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Innovation Absorption And Empowerment Adoption Of Competency Formulation And Productive Performance Of Coffee Farmers In Bener Meriah Regency

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Abstract

Gayo Arabica coffee farmers are a precious human resource asset, so they need to formulate competence and perform productively for their future life. This study aims to analyze the relationship between innovation absorption and empowerment adoption to influence the formulation of competence and productive performance of farmers so that they can produce specialty and superior flavored coffee. The object of this research is the resources of gayo arabica coffee farmers in Bener Meriah Regency, with a purposive sampling approach for 200 respondents. The research model tested the hypothesis using structural equation modeling analysis techniques. The results of the study explain that the low intensity of farmers in absorbing innovation is only 40.8% (sig<0.05), and adopting empowerment is only 34.9% (sig<0.05), causing farmers to have not succeeded in formulating their competencies. The low intensity of farmers in absorbing innovation is only 21.7% (sig<0.05), and adopting empowerment is only 26.7% (sig<0.05), so farmers have not been able to increase their productive performance at every harvest time. Real farmers make their competency formulations as partial mediating variables in absorbing innovation and adopting empowerment to achieve productive performance that increases yearly. It recommended designing a central concept of innovation strategy for developing gayo arabica coffee farmers in an integrated and sustainable manner.

Keywords: innovation absorption, empowerment adoption, competency formulation, productive performance

I. Background

Gayo Arabica coffee farmers are essential and valuable human resource assets, so a competency strategy to needed to continuously improve their quality (Bernardin & Russel, 2010; Dessler et al., 2013; Margherita, 2021), in the development of coffee commodities, sustainable development (Onyas et al., 2018; Nguyen & Drakou, 2021), and with different competencies (Herliana et al., 2019) and empowerment policies (Nguyen & Drakou, 2021), can absorb innovating technology (Verburg et al., 2019) and improve the quality of its performance to produce specialty and superior flavored coffee.

Gayo Arabica coffee is a variety of one of Aceh's leading commodities originating from the Gayo highlands of Aceh, Indonesia (Tari et al., 2022). The coffee is Fair Trade Certified by the International FairTrade Organization, which is the best coffee. Gayo Arabica coffee has also received an IG (Geographical Indication) certificate from the Indonesian Ministry of Law and Human Rights, including the Gayo Arabica

Coffee Collective Brand Certificate issued by the Office for Harmonization in the Internal Market (OHIM) from the European Union. At the Indonesian Coffee Special Auction Event in Bali, again Gayo Arabica coffee received the highest ranking during the cupping score. These certifications and achievements have further strengthened the position of Gayo Arabica coffee as the world's best organic coffee (Willian et al., 2021). According to SCAA (Specialty Coffee Association of America), Gayo Arabica coffee to classified as a specialty coffee. The distinctive aroma with complex flavors and strong body makes Gayo Arabica coffee a high-quality coffee in great demand by the world coffee market.

The most important destination countries for coffee exports from the Gayo Land Highlands are the United States and the European Union (Halkam, 2021). During the last 13 years (2008-2020), export volume Indonesia has increased with an average growth rate of 4.5 percent per year (Maulani & Wahyuningsih, 2021). Indonesian coffee production has begun to increase its exports (Riris Loisa, 2019), which can be taken to improve the competitiveness of Indonesian coffee through quality based on specific coffee characteristics (Jamil, 2019).

The coffee plantations that farmers have developed thrive in the Gayo Highlands, located at an altitude of 1200 meters above sea level, with the largest coffee plantation in Indonesia, around 81,000 hectares. Each of the 42,000 hectares of coffee to located in Bener Meriah Regency, and the remaining 39,000 hectares of coffee is located in Central Aceh Regency (Central Bureau of Statistics of Aceh Province, 2022). This Gayo resident has long worked as a coffee farmer with the dominance of Arabica varieties. The Arabica coffee commodity produced from Gayo Land is the largest in Asia.

