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Posted Date: 15 April 2025

doi: 10.20944/preprints202504.1216.v1

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Hypothesis

Sustainable Business to Customer Value Co -Creation Model : A Novel Theory

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Abstract: Since the Covid-19 pandemic and its aftermath, the public's need for healthy food has been very high. One of them is vegetables and fruits. We get healthy vegetables from organic vegetables. The problem of demand and supply of organic vegetables is still large and there are obstacles in marketing and needed strategic management. The existence of online marketing platforms that also developed during the Covid pandemic, but not a few immediately stopped after the pandemic passed. The public's need to sell or buy necessities is still high with an online system, including several vegetable and organic product platforms. known as Business to Customer (B2C) Marketing strategies that use a shared value creation approach (Value co-creation or VCC) are still rarely carried out. The purpose of this study is to see the large demand and supply, sustainable vegetable business models by implementing a value co-creation model on the platform. The research method is a mix of quantitative methods with Confirmatory Factor Analysis (CFA) and qualitative with Structural Equation Modeling (SEM) Lisrel analysis test tools), In 200 consumer respondents with random sampling , and organic vegeta-ble supporting actors in eight regions where there are organic vegetable producers with purposive sampling , in March 2022 to March 2023. The results of the study are that the demand and supply of organic vegetables in West Java need to pay attention to the right price and quantity to achieve market balance. The sustainable organic vegetable VCC B2C model is the DSRT model that refines the DART model.

Keywords: B2C; organic vegetables; model; sustainability; value co-creation

1. Introduction

National Economic Development and Environmental Challenges. Currently, national development, particularly in the economic sector, tends to clash most strongly with . environmental concerns (ecology). Economic development and ecological preservation are like two opposing sides that are deeply interconnected—on one hand, economic development is necessary for societal welfare, but on the other, it inevitably impacts ecological sustainability. This is because economic terminology has largely failed to reconcile environmental concerns with improving societal well-being.

Despite the many achievements contributed by technology and the industrial sector from upstream to downstream in Indonesia, there has been a significant decline in natural resources and environmental quality. Industrial activities aim to process and utilize natural wealth, but in reality, excessive exploitation of natural resources has resulted in overproduction without considering responsible production practices. This, in turn, diminishes environmental sustainability and negatively affects human survival due to the absence of responsible consumption practices (Responsible Consumption) (Ibcsd, 2019).

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The optimal implementation of Responsible Consumption and Production (SDG 12) has yet to be realized. There is a genuine need to change the current resource management and utilization patterns, which often have negative impacts on both environmental conditions and societal welfare. Conflicts in natural resource management remain evident due to strong sectoral egos, weak coordination and law enforcement, low human resource sensitivity, and the recurring issue of insufficient funding for managing responsible production and consumption. Ideally, economic actors—both producers and consumers—should recognize themselves as eco-centric human beings, acknowledging that humans are part of the environment rather than separate from it. Economic activities should consider environmental sustainability because they are not just about short-term gains but long-term sustainability. Economic growth and environmental preservation are interconnected to achieve SDG 12: Responsible Consumption and Production (Teodore, 2006).

Efforts to achieve Responsible Consumption and Production (RCP) require strategic management within companies to ensure sustainable competitive advantage and value realization. Hunger and Wheelen (1996) discuss strategic management in their work "Strategic Management", explaining that applying strategic management in profit-oriented companies is essential for understanding competitive forces and systematically developing a sustainable competitive advantage.

Organic Agriculture and Sustainable Development. One of the agricultural systems that aligns with SDG 12: Responsible Consumption and Production is organic farming, which promotes sustainability. In Indonesia, organic farming has been expanding annually. The organic farming land area increased from 69,605.9 hectares in 2007 to 251,630.8 hectares in 2019, according to Organic Farming Statistics (SPOI, 2020). The global organic farming industry is also growing, with Indonesia ranking 21st worldwide. Based on demand data for organic products since 2019:

Jakarta leads with 32% of total consumption demand. West Java ranks second with 21% demand.Since the COVID-19 pandemic, demand for organic products has surged. Organic vegetables had the highest demand (20%) Organic fruits accounted for 11.59% There was also a growing demand for processed organic products (SPOI, 2020). The pandemic further influenced consumer habits: 27% consumed organic products daily, 10% consumed twice a day, 9.41% consumed every three days, 5.29% consumed weekly (AOI, 2020)., In terms of supply, organic products experiencing growth include:Organic coffee, tea, and rice (3.1%), Organic palm sugar (8–17 million tons) (Directorate of National Export Development, Ministry of Trade, 2020).Horticultural commodities such as bananas, oranges, and lettuce (SPOI, 2020).

Government Support for Organic Horticulture. Horticulture is a priority sector in Indonesian agriculture aimed at increasing national revenue. Government initiatives include: Expanding dryland horticulture outside Java. Constructing post-harvest storage facilities in production centers

Developing organic horticultural villages. Between 2012 and 2015, Indonesia's vegetable production area expanded from 1,033,817 hectares to 6,370,751 hectares (BPS, 2017), increasing national vegetable production and consumption opportunities (Apriyani et al., 2018). Supply chain efficiency is crucial for maintaining a steady supply, with continuity of supply being a key factor (Hadiguna & Marimin, 2007). However, data on comprehensive organic product supply, including processed and horticultural commodities, is still lacking (AOI).

