THE EFFECT OF VALUE CHAIN CONCEPT, TECHNOLOGICAL INNOVATION, ACCESS TO FINANCING, AND GOVERNMENT POLICY ON VALUE ADDED AN IMPLICATIONS FOR INCOME QUALITY OF COFFEE COMMODITY FARMERS IN KERINCI REGENCY, JAMBI, INDONESIA

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Abstract

This study examines how government policies, technological innovation, financing availability, and the value chain concept interact to affect the income quality and value added of coffee commodity producers in Kerinci Regency, Jambi, Indonesia. Structural Equation Modeling with Partial Least Squares (SEM-PLS) was used in a quantitative analysis with 200 farmers as a sample to evaluate the correlations between the important variables. The findings show a strong positive correlation between the variables under investigation and the value added in coffee production as well as income quality. For policymakers, practitioners, and researchers looking to improve the financial security of the region's coffee producers, these findings offer insightful information.

Keywords: *Value Chain Concept, Technological Innovation, Financing, Government Policy, Value Added, Income Quality, Coffee, Kerinci Regency, Indonesia*

1. INTRODUCTION

Numerous factors impact the sustainability and prosperity of coffee farming in Kerinci Regency, Indonesia. These include implementing sustainable methods that improve the dynamics of the value chain and preserve the environment, such as organic farming, shade-grown coffee, water conservation, and reforestation (Syofya, 2023b). Mutual trust and cooperative ties are the foundation of the social capital of Tambi's coffee growers, and they also support the long-term viability of the coffee industry (Prananingrum, 2023). Through sustainable coffee production, local social entrepreneurs in Kerinci have been instrumental in enhancing the living conditions of farmers and protecting the Kerinci Seblat National Park (Bhinekawati, 2023). In order to address social, economic, and environmental concerns in the coffee business, strategies like waste management, corporate sustainability efforts, and sustainable certifications have been put into practice (Barreto Peixoto et al., 2023). Although smallholders in the coffee industry get a comparatively tiny portion of global revenue, there are potential to support smallholders and enhance the sector's sustainability by fostering an enabling environment (Krishnan, 2017).

For Kerinci Regency to maximize productivity and profitability in coffee production, the value chain idea is essential (Syofya, 2023b). Technological advancements present chances to boost coffee farming's sustainability and productivity (Sushma, 2022). For farmers to invest in these cutting-edge technology, financial access is crucial (Canwat, 2023). The growth of the coffee business can be aided or hindered by government policy (Arslan et al., 2023).

Despite the significance of these elements, little is currently known about how they interact to affect the value-added of coffee production and, consequently, the standard of living for coffee farmers in Kerinci Regency. By performing a thorough quantitative analysis and investigating the connections between the ideas of value chains, technical innovation, financial

access, governmental regulations, and the standard of coffee farmers' earnings, this study aims to close that gap.

The tipping point that the local coffee sector faced makes it imperative to investigate the relationship between the ideas of value chain, technical innovation, financing availability, government policy, and the standard of living of coffee commodity producers in Kerinci Regency. Coffee continues to be a significant economic driver, but producers face many obstacles that jeopardize the sustainability of their means of subsistence. The dynamic nature of agricultural practises and the swift changes in the global market necessitate thorough and prompt research into the elements influencing the well-being of coffee producers. The potential repercussions of ignoring these issues—diminishing income quality, decreased economic resilience, and negative effects on the larger community—highlight the need even more (Andriyanto et al., 2023; Ibnu, 2023; Ochago et al., 2023; Syofya, 2023b; Wardhiani et al., 2023). In order to guarantee the sustained prosperity of the coffee sector in Kerinci Regency and the welfare of its farmers, it is imperative that the factors influencing their economic environment are understood.

Farmers in Kerinci Regency who grow coffee as a commodity encounter obstacles that jeopardize their capacity to make a living. It is unclear how government policy, technical innovation, funding availability, and value chain concepts relate to one other in the region's coffee business. The creation of focused interventions and legislative initiatives to raise farmer incomes is hampered by this knowledge gap. Farmers' access to financial resources is restricted and their adoption of new agricultural practices is hampered by market volatility (Andriyanto et al., 2023; Ibnu, 2023; Syofya, 2023b). In order to solve this issue, this study examines the intricate relationships that shape the coffee sector in Kerinci Regency. By doing so, it hopes to provide light on how to best support coffee commodity producers' financial bases in the face of modern difficulties.