The future of gayo arabica coffee farmers faces various opportunities, and at the same time, encounter various problems in the coffee processing process (Anhar et al., 2021; Teniro et al., 2018), especially the differences in the competence of farmers managing arabica coffee commodities (Fadhil et al., 2017), and differences in the adoption of coffee farmer empowerment (Fadhil et al., 2018; Mariyudi et al., 2019) to improve product performance in creating a specialty flavored gayo arabica coffee commodity. Gayo arabica coffee needs to be developed for continuous excellence (Mawardi Surip, 2017) to meet the need for world-quality coffee and increase the country's foreign exchange by improving the quality of the main actors in coffee management, namely the quality of resources and sustainable coffee farmers, especially in absorbing innovation, adopt empowerment through intensification of farmer training (Sarirahayu & Aprianingsih, 2018), to determine the formulation of farmer competencies in increasing farmers' productive performance.

Innovation is a central issue in the management of the coffee industry (Zylbersztajn et al., 2019), especially in absorbing innovation necessary to develop crop, harvest, post-harvest, and market processes (Fadhil et al., 2017) that efforts to develop the competence of gayo coffee farmers in finding quality and flavorful coffee commodities still need to be solved, especially the competence to process flavored coffee and innovative attitudes. What is often a problem in processing gayo arabica coffee, especially, is the taste defect (fermented), with the main types of flavor defects being fermented or stinker, moldy and earthy. The taste defects are mainly due to harvest and post-harvest handling that is not following the recommended technical standards in absorbing innovations.

With limited studies on absorbing coffee farmers' resource innovations, procedures for managing coffee have not been found according to the recommendations for innovation and adoption of empowerment because some research results so far have been more related to aspects of cultivation techniques (Zainura et al., 2016; Damayanti & Setiadi, 2019; Fadhil et al., 2017). To research findings, the development of

innovations in Gayo coffee powder flavored variants must follow consumer tastes. To reduce the intensity of competition among coffee-producing regions, it is necessary to segment the coffee powder market based on the destination country and target customers. It is necessary to standardize the certification process for the Arabica coffee industry system. They are based on the destination country's tastes (Bagio et al., 2021).

In terms of transformation, the adoption of coffee farmers' empowerment has also not shown optimal results, especially sustainability in determining the empowerment of coffee farmers' resources with productive performance (Zarqan, 2017; Verburg et al., 2019; Akenroye et al., 2021). Other research results show that despite the empowerment carried out by the Bener Meriah Regency Government for coffee farmers, there are still several obstacles for both the government and coffee farmers, especially in increasing creativity, adopting empowerment and training to improve the formulation of farmer competencies (Kasmita et al., 2021).

On the one hand, the Gayo coffee commodity is urgently needed for its development to meet the needs of coffee for world enthusiasts, welfare, and increasing opportunities for global market segments (Warnaen et al., 2020). However, on the other hand, and if it is related to the development of human resources for coffee farmers today, they still have difficulty in finding new innovative methods for sustainable and high-performing coffee farmers to manage coffee commodities to produce coffee that is flavorful and weak in developing the competence of farmers based on their empowerment characteristics (Berraies et al., 2014; Kjellberg et al., 2015).

For the sustainability of the quality of gayo arabica coffee, a process of increasing the absorption of innovation is possible, starting from cultivating, picking, sorting, drying, roasting, and packing, to develop the production quality of gayo arabica coffee, which is increasingly favored by consumers forever, by developing innovative powder flavor variants Gayo arabica coffee according to consumer tastes. Of course, the absorption of innovation for each stage of the coffee processing process will vary depending on each working method (Fattarani et al., 2017).

II. Theoretical Background

Human resources are essential in a business venture and organization because they can provide the ability, knowledge, ideas, innovation, energy, and commitment to create added value to achieve current and sustainable visions and targets (Dessler, 2016; Mathis; Robert L, 2008; Mondy, 2010), to improve management, accelerate organizational growth, and impact the needs and welfare of the population.

Human resources who are actively involved in coffee management are gayo arabica coffee farmers, who can absorb innovation and adopt empowerment advantages to process coffee to be more flavorful and superior (Fadhil et al., 2017; Anhar et al., 2021) so that they can contribute to the improvement of their product performance and welfare.

