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Vietnam's OCOP Product Value Chain: A Study on the Moderating Role of Government Support Policies

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ABSTRACT

This study analyzes the factors influencing the development of OCOP (One Commune One Product) product value chains, with a particular focus on examining the moderating role of state support policies. We collected data from 252 OCOP stakeholders in Thanh Hoa Province, Vietnam, and used the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach for analysis. The key factors investigated include value chain awareness, market access, product advantage, innovation, and collaboration within the value chain. The results reveal that all these factors positively influence the development of OCOP product value chains. Among them, value chain awareness, market access, and collaboration are identified as the most influential. Notably, the study highlights the moderating effect of state support policies in these relationships. When state policies are clearly defined, OCOP actors tend to align their actions more with governmental directives rather than relying solely on their own understanding of the value chain. Moreover, effective state support significantly enhances collaboration among value chain members, thereby promoting the overall development of the value chain. This finding is particularly relevant in the context where OCOP actors are primarily micro- and small-sized enterprises. The study provides important empirical evidence to inform the design of support policies aimed at constructing and developing OCOP product value chains, tailored to the specific context of Thanh Hoa Province in particular and Vietnam in general.

Keywords: Value chain, One Commune One Product (OCOP), State support policies, innovation.

Introduction

The One Commune One Product (OCOP) program represents a key national policy initiative in Vietnam aimed at promoting rural economic development through the mobilization of internal resources and the enhancement of product value. Since its implementation, the program has played a pivotal role in fostering local economic growth and establishing regional product brands. According to the Ministry of Agriculture and Rural Development (2024), over 14,000 OCOP products rated three stars or higher have been developed by 7,846 participating entities, of which 32.8% are cooperatives and 22.7% are micro and small enterprises.

The overarching objective of the OCOP program is to promote the development of local specialty products, improve rural livelihoods, and enhance the quality of life for rural communities. A crucial factor in the program's success is the effective construction and development of value chains for OCOP products. These value chains encompass a series of interlinked activities - from production to consumption - each contributing to the added value of the final product. In Vietnam, existing research on value chain linkages has largely focused on business strategies, coordination among enterprises, and the influence of the regulatory environment on production and distribution. However, inter-firm linkages within the OCOP product value chain remain underdeveloped, often hindered by limited information sharing,

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inconsistent collaboration, and resource constraints. In this context, state support policies are considered essential in facilitating the formation of strong and sustainable connections among value chain participants.

This study seeks to examine the key factors that influence the development of Vietnam's OCOP product value chains, with a particular focus on the moderating role of state support policies. The analysis considers five primary factors: Awareness (ACT), Market Access Capability (MA), Product Advantage (PA), Innovation (INO), and Collaboration (CO). In addition, the research also assesses the impact of regulatory variables (government support policies-GS) on the development of OCOP product value chains. By employing Partial Least Squares Structural Equation Modeling (PLS-SEM), the study aims to elucidate the underlying mechanisms through which these factors interact and to provide policy-relevant insights for the strategic development of OCOP value chains among participating stakeholders.

Theoretical Framework and Research Model

Theoretical Framework

The value chain is a fundamental concept in business management and product development. The value chain is a foundational concept in business management and product development, referring to the sequence of interrelated activities that add value to a product or service, from its initial conception to its final delivery to the end consumer. According to Porter (1998), a firm's value chain comprises core activities such as inbound logistics, operations, outbound logistics, marketing and sales, and after-sales services, each of which contributes to the firm's competitive advantage through value creation.

Kaplinsky and Morris (2000) further advanced this understanding by framing the value chain as a continuum of integrated activities, ranging from product design and production to post-consumption processing. Their emphasis on system-wide efficiency underscores the importance of coordination across stages to maximize overall value creation. Complementing these views, Springer-Heinze (2007) described the value chain as a network of interconnected economic actors, each performing a specific function in the production and delivery of goods and services. This network-based perspective highlights the strategic role of stakeholder collaboration in meeting market demands and generating high-value outcomes. Taken together, these theoretical perspectives suggest that the value chain is not merely a linear aggregation of discrete functions but rather a dynamic and interdependent system. Within this system, effective value creation depends not only on optimizing individual activities but also on fostering cohesion across the entire chain.

In the specific context of Vietnam's One Commune One Product (OCOP) program—where products often reflect strong local identities and are predominantly produced by micro- and small-sized enterprises—value chain development necessitates a comprehensive approach. This includes strengthening stakeholder awareness, fostering innovation and collaboration, leveraging product-specific advantages, expanding market access, and implementing supportive state policies. Such an approach is essential to enhance the competitiveness and long-term sustainability of OCOP value chains.

Formulating Research Hypotheses

The Relationship between OCOP Stakeholders' Value Chain Awareness and Value Chain Development

Enterprises' awareness of the value chain plays a foundational role in the formation and sustainable development of OCOP product value chains. According to Porter (1985), the extent to which enterprises understand the value chain concept and the value-creating activities—from production and processing to consumption—serves as the basis for establishing appropriate competitive strategies, which in turn shapes how they collaborate with other actors within the chain (Porter, 1985).