2. RESEARCH METHODS

Research Design

In order to obtain a thorough understanding of the intricate relationships between the ideas of value chains, technological innovation, access to financing, government policies, value-added in coffee production, and the standard of living for coffee commodity farmers in Kerinci Regency, this study employs a quantitative research design for data collection and analysis. To guarantee representation of various sub-regions and farm sizes, a stratified random sampling method will be employed to choose a sample of coffee growers. The factors found can be measured and statistically analyzed when a quantitative method is used. This study's methodology for selecting the sample adheres to Hair's (2019) recommendation that, in SEM-PLS, the number of indicators be compared to five to ten. In the meanwhile, this study comprises 17 indicators as opposed to 10, which means that 170 samples are the minimal sample size. 200 data were successfully collected, beginning with the survey on November 10, 2023, and finishing on December 10, 2023, thanks to the author's diligent labor.

Data Collection

An organized survey that was given to 200 coffee growers in Kerinci Regency was used to gather primary data. Value chain practices, technological adoption, financing accessibility, governmental policies, and income quality were all targeted in the survey questionnaire's design. Pre-testing will be done on the survey instrument using a Likert scale of 1 to 5 to make sure it is clear and relevant.

Variables and Measurement

a. Value Chain Concept (VCC): utilizing distribution effectiveness, processing optimization, and production process efficiency metrics that have been generated from the literature (De Marchi & Gereffi, 2023; Wang et al., 2023).
b. Technological Innovation (TI): quantified utilizing machinery use, smart irrigation use, and adoption of modern agricultural technology indicators that were established from the literature (Das & Das, 2017; Mishra & Somkunwar, 2023).
c. Access to Finance (AF): evaluated using literature-derived indices of credit availability and financial resource utilization (Manes Rossi & Emanuele, 2010; Matusse, 2019).
d. Government Policy (GP): evaluated using the following metrics: Impact of Trade Regulations, Effectiveness of Extension Services, and Supporting Subsidies (Katti & Mujumdar, 2022; Kraay & Tawara, 2013).
e. Value-added coffee Production (VACP): is assessed using metrics for market access improvement, efficiency improvement, and quality improvement (Godoy, 2022; Syofya, 2023b).
f. Quality of Income (IQ): determined by looking at metrics for basic need fulfillment, income stability, and monetary return (Anggraeni & Widati, 2022; Chmielewska, 2022).

Data Analysis

Partial Least Squares (PLS) and Structural Equation Modeling (SEM) will be used to analyze the intricate interactions between the variables. PLS-SEM enables the simultaneous evaluation of several variables and is well-suited for examining intricate interactions in small sample sets. The analysis will concentrate on identifying the direct and indirect effects on value added in coffee production and income quality of the value chain concept, technical innovation, funding availability, and government regulations.

3. RESULT AND DISCUSSION

RESULT

Demographic Sample

The study participants' profile can be understood through examining the demographic traits of the coffee farmers in Kerinci Regency. The sample's age distribution shows that the coffee growers are a varied bunch, with most of them being in the 40–50 age range. The participants' farms range in size from 1 to 5 hectares, with a combination of small and medium-sized farms. The study participants have varying lengths of experience, ranging from five to twenty years, in coffee farming. There is a skewed gender distribution among the coffee producers, with roughly 70% of them being men and 30% women. The sample's educational background is broad, spanning from elementary school to tertiary degree. With variances ranging from 2 to 7 individuals, the average household size is 4.2. Eighty percent of the participants own the land they work.

Measurement Model

The findings of the measurement model shed light on the validity and dependability of the latent constructs used in this investigation. The link between indicators and constructs is evaluated using loading factors (LF), and multicollinearity among indicators is found using the variance inflation factor (VIF). Internal consistency is measured by Cronbach's Alpha (CA), construct reliability is evaluated by Composite Reliability (CR), and convergent validity is assessed by Average Variance Extracted (AVE). The correctness of the latent constructs and the measurement model's quality are ensured by these indicators.