Challenges in Organic Agriculture Development. According to Yosini Deliana et al. (2019), organic agriculture faces challenges related to: Market limitations – While global demand has risen, domestic demand remains weak. Consumers are primarily eco-conscious individuals willing to pay premium prices. Mislabeling – Some supermarkets label conventional products as organic without proper certification. Farmer participation – Many farmers lack knowledge or interest in organic farming. High certification costs – Organic certification is expensive. Weak farmer organizations – Small farmers struggle to establish agribusinesses without strong support. Weak partnerships – Collaboration between farmers and businesses remains ineffective. Marketing & promotion – Organic vegetable producers still struggle with digital marketing strategies. A key success factor in organic agriculture development is the farmer-business partnership, especially for export markets.

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Research on Value Co-Creation (VCC) with a Value Co-Design approach remains limited, particularly for organic vegetable products in domestic and export markets.

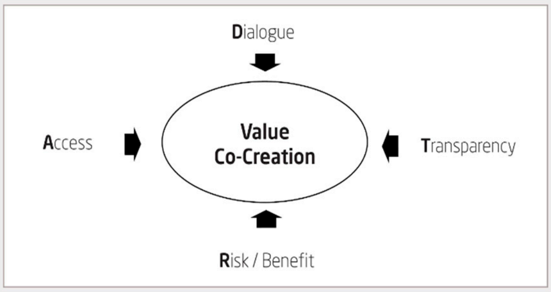

Figure 1
DART MODEL
Source: Adapted from Prahalad & Ramaswamy (2004a).

Value Co-Creation and Digital Marketing in Organic Agriculture. Service-Dominant Logic (SDL) in marketing suggests that customers play an active role in value creation through interactions with products and services (Vargo & Lusch, 2004). However, research has often overlooked individual consumer impact on Value Co-Creation (VCC) (Hoyer et al., 2010; Sugathan & Ranjan, 2019). Prahalad & Ramaswamy (2004) introduced the DART Model of Value Co-Creation, emphasizing: Dialogue, Access, Risk/Benefit Analysis,Transparency. Further research is needed to apply the DART model in social networks and sustainable community engagement. Digital platforms, including mobile applications, have been identified as effective tools for organic product marketing (Arogundade et al., 2020). With the rise of social media marketing, platforms like Facebook, Instagram, WhatsApp, Twitter, and websites have become crucial for B2C (Business-to-Customer) interactions in the Industry 4.0 and post-pandemic era (Fagerström & Ghinea, 2020).

The Shift Toward Healthy and Eco-Friendly Lifestyles. The COVID-19 pandemic accelerated a shift towards eco-friendly, chemical-free lifestyles. Consumers now prioritize safe, nutritious, and environmentally friendly food, increasing demand for organic vegetables globally (Mayrowani, 2012). However, organic vegetable consumption in Indonesia remains low, both domestically and for exports. Research suggests that digital platforms can enhance value creation, ultimately benefiting businesses (Feng Zhu, 2024).

The Role of Organic Farming Communities in Indonesia Indonesia's organic farming sector consists of individuals, farmer groups, and private sector companies, many of which are members of AOI (Aliansi Organik Indonesia). Since 2002, AOI has had 147 members across 18 provinces, including: 43 NGOs, 26 Companies, 16 Farmer Organizations, 37 Individuals. Given the low awareness among consumers and producers regarding organic food, research is needed on Value Co-Creation (B2C) models for organic vegetables, effective digital platforms, and sustainable business models.

2. Baground

2.1. Novelty and Literature Review of VCC in Organic Vegetables

The indexed journal sources used for identification included **Scopus, ScienceDirect, and Google Scholar**. The initial identification of articles from these three sources, using the specified keywords, resulted in **52,395 articles**. The screening process was then conducted based on relevant articles/topics and further refined using keyword **C**, narrowing the selection to **210 articles**. Subsequently, an eligibility assessment was performed, including **backward and forward review analysis**, leading to a final total of **55 articles** for review.

Table 1. Keywords in Database Search and Number of Articles Found.

Kode	Kata kunci	Scopus	ScienceDirect	G.Scholar	Jumlah

A	"value cocreation"	5.795	700	44.900	52.395
B	awareness* OR experience* OR knowledge* OR preference*	521	53.024	397.000	450.545
C	"colearning*" AND "coservice*"	210	71	266	547
D	"Consumption green product*" OR "organic product*"	216	1.154	468	1.838

The review analysis method used is the PRISMA method (four-phase, flow-diagram) (Moher, Liberati et al., and Prisma Group, 2009; Vrabel, 2015), as explained in Figure 1. Based on the keyword search used in codes A, B, C, and D, the specific keywords were: **A**: ("value co-creation"), **B**: (knowledge* OR preference* OR awareness* OR experience*), **C**: ("co-learning" AND "co-service"), **D**: ("green product" OR "organic product").