Innovation Absorption

Innovation is a new idea that does not yet exist or already exists but is not yet known by its adopters. Innovation can also be in the form of new methods to improve the quality of an existing program or item (Drucker, 2014; Sledzik, K., 2013). According to Schumpeter, innovation has a meaning, an effort to create and implement something into a combination so that, with innovation, one can add value to products, services, work processes, and policies not only for institutions, stakeholders but also for society (Croitoru, 2017).

The types of innovation are transformational innovation: creating radically new products and creating substantial value; substantial innovation: in the product is significantly new and creates significant value for customers; and incremental innovation: creating new products through improved

performance or the receipt of more excellent value (lower cost).

Meanwhile, some research innovations are divided into two types: innovation based on the object of change, which consists of product innovation, process innovation, market innovation, and organizational innovation, and innovation based on the level of change, namely complete novelty (radical) and continuous improvement significant. Process innovation helps reduce production costs and also to satisfy customers. Product innovation is one of the critical factors for organizational success and is an essential strategy for increasing market share and business performance (Hassan et al., 2013). Process innovation (Indraningsih, 2017) is improving existing production equipment and utilizing new tools or technology. Product innovation, according to (Haryanti & Nursusila, 2016; Antanegoro et al., 2017), is measured by design changes, technical innovation, and product development (Crawford & Anthony, 2010; Panggabean et al., 2021) measured by design changes, technical innovation, and product development. Thus the absorption of innovation is the fun of absorbing innovations for Gayo Arabica coffee farmers.

Empowerment Adoption

Empowerment is putting workers responsible for what they do to give autonomy, authority, and trust to each individual in an organization and encourage them to be creative to complete their tasks as well as possible (Kasmita et al., 2021). Empowerment is a process to make people more empowered or more capable of solving their problems by giving trust and authority to foster a sense of responsibility (Luthans, F, 2011).

Empowerment can encourage individuals to be more involved in decision-making in various organizational activities. The concept of empowerment emphasizes that individuals acquire sufficient skills, knowledge, and power to influence their lives and the lives of other people of concern. In essence, indicators are needed to measure the concept of empowerment. According to (Luthans, F, 2011), empowerment indicators are participation, innovation, access to information, and accountability. Meanwhile, according to (Hasibuan, 2014), empowerment indicators are loyalty, work performance, honesty, discipline, creativity, cooperation, leadership, personality, initiative, skills, and responsibility. In another study (Adams, 2003), there are four indicators of empowerment, namely: the attitude of trust, the level of use of work for others, giving freedom, and work influencing the lives of other people.Thus the adoption of empowerment is the trust and authority of Gayo Arabica coffee farmers to adopt their empowerment.

Competency Formulation

Competence is a characteristic that stands out for a person and becomes a way of behaving, thinking, and behaving in all situations (Spencer & Spencer, 2011), which underlies individuals to achieve superior performance, to do a job based on the skills and knowledge required by specific job functions. (Sienkiewicz, 2014; Eraut, 1998).

Every individual involved in work needs to have competency characteristics to ensure quality in the results of his work; according to research findings (Russo, 2016; Shermon, 2004), the characteristics in question include knowledge, skills, characteristics, traits, image (social role), individual views (self-image), and motives (motive). The results of other empirical research (Shet et al., 2019; Sitorus & Ghozy, 2014), the indicators used in empirical research are knowledge, skills, and attitudes. Thus, competency formulation is a way of thinking and behaving for Gayo Arabica coffee farmers based on specific skills and knowledge.

Productive Performance

Individual performance at work can be measured by using a specific formula. According to (Bernardin & Russel, 2010; Manzoor et al., 2011; Colquitt Jason et al., 2015), performance is recording the results obtained from certain job functions or activities over a certain period for the fulfillment of

individual and or organizational goals. According to (Wibowo, 2014), there are seven performance indicators: goals, standards, feedback, method, competence, motive, and opportunities. Meanwhile, according to Bernardin & Russel, there are six indicators to measure performance: quality, quantity, timeliness, effectiveness, supervision, and interpersonal. Thus, the productive performance of gayo arabica coffee farmers is achieved from all activities of the production process and management of coffee beans in the form of packing coffee powder in packages or sachets.