Kaplinsky and Morris (2000) also noted that when enterprises clearly recognize the roles of each actor, such as producers, suppliers, processors, distributors, and consumers, they are more likely to actively participate in coordinating and optimizing the chain (Kaplinsky & Morris, 2000). Furthermore, Humphrey and Schmitz (2002) emphasized that enterprises' proactive engagement in the value chain not only enhances product value and quality but also improves income and long-term competitiveness (Humphrey & Schmitz, 2002). Therefore, it can be asserted that a correct and comprehensive awareness of the value chain among enterprises influences not only their internal

strategies but also promotes the formation of effective linkages, thereby significantly contributing to the success of the entire OCOP product value chain.

Based on these discussions, and especially considering that most OCOP stakeholders are small and micro enterprises, awareness is identified as a decisive factor. It impacts the internal development strategy of each entity and acts as a driving force, encouraging the establishment of effective connections throughout the OCOP product value chain. Accordingly, the following hypothesis is proposed:

H1: Enterprises' awareness of the value chain positively influences the development of the OCOP product value chain.

The Relationship between Market Access Capability of OCOP Stakeholders and Value Chain Development

Market access capability plays a pivotal role in the formation and development of OCOP product value chains, particularly in the context of intensifying competition and deepening economic integration. According to Gereffi *et al*. (2005), contemporary value chains are increasingly market-oriented, with consumer preferences serving as the primary coordinating mechanism across production, processing, and distribution activities.

According to Narver and Slater (1990), a firm's market orientation is demonstrated through its capacity to identify target customers, monitor competitors, and continuously update market intelligence (Narver & Slater, 1990; Jaworski & Kohli, 1993).

Consequently, market access capability not only enhances the operational efficiency of individual enterprises but also acts as a strategic driver in upgrading, expanding, and ensuring the sustainable development of the OCOP product value chain. Based on this, the study proposes the following hypothesis:

H2: Market access capability positively influences the development of the OCOP product value chain.

The Relationship between Product Advantage and Value Chain Development

Product advantage is a critical factor influencing the structure, performance, and sustainable development of value chains, particularly in the context of OCOP products in Vietnam. Each product embodies a distinct value creation process that determines how value chain activities are configured to maximize added value (Porter, 1985). Attributes such as local uniqueness, technological complexity, standardization potential, and preservation requirements, especially for agricultural and processed food products, significantly affect the architecture of linkages and the selection of appropriate governance mechanisms (Gereffi *et al*., 2005).

In the practical implementation of the OCOP program, products with advantages such as geographical indications, compelling product stories, safety certifications (e.g., VietGAP, GlobalGAP, HACCP), and positive market feedback tend to establish stronger linkages in the value chain by building trust with consumers and distribution partners. Additionally, products rooted in cultural identity and local heritage serve as tools for "cultural positioning," enhancing emotional connection and promoting sustainable consumption behaviors (Kotler & Keller, 2015).

Therefore, product advantage not only strengthens the individual competitiveness of OCOP stakeholders but also acts as a strategic driver for the formation, maintenance, and expansion of the value chain. It contributes to increased market attractiveness, improved actor coordination, and greater incentives for investment in research, processing, and distribution systems. Based on these perspectives, the following hypothesis is proposed:

H3: Product advantage positively influences the development of the OCOP product value chain.

The Relationship between Stakeholders' Innovation and Value Chain Development

Innovation is a critical driver of value chain development and upgrading, particularly in the agricultural sector, where stakeholders are often small-scale actors such as cooperatives, local enterprises, and individual producers. In a global economy increasingly shaped by digitalization and automation, innovation encompasses not only the adoption of advanced technologies but also improvements in production processes, the development of new products, the adaptation of organizational models, and responsiveness to evolving consumer demands. It lies at the heart of competitive advantage and manifests throughout the value chain—across design, production, marketing, and distribution activities—as a means to optimize cost structures or differentiate products (Porter, 1985).

Kaplinsky and Morris (2000) further contend that innovation is fundamental to "value chain upgrading," enabling firms to transition from low-value to high-value activities such as deep processing, branding, and direct market engagement.

According to the OCOP Report 2018–2023 by the Central New Rural Development Coordination Office, the adoption of appropriate technologies has enabled several small stakeholders to reduce operational costs, enhance product consistency, and reach broader consumer segments. However, widespread challenges remain, particularly in terms of limited technical capacity, insufficient capital, and lack of access to appropriate technological information. Addressing these constraints requires not only proactive efforts by individual actors but also institutional support through technical training, collaboration with technology providers, and facilitative state policies. Based on the above theoretical and practical grounds, this study proposes Hypothesis H4:

H4: The innovation capability of OCOP actors has a positive impact on the development of the OCOP product value chain

The Relationship between Collaboration among Members and the Development of the Value Chain

Collaboration among members within a value chain is widely regarded as a fundamental driver of operational efficiency, adaptability, and long-term sustainability. Core components of effective collaboration—such as mutual trust, coordinated action, and transparent information exchange—form the basis for reducing transaction costs, mitigating operational risks, and enhancing system-wide performance. When stakeholders align their objectives and collaborate in areas such as product development, joint distribution, and co-innovation, value is not only generated at the level of individual enterprises but also multiplied across the entire chain.