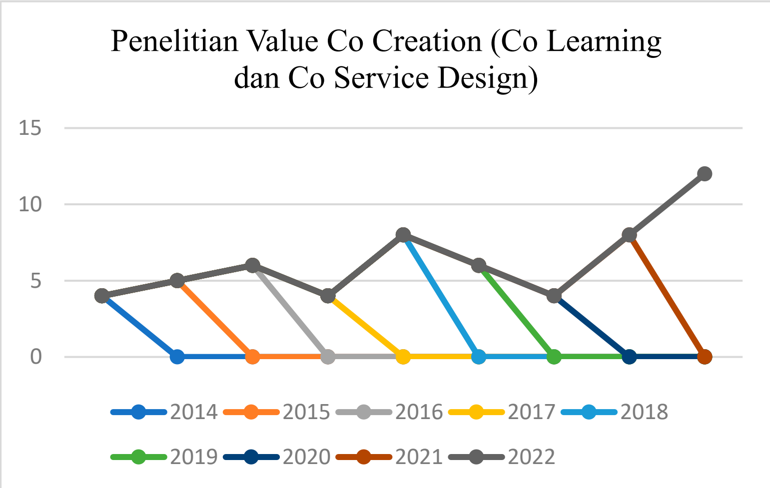

Figure 2. Value Co-Creation Publications Per Year in 2022 (Since 2014).

Table 2. Summary of Discussions from Several Literature Reviews.

Category	Sutarso, Y (2015)	Stokburger Sauer (2016)	Lessard, L (2015)	Zhang, H (2020)	Shi, X, Li, G et al. (2020)
Review Objective	Investigating independent value creation, particularly to describe its concept, activities, and value, as well as examining how personality plays a role in value creation.	Investigating the paradox of co-production between benefits and costs.	Investigating how KIBS services (higher education business services) influence student enrollment and engagement.	Examining the relationship between service quality on the Weibo platform and two behavioral dimensions: participation and citizenship.	Exploring the relationship between green supply chain (GSC) strategy, value co-creation, and firm performance in a manufacturing environment, considering the moderating effects of internal environmental factors and external environmental pressures.
Review Domain	Management entrepreneurship	Service management	Service management	Service design	Co-creation Green Supply Chain (GSC)
Review Scope	Management entrepreneurship	Service management	Service management	Service design	S.D Logic
Research Object on Value Co-Creation	Higher education service customers/students in Indonesia	Three service industries	Higher education service users/students	345 active users of the Weibo platform	115 manufacturing companies in China

Data Collection Method	Primary data through interviews	Primary data from surveys and secondary company data	Primary data from surveys and interviews	Primary data from surveys and interviews	Secondary data from manufacturing companies, primary data from interviews
Data Analysis Output	Identified benefits of independent value creation, such as functional, social, and relational. Personality has the potential to influence customer performance independently in value creation.	Increased levels of joint production positively affect customer loyalty and monetary spending.	Development of value co-creation modeling techniques for KIBS requirements to monitor KIBS involvement in corrective actions for success.	Higher collectivism strengthens the relationship between Weibo service quality and value creation, and citizenship behavior is positively related to customer perception and brand image.	Macro-level external pressure and micro-level internal support can enhance these effects. This study enriches the literature by integrating GSC strategy and value co-creation strategy, instilling confidence in firms and their supply chain partners in value co-creation, thereby aiding better implementation of GSC strategies.
Model Design	Not discussed	Experimental study	Dual case study on value creation	Dual case study on value creation	Dual case study on value creation
Validation and Sensitivity	Not discussed	Not discussed	Not discussed	Multidimensional validation	Multidimensional validation
Model Explanation	Not discussed	Not discussed	VCM (Value Co-Creation Modeling)	Value Co-Service Design	VCM (Value Co-Creation Modeling)

2.2. Research Novelty in Marketing Strategy with Value Co-Creation (Co-Learning and Co-Service Design)

The state of the art of this literature review lies in the application of value co-creation using the co-learning and co-service design approaches. These two approaches have been previously applied in KIBS (Knowledge-Intensive Business Services) and Miobi companies in China, where value co-creation was utilized for higher education service management and Miobi's specialized online marketing applications. However, there has been no prior research on enhancing value to increase the consumption of local organic vegetables and exports to improve supply availability (MAK Siddike et al., 2014; K Komulainen, 2014; K Kimla, K Muto et al., 2015; GA Tangalah, R Jenal, Thahaya, 2021; LA Donovan et al., 2018; J Pocek et al., 2022; M Guseppe et al., 2022).

2.3. The Gap Between Marketing Strategy and the Research Topic of Value Co-Creation.

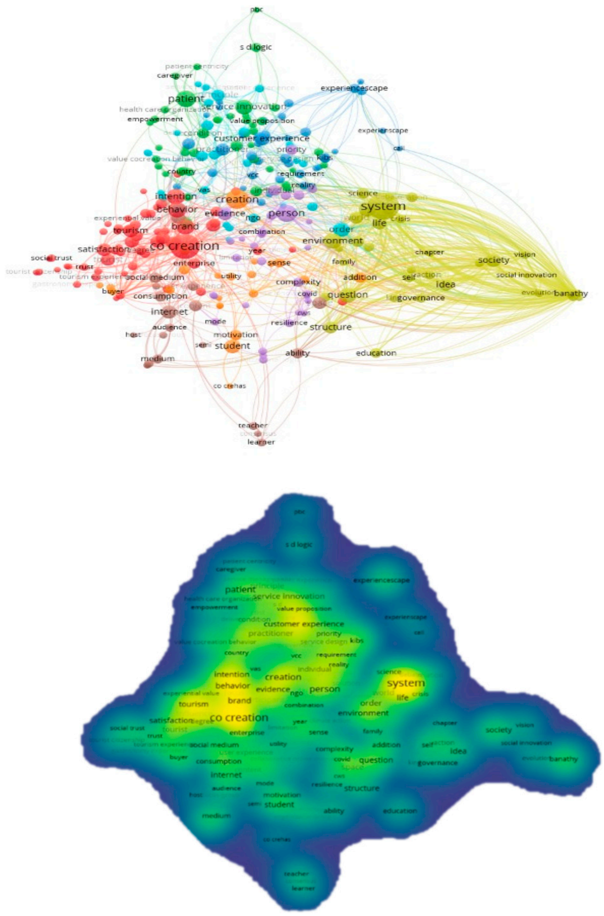

Figure 3. Mapping of Bibliographic Value Co-Creation – Identified 8 Clusters.