III. Conceptual Framework and Research Hypothesis

The essential resource that is the main asset in an organization and business activity is human capital, which provides energy, thought, innovation, and competence for business progress and improving performance (Robbins & Judge, 2013; Colquitt Jason et al., 2011), thereby contributing to carrying out work to achieve sustainable quality standards. Individual performance is significantly related to competence, empowerment, and innovation (Hero et al., 2017; Marjani & Alizadeh, 2014). The findings of other studies show that empowerment has a significant effect on innovation and individual performance (Uzunbacak, 2015; Berraies et al., 2014). Furthermore, the findings of other empirical research proposed by (Alkhodary, 2016; Lim & Ok, 2021; Bouncken et al., 2020) that differences in competence can affect the adoption of empowerment and absorption of innovation.

Improving coffee farmers' productive performance is influenced by innovation, empowerment, and competence (Suryana, 2021; Apsari et al., 2017; Fadhil et al., 2017). Several research findings on coffee were put forward by (Astuti et al., 2015; Putri A. et al., 2018; Mardiah et al., 2019) that to improve the productive performance of coffee farmers, changes in innovation skills and empowerment adoption are needed. Other research findings by (Zainura & Kusnadi, 2016; Mariyudi et al. 2019; Damayanti & Setiadi, 2019) show that the influence of competency formulation, adoption of empowerment, and absorption of innovation is related to the transformation of productive performance of gayo arabica coffee farmers.

The primary consideration of the priority of this research is to contribute ideas to the formulation of coffee farmers' competence and productive performance of coffee farmers, which is related to the elasticity of the relationship between the absorption power of coffee farmers' innovation and the adoption power of coffee farmers' empowerment (Verburg et al., 2019; Warnaen et al., 2020; Shet et al., 2019; Zainura & Kusnadi, 2016), to develop coffee farmers' resources for their welfare, by utilizing innovations and optimal empowerment strategies and transforming the productive performance of gayo coffee farmers to achieve productive efforts in managing coffee.

Changes in theory and practice in technological innovation for the rapid development of farmers' resources need to be balanced with the absorption power of coffee farmers' innovation and empowerment adoption strategies for efforts to transform competency formulations and efforts to improve the productive performance of coffee farmers, to produce transformative and effective coffee management strategies beneficial to their well-being.

Based on the theoretical review and the conceptual framework, the relationship between innovation absorption, empowerment adoption, competence formulation, and productive performance can be formulated in the form of a hypothesis as follows:

1. Innovation absorption (H1) and empowerment adoption (H2) have a significant and positive effect on the competence formulation of coffee farmers;

2. Innovation absorption (H3) and empowerment adoption (H4) have a significant

and positive effect on the productive performance of coffee farmers;

3. Competence formulation (H5) has a significant and positive effect on the productive performance of coffee farmers;

4. Competence formulation can mediate the influence of innovation absorption (H6) and empowerment absorption (H7) on the productive performance of farmers' coffee.

IV. Research Methodology

Due to the large population of coffee farmers and their homogeneity criteria, the number of samples in this study was 200 purposive sampling people in each sub-district in Bener Meriah Regency, by the opinion of Hair et al. (2010), and must also consider the number of existing indicators in models. They also interviewed upstream-downstream entrepreneurs and related figures/officials in collecting data.

The method chosen to analyze the data is a tiered structure model. The Structural Equation Modeling (SEM) analysis technique is operated through the Analysis of the Moment Structure program to test the hypothesis.

The model estimation technique used is Maximum Likelihood Estimation, and the feasibility indices for the model are C-Square Statistics, Probability, CMIN/DF, GFI, AGFI, TLI, CFI, and RMSEA (Ghozali, 2013). Several SEM assumptions must be met in the data collection and processing procedures (Ferdinand, 2006), namely the suitability test of the number of samples, measurement model validation test; data normality test; test of data outliers; multicollinearity, and singularity test.

To analyze the relationship between research variables and the extent of their influence on the performance of gayo arabica coffee farmers, it is necessary to build a structural equation that explains the relationship and relationship of variables, which is formulated to state the causal relationship between variables. The formulation developed is as follows:

$$CF = b1IA + b2EA + Z1$$

$$PP = b1IA + b2EA + b3CF + Z2$$

CF=Competency Formulation; IA=Innovation Absorption; EA=Empowerment Adoption; PP=Productive Performance; b1-b3=Estimated Coefficient (direct relationship between endogenous variables and endogenous variables), with two equations: Z1-Z2, e= error term (residual value).