Despite its importance, the degree of collaboration among OCOP stakeholders in Vietnam remains relatively limited. A critical dimension of collaborative capability lies in supply chain management and logistics coordination, where trust, commitment, communication, and structured information flows are key to sustaining long-term relationships (Morgan & Hunt, 1994). In the specific context of OCOP value chains, often characterized by small-scale producers and fragmented links, developing trust-based partnerships and formal coordination mechanisms contributes to individual competitiveness while reinforcing the overall cohesion and resilience of the value chain. Based on the above analysis, the following hypothesis is proposed:

H5: Collaboration among members in the value chain positively influences the development of the OCOP product value chain.

The Moderating Role of Government Policy

Within the research model, government support policies are conceptualized as a moderating variable that plays a pivotal role in shaping the formation, functioning, and development of OCOP product value chains. In developing economies such as Vietnam, public policy serves not only as a strategic orientation mechanism but also as a direct enabler, helping small-scale producers overcome barriers related to capital, technology, market access, and technical expertise.

Nevertheless, the impact of public policy is often dual in nature. On one hand, well-designed and effectively implemented policies can catalyze stronger integration and coordination across the value chain. On the other hand, overly complex, poorly communicated, or inconsistently enforced policies may hinder actor participation and reduce overall chain efficiency. Administrative burden, regulatory compliance costs, and limited access to financial instruments are examples of factors that may constrain value chain engagement. In light of this, the study integrates government support policies as a moderating construct to assess whether the presence, quality, and implementation of such policies alter the strength or direction of the relationships between internal capability factors and value chain development. Based on this theoretical foundation and practical significance, the following moderating hypotheses are proposed:

H6a: Government support policies moderate the relationship between value chain awareness (ACT) and the development of the OCOP product value chain (VC).

H6b: Government support policies moderate the relationship between market accessibility (MA) and the development of the OCOP product value chain.

H6c: Government support policies moderate the relationship between product advantage (PA) and the development of the OCOP product value chain.
H6d: Government support policies moderate the relationship between innovation (INO) and the development of the OCOP product value chain.
H6e: Government support policies moderate the relationship between cooperation within the value chain (CO) and the development of the OCOP product value chain.

Research Model

As shown in **Figure 1**, based on Porter's (1985) value chain theory, Ajzen's (1991) theory of planned behavior, and empirical findings related to the OCOP program in Vietnam, the proposed research model analyzes the factors influencing the development of the OCOP product value chain. Additionally, it examines the moderating role of government support policies on these relationships. The model focuses on five groups of factors that are considered to directly impact the effectiveness of value chain development, which are conceptualized as follows:

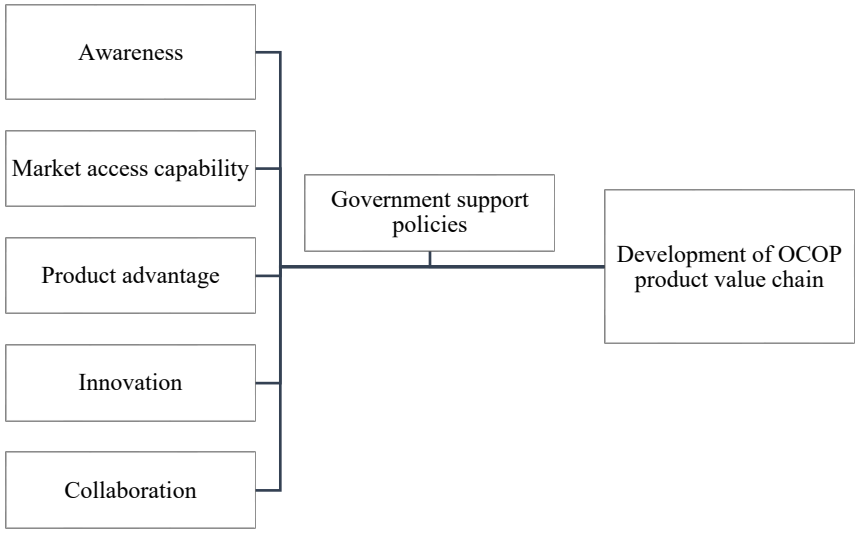

Figure 1. Proposed Research Model

The development of the OCOP product value chain (VC) is measured by the efficiency of production-processing-consumption linkages, market expansion capacity, and the degree of product value addition.
Specifically, the study incorporates a moderating variable, Government Support Policy (GS), to examine the regulatory role of institutional factors on the relationships between internal factors and value chain development. The policy is understood as a set of legal, financial, technical, and market promotion instruments issued and implemented by the government within the OCOP program framework.
The proposed research model for the development of the OCOP product value chain identifies key constructs that impact value chain performance: Awareness of the Value Chain (ACT), Market Access Capability (MA), Product Advantage (PA), Innovation (INO), Collaboration (CO), Government Support Policies (GS), and the Development of the OCOP Product Value Chain (VC).
ACT refers to participants' understanding of the value chain, including production, processing, consumption, and the roles and linkages of actors (Porter, 1985; Kaplinsky & Morris, 2000; Humphrey & Schmitz, 2002; Gereffi *et al*., 2005).
MA assesses the ability to target customers, forecast market demand, understand competition, and sell through traditional and digital channels (Narver & Slater, 1990; Jaworski & Kohli, 1993).
PA measures product uniqueness, quality, safety, and local characteristics, alongside customer feedback and adherence to standards such as OCOP and VietGAP (Kotler & Keller, 2015; Nguyen *et al*., 2017; Tran *et al*., 2018).