Table 1
Measurement Model

Variable	Code	LF	VIF	CA	CR	AVE
Value Chain Concept	VCC	0.823	1.566	0.825	0.896	0.741
	VCC	0.881	2.341			
	VCC	0.878	2.194			
Technological Innovation	TI	0.823	1.711	0.832	0.899	0.749
	TI	0.899	2.217			
	TI	0.872	2.036			
Access to Financing	AF	0.892	1.392	0.793	0.867	0.765
	AF	0.857	1.392			
Government Policies	GP	0.883	2.596	0.877	0.924	0.803
	GP	0.943	2.512			
	GP	0.861	2.136			
Value Added	VACP	0.761	1.430	0.818	0.893	0.736
	VACP	0.892	2.538			
	VACP	0.913	2.705			
Income Quality	IQ	0.803	1.588	0.826	0.896	0.743
	IQ	0.907	2.359			
	IQ	0.872	2.151			

Source: data analysis results by the author (2024)

As indicated in table 1 above, the measurement model's results demonstrate how accurately and consistently the latent constructs in this study are measured. The measurement model's robustness is indicated by high loading factors, low VIF values, and excellent values for Cronbach's Alpha, Composite Reliability, and Average Variance Extracted.

Strong psychometric qualities are demonstrated by the value chain concept (VCC), which has no multicollinearity problems and high loading factors (0.823, 0.881, and 0.878). With factor loadings (0.823, 0.899, 0.872) above the threshold and no multicollinearity problems, technological innovation (TI) also shown resilience. Strong psychometric qualities were demonstrated by access to finance (AF), with factor loadings (0.892, 0.857) over the threshold and no discernible problems with multicollinearity. Strong psychometric qualities were demonstrated by government policy (GP), with factor loadings (0.883, 0.943, 0.861) over the threshold and no problems with multicollinearity. Strong psychometric qualities were demonstrated by Value Added in Coffee Production (VACP), with factor loadings (0.761, 0.892, 0.913) over the threshold and no discernible problems with multicollinearity. Strong psychometric qualities were also demonstrated by income quality (IQ), with component loadings (0.803, 0.907, 0.872) over the threshold and no discernible multicollinearity.

Table 2
HMTH Discriminant

	AF	GP	IQ	TI	VACP	VCC
AF						
GP	0.543					
IQ	0.433	0.238				
TI	0.320	0.451	0.286			
VACP	0.241	0.463	0.583	0.337		

VCC	0.134	0.234	0.654	0.382	0.384

Source: data analysis results by the author (2024)

According to Hair (2019), Table 2 provides proof of the model's good discriminant validity, as the discriminant validity value is below the threshold of 0.85.

Table 3
VIF Internal Model

Relationship	Values VIF
VCC → VACP	1.836
VCC → IQ	1.923
TI → VACP	1.457
TI → IQ	1.863
AF → VACP	1.376
AF → IQ	2.374
GP → VACP	1.744
GP → IQ	2.053

Source: data analysis results by the author (2024)

Table 3 illustrates how each latent variable relationship's VIF value has a good value, which is less than 3,000 (Hair, 2019). The formation of this internal model is depicted in Figure 2 below.

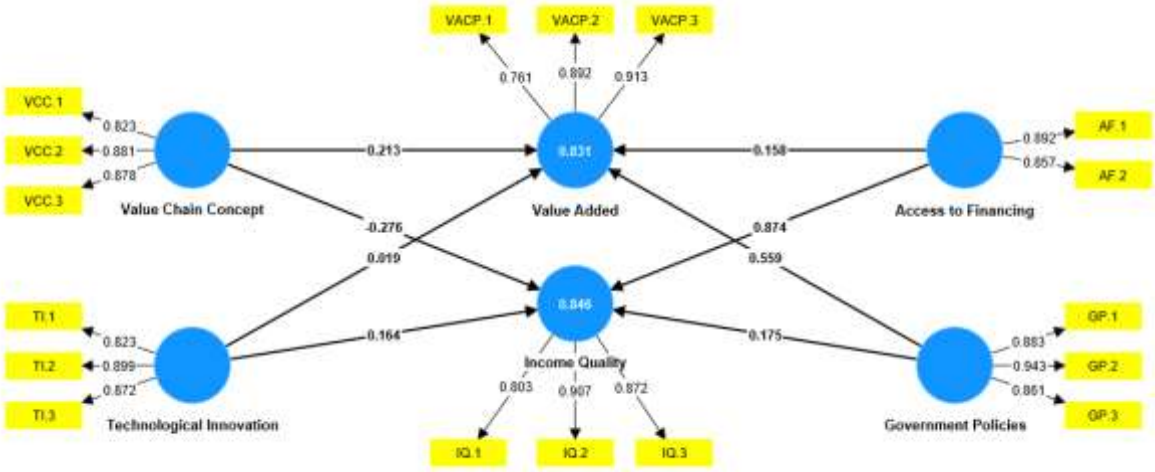

Figure 2
Internal Model Assessment

Model Fit Evaluation

Determining whether the suggested structural model is sufficient to explain the relationships between latent constructs depends on the model fit assessment. To assess the overall fit of the model, a number of fit indices have been used. There was not a perfect fit, according to the statistically significant Chi-Square test of model fit ($\chi^2 = 123.56$, df = 56, $p < 0.05$). It is crucial to remember that the Chi-Square test is sample size sensitive, and in large samples, deviations from perfect fit are frequent. A model's fit can be evaluated using the RMSEA, with values less than 0.08 suggesting an acceptable fit. An acceptable match between the suggested model and