Furthermore, based on the above equation, to determine the direct relationship between innovation absorption, empowerment adoption, competency formulation, and productive performance, it can be analyzed through the Structural Equation Modeling test through the Moment Structure Analysis program, which can be described in the form of a complete model as follows:

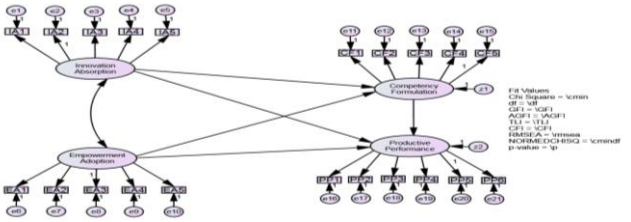


Figure 1: Full Structural Equation Modeling

In measuring each research variable, which states a causal relationship, the indicators of each research variable are used. Indicators of innovation absorption are process, product, market, organization, and novelty. The adoption of empowerment indicators is access to information, participation, accountability, initiative, and skills. Indicators of competency formulation of our knowledge, expertise, character, image, and motive. While the indicators of productive performance are product quality, the number of products, timeliness, effectiveness, opportunities, and independence.

V.Research Results and Discussion

SEM Calculation of Direct Relationship of Research Variables

To obtain the full model test of the Structural Equation Modeling Program

Analysis Moment Structure, a structural calculation analysis was carried out, which can be explained in Figure 2 and Table 1 as follows:

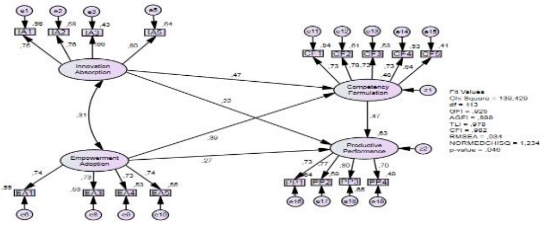


Figure 2: Full SEM Model Before Modification

Goodness of Fit Index	Cut-off Value	Analysis Results	Model Evaluation
χ^2 Chi-Square Statistics	Expected small	139,429	Good
Probability	>0,05	0,046	Marginal
CMIN/DF	<2.00	1,233	Good
GFI	>0.90	0.925	Good
AGFI	>0.90	0.899	Marginal
TLI	>0.95	0,978	Good
CFI	>0.95	0,982	Good
RMSEA	<0.08	0,034	Good
			Good

Table 1: Calculation Result of Full SEM Model Before Modification

Based on the above, it can be stated that the SEM model does not meet the perfection requirements because there are still two GFIs that are still marginal, namely probability and AGFI. Therefore, this model needs to be improved by making modifications, which means doing a re-calculation by looking for the relationship of several measuring indicators to recover the SEM model through covariance. The calculation results can be expressed in Figure 3 and Table 2 as follows:

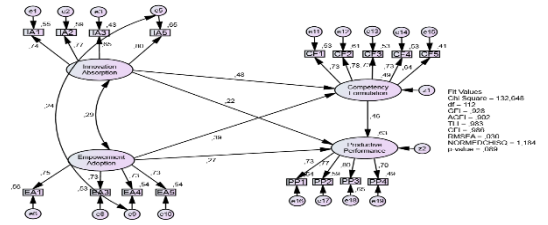


Figure 3: Full SEM Model After Modification

Goodness of Fit Index	Cut-off Value	Analysis Results	Model Evaluation
χ^2 Chi-Square Statistics	Expected small	132,648	Good
Probability	>0,05	0,089	Good
CMIN/DF	<2.00	1,184	Good
GFI	>0.90	0.928	Good
AGFI	>0.90	0.902	Good
TLI	>0.95	0,983	Good
CFI	>0.95	0,986	Good
RMSEA	<0.08	0,030	

Table 2: Calculation Result of Full SEM Model After Modification

Based on the picture of the full SEM model described above, it can be stated that the relationship between variables is perfect. The evaluation of the model is stated to be good. It shows that the full SEM model developed through AMOS calculations results in a comprehensive test of the relationship of variables with various indicators that can be stated perfectly.