INO reflects the integration of technology in product design, production, and online sales, as well as engagement in training and collaboration with technology partners (Nguyen *et al*., 2017; Tran *et al*., 2018).

CO involves trust, cooperation, information sharing, and coordination among value chain stakeholders to improve efficiency and sales outcomes (Morgan & Hunt, 1994).

GS evaluates the support provided by government policies, including training, financial incentives, and market connection efforts, to aid small-scale enterprises in integrating into the value chain (Ndlovu *et al*., 2021; Hue & Hieu, 2022; Department of Cooperative Economy and Rural Development, 2023).

VC is the dependent variable, measuring the impact of the value chain on economic efficiency, market expansion, and value creation for business units (Tran *et al*., 2018; Department of Cooperative Economy and Rural Development, 2021; Ministry of Agriculture and Rural Development of Vietnam, 2021; Nguyen *et al*., 2022; Central New Rural Development Coordination Office, 2023).

Materials and Methods

To guarantee a thorough approach to investigating, modeling, and testing the elements impacting the growth of the OCOP product value chain, the study was carried out using a combination of qualitative and quantitative approaches. Through a review of both domestic and foreign literature, the qualitative method was specifically used in the first phase to systematize the theoretical underpinnings, identify potential factors, design the research model, create the questionnaire, and formulate hypotheses appropriate for the Vietnamese context.

Subsequently, the quantitative method was applied to test the research model and assess the impact levels of the identified factors. The study employed the Partial Least Squares – Structural Equation Modeling (PLS-SEM) approach, which is appropriate for data that are non-normally distributed and for studies with medium sample sizes (Tenenhaus *et al*., 2005). The research model includes five independent variables: (1) awareness, (2) market accessibility, (3) innovation, (4) product advantages, and (5) cooperation among value chain members; the dependent variable is the level of value chain development; and a moderating variable—government support policy—is incorporated to examine its interactive role in the relationship between independent and dependent variables. Variables are measured using a set of observed indicators based on a 5-point Likert scale, adapted and refined from previous studies such as Morgan & Hunt (1994), Chen *et al*. (2011), Song (2012), and Nguyen *et al*. (2019).

Primary data were collected via structured questionnaires distributed to OCOP actors in Thanh Hoa Province, including small and medium-sized enterprises, cooperatives, cooperative groups, and individual business households. As of the end of 2024, there were 474 active OCOP entities in Thanh Hoa. The sample size was determined using Slovin's formula with a 5% margin of error, resulting in a minimum of 209 observations. To enhance reliability and reduce invalid responses, the research team distributed 300 questionnaires proportionally across entity types: 75 enterprises, 75 cooperatives, 5 cooperative groups, and 15 individual households. After data screening and cleaning, 252 valid responses were used for quantitative analysis.

Data processing was conducted in two main stages. In the first stage, SPSS 20.0 was used for data coding, descriptive statistics, and preliminary reliability testing through Cronbach's Alpha (threshold ≥ 0.7). In the second stage, SmartPLS 4.0 was employed to test the PLS-SEM model. Model evaluation included two steps: (1) Assessment of the Measurement Model: examining composite reliability ($CR \geq 0.7$), outer loadings (≥ 0.7), convergent validity ($AVE \geq 0.5$), and discriminant validity using the Fornell–Larcker criterion and HTMT (≤ 0.85) (Hair *et al*., 2017); (2) Assessment of the Structural Model: testing causal hypotheses using the bootstrap technique (5,000 samples), calculating path coefficients (β), p-values (< 0.05), and evaluating explanatory power via R^2 and Q^2. The variable "Government Support Policy" was incorporated as a moderating variable. The moderation effect was tested through interaction terms between independent variables and the policy variable, analyzing changes in R^2 and the statistical significance of interaction coefficients (Ndlovu *et al*., 2021).

The combined use of SPSS and SmartPLS enables the study not only to clarify the direct and indirect impacts of various factors on the OCOP value chain but also to identify the moderating role of government policies. This, in turn, provides a scientific basis for formulating effective and sustainable support policies for OCOP development.

Characteristics of the Survey Sample

The characteristics of the survey sample closely reflect the actual status of OCOP entities in the locality. Among the 252 respondents, individual business households accounted for the largest proportion (60.7%), followed by enterprise leaders (33.7%) and other management staff (5.6%). The gender distribution was relatively balanced, with 51.2% male and 48.8% female participants (İlhan *et al*., 2022; Liu *et al*., 2022; Mobeen & Dawood, 2022).