Table 3. Top 10 Populer Keyword pada 8 Cluster Penelitian Value Co Creation.

Cluster 1	*Cluster 2*	*Cluster 3*	*Cluster 4*	*Cluster 5*	*Cluster 6*	*Cluster 7*	*Cluster 8*
Advocacy	Ambiguity	Account	Action	Combination	Animal welfare	Active Sport Tourist	Ability
Association	Archetype	Authentic experience	Banathy	Complitcity	Best Practice	Addition	Audience
Behaviour	Attitude	Basis	Chage	Covid	Care	Brand Cocreation	Blogger
Brand	Better Understandi ng	Brand meaning	Chapter	CWS	Comunication Technology	Brand resurrection move	Consensus
Climate action	Big Data	Branding	Conscicous evolution	Disability	Consumer Value Coreation	Buyer	Compsumtio n
Co Creation	Big data application	Call	Crisis	Evidence	Cost	Co crehas	Content
Co created value	Caregiver	Client	Culture	Further research	Customer value	Colaborative Online Innovative	Deep Interview

Co created experience	Codesign	Co production	Debate	Gender	Delivery	Creation	Focus
Conceptual model	Condition	Colective focus	Direction	Human machine interaktive	Dementia	Customer involvement	Focus Group
Control	Co production	Conceptual farmwork	Education	Inclusion	Dialogue	Defuct brand	Host

Table 4. Top 10 Populer Keyword pada 8 Cluster Penelitian Value Co creation (Co learning dan Co service design).

Cluster 1 (12 artikel)	*Cluster 2 (10 artikel)*	*Cluster 3 (7 artikel)*	*Cluster 4 (13 artikel)*	*Cluster 5 (15 artikel)*	*Cluster 6 (8 artikel)*	*Cluster 7 (7artikel)*	*Cluster 8 (15 artikel)*
Co creation	Consumption	Combination	Creation	s.d logic	pbc	Governance	Idea
Brand	Internet	Environment	Value Co creation behaviour	Value propotition	s.d Logic	System	Society
Intention	Mode	Structure	Service design	Principle	Experience scape	Life	Vision
Behaviour	Motivation	Addition	Practitioner	Reality	Call	Chapter	Sosial Innovation
Creation	Student	Sense	Priority	Service design	Value propotitin	Order	Evoluton
Satisfaction	Audience	Family	Customer Experience	Service management	Customer experience	Resilience	Banathy
Enterprise	Buyer	Complexcity	Caregiver	Service innovation	Kibs	Ability	Action
Person	Ability	Question	Patient	Individual	Science	Sense	Structure
Experimental value	Leaner	Order	Value proposition	Solution	Reality	Cocid	Education
Combination	Education	NGO	Country	Healt care organization	Requirtment	Family	Life

3. Methodology

Our Role as Academics and Members of Society in Managing Natural Resources for Sustainable Welfare

As academics and members of society, we must prioritize the responsible management of natural resources to ensure the welfare and prosperity of communities. Natural resource management should align with the mandate of the Creator—to utilize resources responsibly while maintaining the sustainability of humanity, preserving nature and the environment, and avoiding destruction or over-exploitation. Our role as both producers and consumers must uphold the objectives of the Sustainable Development Goals (SDGs). One of the key SDGs related to production and consumption is SDG 12: **Responsible Consumption and Production (RCP)**. This goal emphasizes sustainable consumption and production practices. One commodity that has seen increasing demand, particularly after COVID-19, is vegetables, which are essential for boosting immunity. Given Indonesia's tropical climate, various types of vegetables can be cultivated effectively. Most farmers in Indonesia use conventional, semi-organic, and organic farming systems. Organic vegetable farming aligns with SDG 12's RCP objectives, as it ensures health safety and environmental sustainability by avoiding synthetic chemical fertilizers, pesticides, and artificial

 doi:10.20944/preprints202504.1216.v1

growth hormones. These natural farming practices enhance agricultural productivity while ensuring organic produce benefits consumers by supporting immune health.

Grant Theory	• Strategic Management (Thomas L Wheelen dan J. David Hunger, 2003),
Midlle Theory	• Value Co-Creation (Prahalad dan Ramaswamy , 2004)
Apply Theory	• Business Model (Alexander Osterwalder,2005)

According to Thomas L. Wheelen and J. David Hunger (2003), strategic management involves a series of managerial decisions and actions that determine a company's long-term performance. It includes environmental scanning (both external and internal), strategy formulation (long-term planning), implementation, and evaluation for strategic control. To achieve responsible consumption and production (RCP), businesses must adopt strategic management to ensure sustainable competitive advantages and value creation. Hunger and Wheelen (1996), in their work *Strategic Management*, discuss the importance of strategic management in profit-oriented companies, emphasizing its role in systematically and consistently developing sustainable competitive advantages.