To explain how big the relationship between exogenous variables (innovation absorption and empowerment adoption) on mediating variables (competence formulation) and endogenous variables (productive performance), an error level of sig < 0.05 (5%) was determined, in other words, the confidence range was 95 percent, as where the results of the analysis are shown in the following table:

Table 3: Calculation Result the Effect of Exogenous Variables on Endogenous Variables

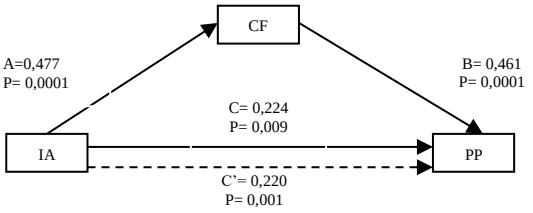
Variabel Endogen		Variabel Eksogen	Estimate	S.E.	C.R.	P
Competency_Formulation	<---	Empowerment_Adoption	0,349	0,076	4,589	0,0001
Competency_Formulation	<---	Innovation_Absorption	0,408	0,076	5,371	0,0001
Productive_Performance	<---	Empowerment_Adoption	0,267	0,083	3,236	0,001
Productive_Performance	<---	Innovation_Absorption	0,217	0,082	2,630	0,009
Productive_Performance	<---	Competency_Formulation	0,523	0,123	4,237	0,0001

Based on the table above, it can be explained that the results of hypothesis testing at the significance level are set at 0.05 (5%). In other words, the confidence level is 95 percent. The analysis results show that innovation absorption (IA) has a positive and significant effect on competency formulation (CF) with a P_{value} of 0.0001. The adoption of empowerment (EA) has a positive and significant effect on the formulation of competence (CF) with a P_{value} of 0.0001. Moreover, innovation absorption (IA) has a positive and significant effect on the productive performance of coffee farmers (PP) with a P_{value} of 0.009. The adoption of empowerment (EA) has a positive and significant effect on the productive performance of coffee farmers (PP) with a P_{value} of 0.001, as well as competency formulation (CF), positive and significant effect on the productive performance of coffee farmers (PP) with P_{value} 0.0001.

SobelTest Calculation of Competence Formulation Mediation Between Research Variables

Testing the hypothesis of an indirect relationship (mediation) with the SobelTest procedure, which was developed by (Sobel, 1982; Hayes & Preacher, 2014), can be explained in the following figure:

The calculation results were obtained from the Sobel test, an interactive calculation tool for mediation tests where the statistical test value obtained a value of 3.217, which is much greater than the minimum required C.R of 1.96 of (3.217 <1.96) and a p-value of 0.001 <0.05 and the standard error value is 0.068. Based on the results of the calculation of the significance value for path C' using the Sobel Test, then the significance value for all paths (A, B, C, and C').



The results of the study indicate that the probability of path C' is significant, so it can be concluded that there is a partial mediation relationship, or in other words, the competency formulation variable mediates partial mediation between the absorption of inno offee far

Figure 4: Mediation Effect Test Results, AI,CF,PP

Input:		Test statistic:	Std. Error:	p-value:
a 0.477	Sobel test:	3.21787977	0.06833599	0.00129142
b 0.461	Aroian test:	3.18818809	0.0689724	0.00143167
s_a 0.076	Goodman test:	3.24841677	0.06769359	0.00116049
s_b 0.123	Reset all	Calculate		

Table 4: Sobel Test, Aroian Test, & Goodman Test

The calculation results were obtained from the Sobel test, an interactive calculation tool for mediation tests where the statistical test value obtained a value of 3.037, which is much greater than the minimum required C.R of 1.96 of (3.037 <1.96) p-value of 0.002 < 0.05 and the standard error value is 0.059. Based on the results of the calculation of the significance value for path C' by using the Sobel Test, as shown in Figure 5., then the significance value for all paths (A, B, C, and C').