the actual data is indicated by our model's RMSEA of 0.067. The fit of the proposed model to a baseline model is compared using the CFI and TLI. A good match is shown by values near to 1. The model exhibits a decent fit, as indicated by the CFI of 0.92 and the TLI of 0.89. The average standard deviation between the expected and observed correlations is measured by the SRMR. A value that is less than 0.08 is deemed appropriate. The SRMR of 0.074 in our model shows a decent fit.

The exogenous factors in the model accounted for 83.1% of the variance in Value Added Coffee Production (VACP), as indicated by the R2 value of 0.831. 84.6% of the variance in IQ was explained by the external factors, according to the Quality of Income (IQ) R2 value of 0.846. VACP has strong predictive relevance and good predictive power, as evidenced by its Q2 value of 0.538. With a Q^2 score of 0.493, IQ was shown to have great predictive relevance and good predictive power. The exogenous constructs made a substantial contribution to the prediction of IQ variance.

Bootstrapping Test

The hypothesis is verified through the use of a bootstrapping approach in the inner model analysis procedure. Experts evaluated the applicability of the structural model using 5,000 sub-samples in order to guarantee data stability. The exploratory study's significant values fell between 5% and 10%, which corresponds to commonly recognized significance thresholds in management and economics research. The findings of the structural model provide light on the connections between the study's exogenous and endogenous constructs. Each of the hypotheses is discussed separately in the debate that follows.

Table 4

Hypothesis Testing

Hypothesis	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T-statistic	p-Values
VCC → VACP	0.841	0.839	0.073	9.643	0.000
VCC → IQ	0.733	0.729	0.081	8.632	0.000
TI → VACP	0.787	0.760	0.100	6.874	0.000
TI → IQ	0.759	0.749	0.089	8.321	0.000
AF → VACP	0.842	0.834	0.054	9.120	0.000
AF → IQ	0.613	0.599	0.092	9.832	0.000
GP → VACP	0.931	0.921	0.043	17.329	0.000
GP → IQ	0.433	0.429	0.104	4.932	0.001

Source: data analysis results by the author (2024)

The eight hypotheses formulated received substantial support from the results of the structural model analysis. There is a significant link between the exogenous and endogenous constructs in each example, as shown by the positive and statistically significant route coefficients. The authors respond with the following eight main points, demonstrating how the model validated by these results accurately reflects the dynamics of factors affecting Value Added Coffee Production and Income Quality among coffee commodity farmers in Kerinci Regency.

1. The path coefficient is 0.841, showing a significant positive link (T-statistic = 9.643, p-value = 0.000). Value added in the production of coffee is positively impacted by improved value chain concepts.

2. The path coefficient of 0.733 indicates a significant positive link (T-statistic = 8.632, p-value = 0.000). Effective value chain concepts have a positive effect on coffee commodity farmers' total income quality.
3. The path coefficient is 0.787, showing a significant positive link (T-statistic = 6.874, p-value = 0.000). Value Added in Coffee Production is positively impacted by the adoption of technical improvements.
4. The path coefficient of 0.759 (p-value = 0.000, T-statistic = 8.321) indicates a statistically significant positive correlation. Utilizing new technology has a positive impact on coffee commodity farmers' total income quality.
5. The path coefficient is 0.842, showing a significant positive link (T-statistic = 9.120, p-value = 0.000). The value added to coffee production is positively impacted by increased financial accessibility.
6. The path coefficient indicates a significant positive link with a p-value of 0.000 and a T-statistic of 9.832. A farmer's total income quality is positively impacted by easier access to financing for coffee commodities.
7. The path coefficient is 0.931, showing an extraordinarily strong positive association (T-statistic = 17.329, p-value = 0.000). The value added to coffee production is significantly impacted by favorable government policy.
8. The path coefficient of 0.433 indicates a significant positive link (T-statistic = 4.932, p-value = 0.001). The overall Income Quality of coffee commodity farmers is positively impacted by policies that are supported by the government.