Challenges in the Organic Vegetable Market

The demand for organic vegetables is high, both locally and internationally, yet the supply from agricultural businesses remains low. Organic vegetable consumers primarily belong to communities that already understand the importance of consuming healthy food and contributing to environmental preservation. However, both internal and external business factors continue to present challenges in increasing public adoption of organic vegetable consumption. Consumers play a central role in providing valuable business data regarding their needs, preferences, and expectations. Businesses must analyze consumer data to improve services and enhance mutual value creation. By understanding factors affecting demand, supply, and preferred vegetable varieties (both locally and for export), businesses can enhance **Value Co-Creation (VCC)** to drive profitability. The information collected from the market can be categorized based on co-creation strategies to develop a robust business model for Business-to-Consumer (B2C) VCC in the organic vegetable sector.

Bridging the Gaps in Organic Vegetable Consumption Through Value Co-Creation (VCC)

Analysis of previous studies reveals certain limitations in their implications, particularly regarding psychological factors influencing the acceptance and consumption of organic vegetables. Besides product quality, promotion, and distribution, online marketing systems have also evolved significantly during the COVID-19 pandemic. Digital platforms and internet-based applications have become essential for consumers in obtaining healthy vegetables, presenting an opportunity for businesses to sustain their operations. However, many existing websites and e-commerce platforms still face challenges in their implementation, possibly due to inadequate marketing campaigns, lack of socialization, or insufficient consumer education. Many platforms fail to meet consumer expectations in terms of service and engagement. By leveraging an effective **Value Co-Creation (VCC) model**, this research aims to develop a **B2C-based digital platform for organic vegetables**, ensuring better understanding, acceptance, consumption levels, frequency, and consumer awareness. Furthermore, it aspires to cultivate influencers who actively promote responsible consumption and production (RCP) in the organic vegetable sector.

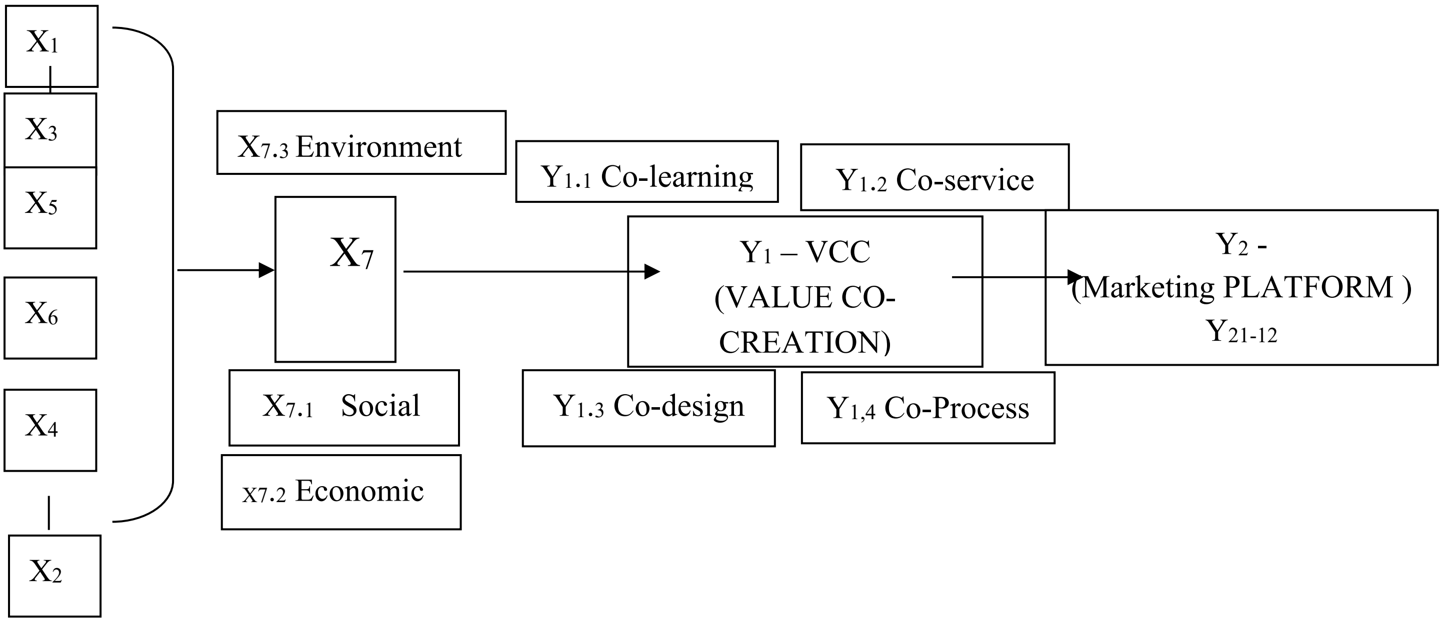

Figure 4. Framework Diagram of VCC B2C Analysis for Organic Vegetables Using SEM LISREL.

Description:

- X_1 = Demand and its indicators
- X_2 = Supply and its indicators
- X_3 = Dialogue
- X_4 = Access
- X_5 = Risk/Benefit
- X_6 = Transparency
- X_7 = Sustainability (economic, social, environmental)
- Y_1 = Value Co-Creation (co-learning, co-design, co-process, co-service)
- Y_2 = Online marketing platform (14 indicators)

Hypothesis Development

Table 5. Research Hypotheses.