In terms of age, the majority were within the experienced working-age group: 56.3% were between 40 and 60 years old, 42.1% were between 25 and 40, and only 1.6% were under 25 years old. Regarding educational attainment, most respondents had a high school education or below (65.1%), 24.6% held vocational or college-level qualifications, and only 10.3% had a university degree or higher, highlighting the current limitations in management and technological capacity among OCOP actors (Ansari *et al*., 2022).

Evaluation of the Measurement Model

Assessment of Indicator Reliability: According to standard evaluation criteria, as shown in **Table 1** outer loading values are considered acceptable if they exceed 0.7. The results from the PLS-SEM model run using SmartPLS 4.0 show that all observed variables in the model have outer loadings greater than 0.7, indicating that the retained measurement items are fully appropriate for the model.

Assessment of Scale Reliability: Scale reliability was evaluated using two key indicators: Cronbach's alpha and Composite Reliability (CR). According to international standards, both values should be at least 0.7 to ensure reliability. As shown in **Table 1**, all measurement scales achieved Cronbach's Alpha values of 0.806 or higher, and CR values ranged from 0.871 to 0.945, which falls within the "very good" range (0.8–1.0), demonstrating that the measurement scales have high reliability **(Table 1)**.

Table 1. Scale Reliability and Convergent Validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
ACT	0.806	0.827	0.871	0.629
CO	0.886	0.889	0.921	0.746
GS	0.848	0.908	0.906	0.763
INO	0.864	0.873	0.907	0.710
MA	0.904	0.905	0.929	0.723
PA	0.927	0.932	0.945	0.775
VC	0.889	0.893	0.931	0.818

Source: Results of Data Analysis

Assessment of Convergent Validity: Convergent validity was assessed using the Average Variance Extracted (AVE) indicator. According to Hock and Ringle (2010), a measurement scale is considered to have adequate convergent validity if the AVE is ≥ 0.5, meaning that the latent construct explains at least 50% of the variance in its observed indicators. **Table 1** presents all scales that achieved the AVE for the research variables. As shown in **Table 1**, all scales exhibit AVE values greater than 0.6, which exceeds the required threshold. This indicates that the measurement scales used in this study meet the standards for convergent validity.

Assessment of Discriminant Validity: Discriminant validity reflects the extent to which a given construct is distinct from other constructs within the model. This study employed the Heterotrait-Monotrait Ratio (HTMT) to assess discriminant validity. Following the recommendation of Henseler *et al*. (2015), HTMT values should be less than 0.85 to confirm discriminant validity. The analysis results, as shown in **Table 2**, indicate that the majority of construct pairs had HTMT values below 0.85. Only one pair, CO-PA, recorded an HTMT value of 0.854, which is slightly above the recommended threshold. However, this value still falls within the acceptable range, as per Hair *et al*. (2016). Therefore, the model is considered to meet the criteria for discriminant validity.

Table 2. Discriminant Validity Assessment Results

	ACT	CO	GS	INO	MA	PA	VC
ACT	0.793						
CO	0.191	0.863					
GS	0.070	0.112	0.874				
INO	0.380	0.255	0.345	0.843			
MA	0.464	0.362	0.208	0.340	0.850		
PA	0.523	0.289	0.102	0.307	0.439	0.880	
VC	0.614	0.520	0.289	0.498	0.658	0.565	0.905

Source: Results of Data Analysis

The assessment of the measurement model results includes evaluating composite reliability to assess internal consistency, the reliability of each scale/construct, and the Average Variance Extracted (AVE) to evaluate convergent validity. Additionally, the Fornell-Larcker criterion and cross-loading values are used to assess discriminant validity.

Structural Model Evaluation

In this study, the Variance Inflation Factor (VIF) was used to assess the degree of multicollinearity among the independent variables. According to Hair *et al*. (2019), VIF values should be greater than 0.2 and less than 5.0 to exclude the possibility of serious multicollinearity in the model.

The results of the VIF assessmentshow that all observed variables have VIF values ranging from 1.689 to 4.273, which are well within the acceptable limits. Although some indicators, such as PA1 (VIF = 4.273) and PA3 (VIF = 3.789), have relatively high values, they remain below the threshold of 5.0 and thus do not adversely affect the model. This indicates that there is no significant multicollinearity present, and the linear relationships among the independent variables are stable and reliable. Therefore, the VIF analysis results confirm that the model does not violate the assumption of multicollinearity. Consequently, it is appropriate to proceed with testing the causal relationships among variables in the structural model without concern for negative impacts from multicollinearity among the independent variables.

**Assessment of the Predictive Power of the Structural Model*

The Explained Variance of the Dependent Variable by the Independent Variables (Adjusted R^2)

In the structural model analysis using PLS-SEM, the adjusted R^2 is an important measure to evaluate the explanatory power of the set of independent variables on the dependent variable. The analysis results show that the adjusted R^2 value for the variable VC (Value Chain Development) is 0.711, indicating that the independent variables in the model explain 71.1% of the variance in VC. This represents a very good level of explanation, reflecting a strong predictive capability of the model.

