, leads farmers to believe that growing indigenous varieties of maize is more economically advantageous, in addition to being simple to grow, appropriate for Madura's natural environment, and meeting their needs.
- 14) The economic context, particularly the influence of monetary resources, can influence farmers directly or indirectly, hence shaping their decision-making processes regarding indigenous maize planting. The economic environment encompasses various factors, including production facilities, market guarantees, cost guarantees, and access to financing for farmers. Among these factors, the market certainty component holds the most significant influence on the overall economic environment.
- 15) These results corroborate those of Wongkar et al. (2016), who found that economic factors like cosmopolitan level, formal education, income, and land area significantly affect the adoption of innovations in rice cultivation, while non-formal education and age do not. Consistent with Ratulangi et al. (2019) findings that economic factors, including family size, land area, facilities and infrastructure, income, spending, and pricing, affect farmers' decisions about the cultivation of sweet corn and local corn.
- 16) The Local Maize Added Value and Local Maize Varieties Decisions have a significant positive effect.
- 17) The justification for a community's decision to select a specific crop as their primary food source is intricately linked to their inquisitiveness about the inherent attributes of the chosen commodity. The critical evaluation criteria the Madurese community utilizes in their consumption of maize encompass flavor, texture, dimensions, and cost. The Madurese population exhibits a preference for dietary dishes that include a noticeable sweetness as well as a smooth and tender consistency. The flavor profile of indigenous maize types is notably sweeter than hybrid maize, and their processing yields a relatively low quantity of powder. Despite farmers' widespread development of hybrid maize, there is a preference among individuals for locally sourced maize to fulfill their consumption requirements. The coexistence of hybrid maize varieties cannot alter the significance of indigenous maize varieties. It demonstrates that the choice to cultivate indigenous maize is predicated upon the augmented worth attributed to indigenous maize strains. These results corroborate the conclusions reported by Mangesti et al. (2021) that value-added crop variety affects cultivation decisions.
- 18) Farmers' Motivation and Local Maize Varieties Decisions have a significant positive effect.
- 19) The findings of this study suggest a positive correlation between the motivation levels of maize farmers and their inclination to plant indigenous varieties of maize. This link indicates a positive correlation between the level of motivation among farmers and their inclination to plant indigenous varieties of maize. This result aligns with Maslow's theory, which posits that human motivation is inherently intertwined with the external world, encompassing situational factors and interpersonal dynamics. To comprehensively address this phenomenon, any motivational theory must incorporate the influential impact of culture within its contextual framework.
- 20) The Local Maize Varieties Decisions and Family Food Security have a significant positive effect.
- 21) This result demonstrates that the indigenous maize cultivation decision is fundamental in establishing food security for Madurese families. The most important source of sustenance for Madurese people is the long-lasting nature of indigenous maize varieties, which can endure for up to one year. Typically, a mere 20%–30% of the overall harvest is sold, while the remaining portion is retained for future sale in the local market, serving as a financial resource when needed. Maize mixed rice is a traditional culinary delicacy among the Madurese community, characterized by the utilization of indigenous maize types cultivated that exhibit petite sizes, a sweet flavor, and a tender consistency. In contrast, it has been observed that hybrid maize cultivars exhibiting more significant physical dimensions possess enhanced durability and are better suited for utilization as animal feed. These results corroborate Tefera and Tefera (2014), who concluded that crop decisions affect food security for 90% of food-secured families and 91.3% of non-food-secured families.

- 22) The Coping Mechanism mediates a positive correlation between Local Maize Cultivation Decisions and Family Food Security.
- 23) The findings indicated that the farmer's decision to cultivate local maize was pivotal in bolstering the household's food security. Indeed, the productivity level of indigenous corn could be better when compared to hybrid corn. Farmer households tend to employ a more significant number of coping strategies aimed at reducing expenses rather than augmenting revenue, resulting in the experience of economic strain among farmers. Hence, farmers employ a strategic approach to augment revenue and minimize expenses. Consequently, the economic plan implemented involves acquiring debt, selling commodities, and utilizing accumulated savings.
- 24) The findings align with the Theory of Reasoned Action, explicitly highlighting that farmers' choice to cultivate the local Madura maize variety is driven by the pursuit of food security while also considering the associated risks. This decision-making process is influenced by a conceptual framework reflecting individuals' behavioral intentions and subsequent implementation. The behavior under consideration is contingent upon the prevailing attitude that influences it. The elements that propel or impede this behavior, which afterward manifests as risks in each decision, indicate the challenges farmers encounter when opting to cultivate indigenous maize varieties. This risk is mitigated by various techniques, including utilizing coping strategies and procedures.
- 25) 6.Conclusion and Implications
- 26) One of the determinants influencing the food and economic security of the Madurese population is the indigenous maize cultivation choice. The Madurese population typically markets approximately 20%–30% of their indigenous maize cultivar, which exhibits a capacity for up to one year of preservation. The remaining portion is preserved for further sales, primarily during periods necessitating substantial financial resources. This behavior serves as a coping mechanism, resulting in an annual escalation of the price of maize in the local market. The decision to engage in local maize cultivation is influenced by various factors, including the motivation of farmers, their Socioeconomic status (educational, financial, and social background), the prevailing economic conditions, and the perceived value contributed by utilizing local maize varieties as practiced by the Madurese population.

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