Hypothesis No.	Definition	Theory
H 1.1	Ho: Indicators X 1.1-1.13 have a positive/significant effect on the demand for organic vegetables. H1: Indicators X 1.1-1.13 do not have a positive/significant effect on the demand for organic vegetables.	Factor Analysis Charles E. Spearman CFA (1863)
H 1.2	Ho: Indicators X 2.1-2.11 have a positive/significant effect on the supply of organic vegetables. H1: Indicators X 2.1-2.11 do not have a positive/significant effect on the supply of organic vegetables.	Factor Analysis CFA Charles E. Spearman (1863)
H 2.1	**Sustainable Value Co-Creation B2C Model for Organic Vegetables** **Exogenous Variable: Demand** - Ho: Price has a significant effect on the VCC platform. H1: Price does not have a significant effect on the VCC platform. - Ho: Awareness has a significant effect on the VCC platform. H1: Awareness does not have a significant effect on the VCC platform. - Ho: Behavior has a significant effect on the VCC platform.	SEM Lisrel

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	H1: Behavior does not have a significant effect on the VCC platform. - Ho: Lifestyle has a significant effect on the VCC platform. H1: Lifestyle does not have a significant effect on the VCC platform. - Ho: Knowledge has a significant effect on the VCC platform. H1: Knowledge does not have a significant effect on the VCC platform. - Ho: Availability has a significant effect on the VCC platform. H1: Availability does not have a significant effect on the VCC platform. - Ho: Product quality has a significant effect on the VCC platform. H1: Product quality does not have a significant effect on the VCC platform. - Ho: Community certification has a significant effect on the VCC platform. H1: Community certification does not have a significant effect on the VCC platform. - Ho: LSO certification has a significant effect on the VCC platform. H1: LSO certification does not have a significant effect on the VCC platform. - Ho: Brand has a significant effect on the VCC platform. H1: Brand does not have a significant effect on the VCC platform. - Ho: Quality assurance has a significant effect on the VCC platform. H1: Quality assurance does not have a significant effect on the VCC platform. - Ho: Packaging has a significant effect on the VCC platform. H1: Packaging does not have a significant effect on the VCC platform. - Ho: Community has a significant effect on the VCC platform. H1: Community does not have a significant effect on the VCC platform.
Exogenous Variable: Supply	- Ho: Production output has a significant effect on the VCC platform. H1: Production output does not have a significant effect on the VCC platform. - Ho: Climate change has a significant effect on the VCC platform. H1: Climate change does not have a significant effect on the VCC platform. - Ho: Price has a significant effect on the VCC platform. H1: Price does not have a significant effect on the VCC platform. - Ho: Information technology has a significant effect on the VCC platform. H1: Information technology does not have a significant effect on the VCC platform. - Ho: Government policy has a significant effect on the VCC platform. H1: Government policy does not have a significant effect on the VCC platform. - Ho: Quality assurance has a significant effect on the VCC platform. H1: Quality assurance does not have a significant effect on the VCC platform. - Ho: Distribution services have a significant effect on the VCC platform. H1: Distribution services do not have a significant effect on the VCC platform. - Ho: Access to capital has a significant effect on the VCC

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	platform. H1: Access to capital does not have a significant effect on the VCC platform. - Ho: Brand has a significant effect on the VCC platform. H1: Brand does not have a significant effect on the VCC platform. - Ho: Packaging has a significant effect on the VCC platform. H1: Packaging does not have a significant effect on the VCC platform. - Ho: Community has a significant effect on the VCC platform. H1: Community does not have a significant effect on the VCC platform.
D,A,R,T Variables	- Ho: Dialogue has a significant effect on the VCC platform. H1: Dialogue does not have a significant effect on the VCC platform. - Ho: Access has a significant effect on the VCC platform. H1: Access does not have a significant effect on the VCC platform. - Ho: Risk has a significant effect on the VCC platform. H1: Risk does not have a significant effect on the VCC platform. - Ho: Transparency has a significant effect on the VCC platform. H1: Transparency does not have a significant effect on the VCC platform.
Sustainability (S) Variable	- Ho: Economic factor has a significant effect on the VCC platform. H1: Economic factor does not have a significant effect on the VCC platform. - Ho: Social factor has a significant effect on the VCC platform. H1: Social factor does not have a significant effect on the VCC platform. - Ho: Environmental factor has a significant effect on the VCC platform. H1: Environmental factor does not have a significant effect on the VCC platform.
Dependent Variables	**Y1: Value Co-Creation (VCC)** - Co-Learning - Co-Service - Co-Design - Co-Process **Y2: Platform** - Attractive website - Engaging content - Communicative - Informative - User-friendly - Affordable costs - Flexible and dynamic - Detailed segmentation - Measurable results - System control and evaluation - Benefit value - Environmental value - Certification/legal value

3.1. Research Method

The research was conducted in Indonesia, a location that serves as both a producer and consumer of organic and conventional vegetables, for the initial identification of organic vegetable business actors, business mentors, and a focus on West Java. The study specifically covered eight organic vegetable-producing regions: Sukabumi Regency, Cianjur Regency, Bogor, Depok, Bandung Regency, Garut Regency, Tasikmalaya Regency, and Ciamis Regency. The research was carried out from January 2023 to January 2024. The data collection technique used was **purposive sampling,** by selecting all business actors (organic vegetable producers) and mentors in **West Java and 10 provinces (**AOI data) as well as data from the **Food and Horticulture Office.** Additionally, **random sampling** was used to select **200 respondents** consisting of organic and conventional vegetable consumers. The data sources consist of primary and secondary data. Primary data was obtained from questionnaires and direct interviews, product surveys, and focus group discussions (FGDs) involving and interview with google form for producers and consumers/communities of local and export organic vegetables, as well as non-organic consumers. Secondary data was sourced from organic horticulture businesses, AOI (Aliansi Organik Indonesia), relevant LSOs, IFOAM (International Federation of Organic Agriculture Movements), PAMOR (Organic Quality Assurance), export organic vegetable producers, stakeholders in export organic vegetable production, the West Java Food and Horticulture Office, the West Bandung Regency Agriculture Office, and the local Agricultural Extension Center (BPP).