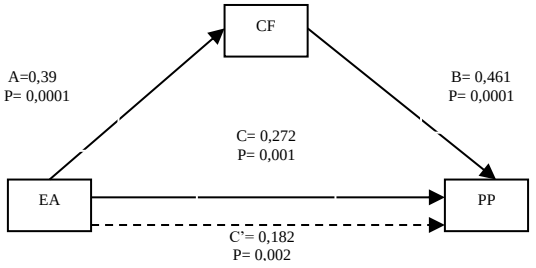


Figure 5.: Mediation Effect Test Results EA, CF, PP

Input:		Test statistic:	Std. Error:	p-value:
a 0.394	Sobel test:	3.03733801	0.05980039	0.00238678
b 0.461	Aroian test:	3.00089444	0.06052662	0.00269188
s_a 0.076	Goodman test:	3.07514241	0.05906523	0.00210402
s_b 0.123	Reset all	Calculate		

Table 5: Sobel Test, Aroian Test, & Goodman

The results of the study state that the probability of path C' is significant, so it can be concluded that there is a partial mediation relationship, or in other words, the empowerment adoption variable mediates partial mediation between the absorption of innovation and the productive performance of coffee farmers.

Discussion and Analysis of Relationships Between Variables

The relationship between innovation absorption and productive performance. The field research results show a positive and significant effect between the absorption of innovation and the productive performance of Gayo Arabica coffee farmers in a low degree of ability (0.217; sig 0.009 <0.05). This means that coffee farmers must be engrossed and skilled in mastering the absorption of innovation so that they can produce productive performance continuously toward their welfare. The findings of this study are in line with research findings (van den Heuvel et al., 2011; Barzola Iza & Dentoni, 2020; Hero et al., 2017), which explains that there is a significant relationship between innovation absorption and changes in the productive performance of Gayo arabica coffee farmers.

Relationship between the adoption of empowerment and productive performance. The results of the field research prove that there is a positive and significant effect between the adoption of empowerment and the productive performance of coffee farmers with a low degree of intensity (0.267; sig 0.0001 <0.05). This means that if coffee farmers feel confident in trusting the results of the adoption of empowerment by their authority, they will change their productive performance more quickly. The results of this study support the research developed by (Nainggolan et al., 2020; Dzakiroh & Irianto, 2021; Berraies et al., 2014), illustrating that there is a significant relationship between the adoption of empowerment and the productive performance of gayo arabica coffee farmers.

The relationship between innovation absorption and competency formulation. There is a positive and significant relationship between innovation absorption and coffee farmer competency formulation, with a low-intensity level (0.408; sig 0.0001 <0.05). This means that if farmers are interested in being skilled at absorbing innovations, they will quickly change the behavior of competency formulations so they can always broaden their horizons. The results of this study are in line with the findings of research developed by (Akenroye et al., 2021; Kjellberg et al., 2015; Zylbersztajn et al., 2019), which explains that there is a strong relationship between the adoption of innovations and the procedures for formulating individual competencies, by each gayo arabica coffee farmer.

Relationship between the adoption of empowerment and competency formulation. There is a positive and significant relationship between the adoption of empowerment and competency formulation of coffee farmers, with a low degree of intensity (0.349; sig 0.0001 <0.05). This can be explained by the fact that if farmers can change their authority after adopting empowerment, they will always be able to change their mindset to formulate their competencies properly. The results of this study are in line with the findings of research developed by ((Warnaen et al., 2020; Civera et al., 2019; Bouncken et al., 2020), which explains that there is a strong relationship between the adoption of empowerment and the procedures for designing competency formulations, by each Gayo Arabica coffee farmer.

The relationship between competency formulation and productive performance. A positive and significant relationship exists between competency formulation and productive performance in the moderate intensity degree (0.523; sig 0.0001 <0.05). This means that if farmers can change innovative ways of thinking in formulating their competencies, they will continuously improve their product performance for their families future. The results of this study support the research findings developed by ((Fadhil et al., 2018; Putri A. et al., 2018; Zainura & Kusnadi, 2016) that competency formulation strategies have a significant relationship with changes in the performance of Gayo Arabica coffee farmers.