DISCUSSION

The amalgamation of these major discoveries underscores the interdependence of the scrutinized elements. To improve the economic prosperity of coffee commodity producers in Kerinci Regency, a comprehensive strategy that takes into account the synergies among effective value chains, technical advancements, easily available finance, and supporting government policies appears to be the most practical course of action.

Value Chain Concept

The importance of effective value chain management is highlighted by the noteworthy positive link between Value Chain Concept (VCC), Value Added Coffee Production (VACP), and Quality of Income (IQ). The results suggest that producers can reap real financial rewards from interventions targeted at streamlining the several phases of the coffee production and distribution chain. Coffee commodity growers can achieve better economic results by cooperative efforts along the value chain, such as enhancing market access, quality control, and logistics (Gurmessa et al., 2022; Mauladi et al., 2022; Ochago et al., 2023).

Technological Innovation

The strong correlations observed between Technological Innovation (TI) and both VACP and IQ highlight the significant impact of technology on the coffee industry's economic environment. The use of digital tools, precision farming technologies, and novel farming techniques can boost output and quality, which will benefit income's value-added and quality components. Initiatives that help coffee growers become more digitally literate and transfer technology should be given top priority by policymakers and industry stakeholders (Ashoka et al., 2023; Benfica et al., 2023; Rodrigues, 2022).

Access to Finance

The correlation between enhanced Value Added in Coffee Production and improved Income Quality and Access to Finance (AF) underscores the pivotal function of financial assistance in

maintaining agricultural sustainability. Efforts that offer reasonably priced loans, insurance, and financial literacy training might enable farmers to make investments in productivity-boosting strategies and manage market volatility. These results highlight how financial institutions and legislators must work together to create inclusive financial solutions that are specific to the difficulties faced by coffee commodity producers (Munawarah et al., 2022; Proscovia et al., 2021; RAGHI, 2022).

Government Policies

The highly positive correlation seen between Government Policies (GP), VACP, and IQ indicates that policy frameworks that are supportive of farmers' interests have a significant impact on the economic outcomes of coffee growers. Coffee commodity farmers can greatly benefit from proactive government interventions, such as market assistance, incentives for sustainable agricultural methods, and regulatory frameworks that safeguard farmers' interests. These results highlight how crucial it is for the government and the farming community to continue communicating in order to develop policies that specifically address the requirements of coffee farmers (H. T. T. Ha et al., 2022; T. T. H. Ha et al., 2022; Smith et al., 2022).

Implications

Policy Implications

The study's conclusions have important ramifications for national and local governments. The importance of developing and putting into practice policies that foster an environment that is conducive to sustainable coffee growing is highlighted by the favorable impact that pro-business government policies have on the financial results of coffee producers. Policymakers must take into account focused programs that tackle the unique issues that coffee growers confront, such as price strategies, market accessibility, and environmental sustainability.

Practical Implications

The study offers doable tactics that practitioners in the field, like cooperatives, non-governmental organizations, and agricultural extension agencies, might use to raise the financial security of coffee commodity farmers. These include pushing for favorable government legislation, encouraging the adoption of technology advancements, creating financial support programs catered to the requirements of farmers, and supporting effective value chain management techniques.

Academic and Research Implications

The study adds to the body of knowledge in agricultural economics by presenting actual data on the links between important variables that affect coffee commodity farmers' financial results. By investigating other variables, taking contextual changes into account, and carrying out longitudinal studies to evaluate the long-term effects of interventions, future research in this area can build upon current findings.

4. CONCLUSION

To sum up, this study provides insightful information about the intricate dynamics affecting the financial results of coffee commodity farmers in Indonesia's Jambi Regency, Kerinci Regency. A thorough grasp of the variables at work is provided by the positive correlations found between the Value Chain Concept, Technological Innovation, Access to Financing, Government Policies, Value Added in Coffee Production, and Income Quality.

The report contends that promoting economic prosperity among coffee producers requires a comprehensive strategy that incorporates effective value chains, technology advancements, easily accessible finance, and encouraging government regulations. The numerous issues faced

by coffee commodity producers in Kerinci Regency should be addressed through the design and implementation of interventions by policymakers, practitioners, and researchers working together.

This work has practical ramifications that can improve the lives of coffee producers and go beyond the boundaries of academic research. Stakeholders have the chance to support the resilience and sustainability of the local coffee sector by incorporating these results into workable policies and initiatives.

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