Predictive Fit of the Model

In addition to the R^2 indicator, the Q^2 value is used to assess the out-of-sample predictive relevance of the model through the blindfolding technique in PLS-SEM. According to Geisser (1974) and Stone (1974), a model with $Q^2 > 0$ is considered to have predictive capability. Tenenhaus *et al*. (2005) proposed that $Q^2 > 0.25$ indicates moderate predictive relevance, while $Q^2 > 0.5$ indicates strong predictive relevance. The analysis results in **Table 3** show that the variable VC achieved a Q^2 value of 0.691, exceeding the 0.5 threshold, reflecting strong predictive power and suitability of the model. Additionally, the RMSE (0.559) and MAE (0.424) values are relatively low, further reinforcing the model's accuracy when applied in practice.

Table 3. Results of $R^{2,}$ Q^2

	R-square	R-square adjusted	*Q^2predict*	*RMSE*	*MAE*
VC	0.723	0.711	*0.691*	*0.559*	*0.424*

Source: Results of Data Analysis

**Effect Size (f^2) Value*

The f^2 index allows for evaluating the importance of an independent variable by measuring the change in R^2 when that variable is removed from the model. The data analysis results in **Table 4** indicate that most independent variables in the model have a small to moderate effect on the dependent variable, the development of the OCOP product value chain (VC). Specifically, the variables Awareness of the Value Chain (ACT), Market Access (MA), and Cooperation in the Value Chain (CO) have f^2 values of 0.194, 0.166, and 0.216, respectively **(Table 4)**, indicating a moderate impact on VC. In contrast, the variables Innovation (INO) and Product Advantage (PA) have f^2 values of 0.036 and 0.050, respectively, reflecting relatively small effects. Thus, the f^2 analysis provides a deeper insight into the role and influence level of each factor in the model, thereby confirming that the established causal structure is reasonable and supported by solid empirical evidence.

Table 4. Results of f^2 Values and Effect Sizes

Relationship between factors	f^2 Values	Level of effect
ACT -> VC	0.194	Moderate
CO -> VC	0.216	Moderate
INO -> VC	0.036	Small
MA -> VC	0.166	Moderate
PA -> VC	0.050	Small

Source: Results of Data Analysis

Hypothesis Testing

To ensure the stability of the model and avoid multicollinearity among latent variables in the structural model, this study uses the inner VIF values for assessment. The analysis results show that all VIF coefficients range from 1.582 to 2.810, which are below the threshold of 3, indicating no signs of multicollinearity in the model. This demonstrates that the relationships among the independent variables in the model are relatively independent and reliable for further analysis.

In the PLS-SEM model, since normal distribution is not assumed, the statistical significance of the path coefficients is not tested by traditional parametric tests but rather by non-parametric bootstrapping analysis.

The hypothesis testing results presented in **Table 5** indicate that all hypotheses from H1 to H5 are accepted with p-values < 0.05, among which four hypotheses are highly statistically significant with p-values < 0.01. This confirms that the independent variables—Awareness of the Value Chain (ACT), Market Access (MA), Product Advantage (PA), Innovation (INO), and Cooperation in the Value Chain (CO)—all have significant impacts on the development of the OCOP product value chain (VC).

The perception of OCOP value chain development (VC) is significantly influenced by a number of factors, including market access (MA), cooperation in the value chain (CO), and awareness of the value chain (ACT). The analysis also illustrates the effects of Innovation (INO) and Product Advantage (PA), albeit to a lesser degree. The order in which effects diminish in size is as follows: CO (0.268) > PA (0.149) > INO (0.118) > ACT (0.306) > MA (0.270). These results set the stage for developing the official model that considers the factors that influenced the development of the OCOP product value chain. For local OCOP program participants, this will support state-assisted policies and strategic orientations.

The results of the PLS-SEM structural equation model analysis are presented in the **Figure 2**:

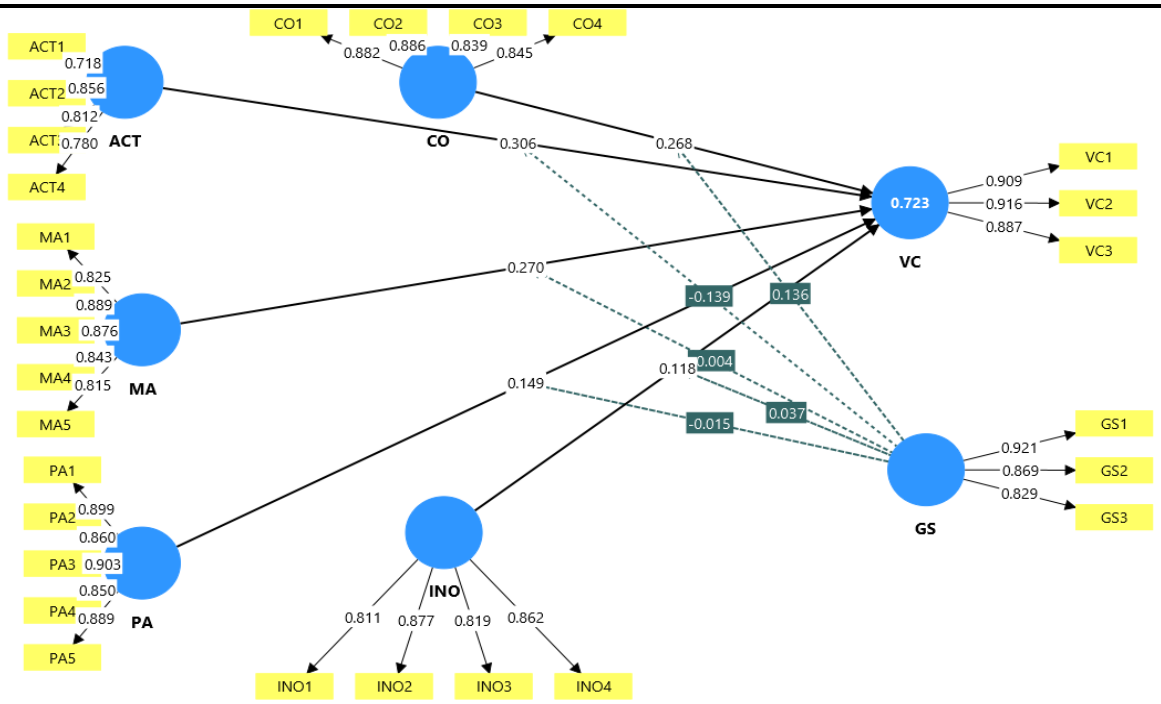

Figure 2. The results of the PLS-SEM structural equation model analysis

Source: Results of Data Analysis

Assessment of the Moderating Influence of Government Support Policy

The study employs the interaction testing method through bootstrapping to assess the moderating role of the State Support Policy variable (GS). The results presented in **Table 5** show that only two interaction effects are statistically significant ($p < 0.05$), including

Interaction: GS x ACT → VC ($p = 0.008$): The results indicate that the State Support Policy has a negative moderating effect, weakening the influence of Value Chain Awareness (ACT) on the development of the OCOP value chain (VC). This suggests that in the context of clear state policies, people tend to act more according to government directions rather than relying on their own awareness of the OCOP value chain.

Interaction: GS x CO → VC ($p = 0.000$): The results show that the State Support Policy has a positive moderating effect, strengthening the impact of cooperation within the value chain (CO) on the development of the OCOP value chain (VC). Effective government policies help promote cooperation among value chain members, thereby boosting the development of the value chain. This is entirely reasonable in the context of public management practice. Members of the value chain are more proactive when they clearly understand the support they receive, their responsibilities, and the risks involved in participating in the value chain. This is consistent with the Theory of Planned Behavior (Ajzen, 1991), as well as the assessment by Agyekumhene *et al*. (2018) in the context of actors with limited market experience who are heavily influenced by support from institutional and legal environments. The other three interactions (GS x INO, GS x MA, GS x PA) are not statistically significant and thus are not further analyzed.

Table 5. Results of Hypothesis Testing and Assessment of the Moderating Influence of Government Support Policy

Hypo	Interaction	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Conclusion
H1	**ACT -> VC**	0.306	0.302	0.059	5.164	0.000	Accepted
H2	**MA -> VC**	0.270	0.275	0.054	5.021	0.000	Accepted
H3	**INO -> VC**	0.118	0.120	0.046	2.580	0.010	Accepted
H4	**PA -> VC**	0.149	0.148	0.051	2.936	0.003	Accepted

H5	**CO -> VC**	0.268	0.265	0.042	6.318	0.000	Accepted
H6a	GS x ACT -> VC	-0.139	-0.137	0.052	2.673	0.008	Accepted
H6b	GS x MA -> VC	-0.004	-0.003	0.051	0.085	0.933	Rejected
H6c	GS x INO -> VC	0.037	0.038	0.032	1.171	0.241	Rejected
H6d	GS x PA -> VC	-0.015	-0.015	0.049	0.298	0.765	Rejected
H6e	GS x CO -> VC	0.136	0.132	0.037	3.701	0.000	Accepted

Source: Results of Data Analysis

Compared to previous studies, these results are consistent with the research of Tran Trung Vy *et al*. (2018). Studies on agricultural value chains also indicate that support policies are only effective when accompanied by specific management tools, rather than relying solely on communication to change awareness. However, the results partly differ from some studies conducted in developed countries, where government support policies are often considered as mediating factors rather than direct moderating variables. This suggests that under the practical conditions in Vietnam, where the role of the government remains highly directive, the policy variable can directly intervene in the relationship between awareness, behavior, and development outcomes.

Overall, the findings regarding the moderating variable "State Support Policy" are fully consistent with the actual implementation of OCOP in Vietnam and are further supported by many domestic studies, especially in organizational behavior, agricultural development, and public policy management. These results not only have theoretical significance but also suggest specific directions for policy formulation to promote OCOP value chains, where the state both guides and creates favorable conditions for individual actors to act effectively.

Results and Discussion

The study confirms the crucial role of several factors influencing the development of OCOP product value chains in Thanh Hoa province. Among these, the awareness of value chains by OCOP actors is identified as the most influential factor. This highlights that knowledge, linkage thinking, and organizational capacity to operate along the value chain are key determinants for sustainable value creation in OCOP products. This finding reflects the reality that most OCOP actors are micro or small enterprises or individual households, many of whom lack sufficient understanding or attention to the value chain's role in product development. Therefore, raising awareness and management capacity for the value chain is a prerequisite to enhancing the competitiveness of OCOP products. As highlighted by FAO (2007), understanding the value chain enables more effective coordination and increases added value. Therefore, strengthening awareness and management capacity must be regarded as a foundational requirement for improving the competitiveness and sustainability of OCOP products.