3.2. Analyst Method

A. Phase 1 Research:

The process of qualitative data collection is divided into two main categories: (1) **Data collected by researchers** through interviews, focus groups, or ethnographic field observations. (2) **Pre-existing data** in the form of documents before the study, such as public records, statistics, emails, etc.

For the second category, the data is already recorded, minimizing challenges in collection and management. Qualitative non-numeric data is obtained not only from **primary data** (interviews, focus group discussions (FGDs), and field observations) but also from **secondary data**, including: Written documentation and photographs, Researcher-recorded videos and YouTube videos, Content from various websites and WhatsApp, Discussions on social media platforms such as **Twitter, LinkedIn, and Facebook,** Non-numeric data from **SPSS, Excel, and SurveyMonkey spreadsheets** NVivo 11 Plus is used for **visualizing data analysis results**, including **mind mapping, project mapping, and concept mapping**. This tool is effective for **content analysis, thematic analysis, and discourse analysis**, The first phase of the research applies **conditional analysis and participatory analysis (NVivo 11)** and is validated using **factor analysis.**

B. Factor Analysis Stages: (CFA Factor Analysis)

SPSS factor analysis is a method used to form factors in factor analysis using the SPSS application. Through this analysis, the following outcomes can be obtained:

1. Identifying underlying dimensions or factors that explain the correlation among a set of variables.
2. Identifying new, smaller variables to replace uncorrelated variables from a set of original variables that are correlated in multivariate analysis (such as regression analysis or discriminant analysis).
3. Identifying key smaller variables that stand out from a larger set in a multivariate analysis.

Steps:

1. Rate/rank the most frequently mentioned demand and supply factors from the research results, based on references and FGD (Focus Group Discussion) findings.

No.	Demand	Supply
	Journal / Reference	**Demand Factors**

No.	Demand	Supply
1	SPOI, 2022	Price, Quality, Awareness, Knowledge
2	Deliana, Y, et al., 2019	Certification, Price, Policy, Quality
3	Shalehah, EN, 2020	Price, Certification, Product Quality
4	Paradiba, D, et al., 2017	Price, Income, Substitute Goods Price

4. Result

4.1. Research Area Conditions

West Java, also known as **Tatar Sunda**, is a province in Indonesia. The capital of this province is **Bandung City**. In 2021, the population of West Java reached **48,782,408 people**, with a density of **1,379 people/km²**. Based on the 2010 BPS census, West Java is the most populous province in Indonesia, with the indigenous population being the **Sundanese ethnic group**. West Java is located in the **western part of Java Island**. The province is bordered by **Banten Province, DKI Jakarta Province, and the Java Sea** to the north, **Central Java Province** to the east, **the Indian Ocean** to the south, and **Banten Province and DKI Jakarta Province** to the west. The **northern coastal area** consists of lowlands, while the **central region** is mountainous, forming part of the mountain range that extends from **west to east across Java Island**. The highest point in the province is **Mount Ciremay**, located southwest of **Cirebon City**. Several major rivers, such as the **Citarum River and Cimanuk River**, flow into the **Java Sea**.

West Java has a **tropical climate**, with the lowest recorded temperature reaching **9°C** at the **summit of Mount Pangrango**, while the highest recorded temperature reaches **34°C** in the **northern coastal areas**. The **average annual rainfall** across the province is approximately **2,000 mm**, with some mountainous areas receiving **3,000 mm to 5,000 mm** of rainfall per year. West Java consists of **18 regencies and 9 cities**. The cities that have been newly established since **1996** are: West Java Province consists of **18 regencies, 9 municipalities, 627 districts, 645 sub-districts, and 5,312 villages**. In **2017**, the estimated population reached **44,039,313 people**, with a total land area of **35,377.76 km²**.

West Java Province's Economic and Industrial Potential. West Java Province has a high concentration of manufacturing industries, including electronics, leather, food processing, textiles, furniture, and aircraft industries. Additionally, geothermal energy, oil and gas, and the petrochemical industry are among the province's key economic drivers. The largest contributor to West Java's Gross Regional Domestic Product (GRDP) is the manufacturing sector (36.72%), followed by hospitality, trade, and agriculture (14.45%), bringing the total contribution to 51.17%. Despite economic crises, West Java remains the center of modern textile and garment industries in Indonesia, whereas other regions are more focused on traditional textile production. The province contributes nearly a quarter of Indonesia's total non-oil and gas production value. Its main export commodity is textiles, accounting for 55.45% of West Java's total exports. Additionally, West Java is one of the few provinces in Indonesia that exports iron ore, albeit in small quantities. The province is also home to industries such as steel production, footwear, furniture, rattan, electronics, and aircraft components.