The relationship between competency formulation mediation with the absorption of innovation and productive performance. The calculation results were obtained from the Sobel test, where the statistical test value is 3.217, much greater than the minimum required C.R of 1.96 of (3.217 <1.96) and the P-value of 0.001 <0.05, and the standard error value of 0.068. The significance value for path C' by using the Sobel Test, then the significance value for all paths (A, B, C, and C'). Thus, the probability of path C' is significant, so it can be concluded that there is a partial mediation relationship or in other words, gayo arabica coffee farmers with an average age of 35 years, an average of 10 years of formal education, nine times of non-formal education, an average of 14 years of coffee farming experience, dependents an average family of 4 people, and an average land area of 1.5 ha, has used competency formulation as a mediating variable, partially mediating, to interpret the relationship between innovation absorption at the level of innovation application in the medium category with the productive performance of gayo arabica coffee farmers, in order to meet his welfare.

Mediation relationship of competency formulation with adoption and productive performance. The results of the research calculations obtained from the Sobel test, where the statistical test value obtained a value of 3.037, much greater than the minimum required C.R of 1.96 of (3.037 < 1.96) the P-value of 0.002 < 0.05 and the value of the standard error of 0.059. Based on the calculation of the significance value for path C' using the Sobel Test, as shown in Figure 5., the significance value for all paths (A, B, C, and C'). Thus, the probability of path C' is significant, so it can be concluded that there is a partial mediation

relationship or in other words that coffee farmers with an average age of 35 years, an average of 10 years of formal education, nine times of non-formal education, an average of 14 years of coffee farming experience, family dependents an average of 4 people, and an average land area of 1.5 ha, actually used competency formulation as a mediating variable, with partial mediation, to link the relationship between adoption of empowerment in the low category with the productive performance of Gayo Arabica coffee farmers.

VI. Conclusion and Recommendation

Conclusion

Based on the background of the problem, descriptions of theories and concepts, and the results of field research on gayo arabica coffee farmers, by analyzing the individual data of farmers and related figures/officials, the following conclusions can be drawn:

1. The low intensity of farmers absorbing innovation is only 40.8% (sig<0.05), and adopting empowerment is only 34.9% (sig<0.05), resulting in farmers not being able to formulate their competencies, in terms of farmers generally being young and adults, with an average of 14 years of experience;
2. The low intensity of farmers absorbing innovation is only 21.7% (sig<0.05), and adopting empowerment is only 26.7% (sig<0.05), so farmers have not been able to improve the productive performance of farmers at every harvest time, from generation to generation, their family members and farmers have learned by referring to good coffee cultivation techniques, with an average land area of 1.5 hectares;
3. The ability of farmers to formulate their competence of 52.3% to develop the productive performance of farmers is the sincerity of gayo arabica coffee farmers to strengthen changes in the intensity of absorbing innovations and adopt empowerment, which is still low in power;
4. Gayo Arabica coffee farmers are characterized by an average age of 35 years, an average of 10 years of formal education, nine times of non-formal education, an average of 14 years of coffee farming experience, an average of 4 family dependents, and an average land area of 1.5 ha, actually make the formulation competence as a partial mediating variable to absorb innovation and adopt empowerment to achieve product performance which is increasing from year to year.

Recommendation

Based on the results of field research by utilizing and analyzing data, along with the conclusions of the research results, the following suggestions can be formulated:

1. Gayo arabica coffee has an attraction or gravity to various parts of the international, national and local world, so it is necessary to manage and maintain its existence by building innovative absorption strategies and continuous adoption of empowerment to improve the formulation of competence and productive performance of gayo arabica coffee farmers. The strategic step that needs to be developed and built is a strategy for developing an integrated and sustainable Gayo Arabica coffee farmer resource innovation center strategy.
2. With the current conditions of upstream-downstream farming management, Gayo arabica coffee plants need to be developed and adapted to advances in technological innovation and design education/training so that they can become innovators and empower them to create different final outputs of coffee grounds, flavors, aromas, and

types in the form of packages and sachets, according to the tastes of international and domestic consumers continuously and from generation to generation, to improve their welfare, absorb labor, generate foreign exchange, and increase local taxes.

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