The second most influential factor, market accessibility (MA), ranks as the second most impactful factor, followed by cooperation within the value chain. When stakeholders—including producers, processors, distributors, and consumers—build trust, share information, and coordinate effectively, the value chain becomes more efficient and adaptable. These results align with Kaplinsky and Morris (2000), who emphasize that the degree of vertical and horizontal integration directly affects coordination effectiveness and equitable value distribution. Strengthening collaboration among farmers, cooperatives, enterprises, and intermediaries will foster a cohesive and resilient value chain aligned with market demands (Duraimurugan *et al*., 2022; Alsubeie, 2023; Anushree *et al*., 2023; Malinga & Laing, 2024; Zafeiraki *et al*., 2024).

Although less impactful than the aforementioned variables, product innovation and product advantage also exert important supporting effects. Improvements in processing technology, packaging, and communication contribute to aligning OCOP products with contemporary market trends. Simultaneously, product advantages—such as geographical origin, cultural identity, and local storytelling—enhance emotional value and brand differentiation, thereby increasing market competitiveness.

Importantly, the study clarifies the moderating role of Government Support Policies. Two significant interactions were observed. First, state support policies were found to negatively moderate the relationship between value chain awareness and OCOP value chain development, indicating that in contexts with clear government directives, actors

tend to rely on institutional orientation rather than autonomous awareness. Second, state support policies positively moderate the influence of collaboration, demonstrating that well-designed policies facilitate stakeholder participation and cooperation. These findings are consistent with Ajzen's (1991) Theory of Planned Behavior and the work of Agyekumhene *et al*. (2018), particularly in settings where limited market experience necessitates reliance on institutional mechanisms.

In conclusion, the development of OCOP value chains is shaped by a comprehensive interplay of awareness, market access, cooperation, innovation, product uniqueness, and state policy. Given the predominance of small-scale actors in the OCOP system, the enhancement of internal capacities, coupled with a comprehensive and enabling policy framework, is imperative. The study contributes both theoretically and practically to the formulation of responsive, evidence-based public policies to effectively implement the OCOP program in the coming period (Enwa *et al*., 2022; Liu *et al*., 2022; Zhang *et al*., 2022; İlaslan *et al*., 2023; Makhoahle *et al*., 2023; Tabassum *et al*., 2023).

Policy Recommendations

Raise Awareness of Value Chains

Implement targeted training programs on value chain management, branding, and market strategies, tailored for micro-enterprises and individual businesses, with a focus on practical and on-site consulting (Al-Khotani *et al*., 2022; Daivasigamani *et al*., 2022; Mohandas *et al*., 2022; Mubayrik *et al*., 2022; Broers *et al*., 2023; Hackenberg *et al*., 2023; Kulkarni *et al*., 2023; Dobrzynski *et al*., 2024; Ismikhanov *et al*., 2024; Makakova *et al*., 2024).

Improve Market Access

Enhance market promotion and analysis through collaboration among local authorities, industry associations, and e-commerce platforms. Encourage OCOP actors to develop proactive market strategies rather than passive sales through intermediaries.

Promote Linkages and Cooperation

Support the formation and development of cooperatives, new-style cooperatives, and production-consumption alliances. Local government and technical support organizations play critical roles in building trust and maintaining effective coordination.

Leverage Product Advantages and Innovation

Invest in product storytelling based on cultural and historical values, standardize quality, improve packaging design, and upgrade processing technology. Encourage innovation and technology application to enhance competitiveness.

Strengthen State Support and Institutional Frameworks

Complete policies, provide financial incentives, support innovation, and develop rural logistics infrastructure. Establish monitoring mechanisms to adjust policies as needed, and foster horizontal and vertical linkages among OCOP actors, cooperatives, enterprises, and financial institutions through funding and preferential credit schemes.

Conclusion

This study examines the influence of factors that significantly influence the development of the OCOP product value chain in Thanh Hoa province, in which awareness is the most important determinant. Enhancing knowledge and linkage thinking among OCOP actors—mainly micro and small enterprises—is essential for sustainable value creation. Market access and collaboration also play vital roles in improving product quality and expanding reach. Although less dominant, innovation and product advantages contribute meaningfully to differentiation and competitiveness. Importantly, state support policies serve as a moderating force, emphasizing the need for clear and consistent institutional frameworks to guide and enhance value chain coordination. This study is evidence to confirm the role of state support in promoting the development of the value chain of OCOP products in general and local specialty products of Vietnam in particular.

Limitations and Dimensions for Future Research

The study was limited in scope to Thanh Hoa province with a limited sample size. In addition, the study did not include or discuss age, gender, or time participating in the OCOP program. For future research, the scale and scope of the study can be expanded to many other localities. In addition, studies can also assess the influence of factors related to the personal characteristics of OCOP subjects on the development of the OCOP product value chain.

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