Known as one of Indonesia's "national rice barns", nearly 23% of its total area of 29,300 km² is dedicated to rice production. As Indonesia's "Production Hub", West Java contributes 15% of Indonesia's total agricultural output. The province produces rice, sweet potatoes, corn, fruits, and vegetables, as well as commodities like tea, coconut, palm oil, natural rubber, sugar, cocoa, and coffee. The livestock sector is also significant, with 120,000 cattle, representing 34% of the national total. West Java has two major coastal fronts: the Java Sea to the north and the Indian Ocean to the south, with a coastline spanning around 1,000 km. This geographical advantage provides immense potential for the fishing industry. The estimated fish catch potential in the southern coastal waters is 1.2 million

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tons per year, but the actual catch has only reached 11,000 tons per year. The total fish production in West Java is 1.6 million tons annually, with 280,000 to 300,000 tons (17.5% to 18.75%) coming from capture fisheries. This means that fish catches from the southern coast account for only 3.67% of West Java's total capture fisheries production. A report from the West Java Marine and Fisheries Department (DKP) states that there are at least 120,000 fishermen in the province, along with an estimated millions of people engaged in aquaculture. West Java's inland water resources are not only derived from its many rivers but also from water reservoirs such as Saguling Dam, Cirata Dam, and Jatiluhur Dam, which not only generate hydroelectric power but also support agricultural irrigation and freshwater fisheries.

As of **2003**, West Java had a population of **approximately 37 million people**, accounting for **16% of Indonesia's total population**. Urbanization has been growing rapidly, particularly in the **Greater Jakarta area (Jabodetabek)**. In **2001**, West Java had **15.7 million educated workers**, making up **18% of Indonesia's total educated workforce**. The majority of them were employed in **agriculture, forestry, and fisheries (31%)**, followed by **manufacturing (17%)**, **trade, hospitality, and restaurants (22.5%)**, and **services (29%)**.

Table 6. Land Area and Organic Vegetable Production in Indonesia. West Java Ranks 3rd After Central Java and East Java.

No	Province	2019		2020			2021		2022
		Land Area (ha)	Production (Ton)	Producers	Land Area (ha)	Production (Ton)	Producers	Land Area (ha)	Production (Ton)
1	DKI Jakarta	8.4	4.2	0	20.15	10.075	0	20.15	10.075
2	West Java	147.53	865,257	117	138.8	928,397	131	140.87	1,091,040
3	Central Java	53.073	955,765	513	257.688	507,390	1,077	254.527	203,636
4	Special Region of Yogyakarta	2.305	94.48	17	2.105	166.1	12	1.78	140,942
5	East Java	80.588	1,828,439	237	75.087	639,362	306	42.357	1,188,106

Scheme 2022. Table 4.2 Respondent Characteristics 1.A. Mentors (2), Internal Data.

Table 7. Respondent Mentors Characteristics.

City/Regency	Number	Province	Number	Age (years)	Number	Education Level	Number
Sukabumi Regency	4	West Java	4	25-35	-	Elementary School	-
				36-46	3	Junior High School	-
				47-57	1	Senior High School	-
				58-70	-	Higher Education	4
Total	**4**	**4**	**4**	**4**	**4**	**4**	**4**
Cianjur Regency	3	West Java	3	25-35	-	Elementary School	-
				36-46	2	Junior High School	-
				47-57	-	Senior High School	1
				58-70	-	Higher Education	1
Total	**3**	**3**	**3**	**3**	**3**	**3**	**3**
Tasikmalaya Regency	2	West Java	3	25-35	1	Elementary School	-
				36-46	2	Junior High School	-
				47-57	-	Senior High School	2
				58-70	-	Higher Education	1
Total	**3**	**3**	**3**	**3**	**3**	**3**	**3**

Garut Regency	3	West Java	3	25-35	-	Elementary School	-
				36-46	3	Junior High School	-
				47-57	-	Senior High School	2
				58-70	-	Higher Education	1
Total	**3**	**3**	**3**	**3**	**3**	**3**	**3**
Bogor Regency	2	West Java	2	25-35	-	Elementary School	-
				36-46	1	Junior High School	-
				47-57	1	Senior High School	-
				58-70	-	Higher Education	2
Total	**2**	**2**	**2**	**2**	**2**	**2**	**2**
Depok	2	West Java	2	25-35	1	Elementary School	-
				36-46	1	Junior High School	-
				47-57	-	Senior High School	-
				58-70	-	Higher Education	-
Total	**2**	**2**	**2**	**2**	**2**	**2**	**2**
Bandung Barat Regency	3	West Java	3	25-35	1	Elementary School	-
				36-46	2	Junior High School	-
				47-57	-	Senior High School	-
				58-70	-	Higher Education	3
Total	**3**	**3**	**3**	**3**	**3**	**3**	**3**
Ciamis Regency	4	West Java	4	25-35	3	Elementary School	-
				36-46	-	Junior High School	-
				47-57	1	Senior High School	1
				58-70	-	Higher Education	3
Total	**4**	**4**	**4**	**4**	**4**	**4**	**4**
Total (West Java)	**23**	**23**	**23**	**23**	**23**	**23**	**23**
Outside West Java	**21**	**21**	**21**	**21**	**21**	**21**	**21**

1.B. Mentors (20), Assisted Data.

Table 8. Responden Mentor Characteristik.

Number Mentoring Duration (years)	Number	Number Assisted Category	Number	Number of Members (people)	Number	Number Land Area (ha)	Number
1-5	8	Individual	4	1-10	9	1-2	10
6-10	-	-	-	3-4	-		
>10	11	Group	19	1-30	14	>5	7
Total	**23**	**Total**	**23**	**Total**	**23**		
Outside West Java	21		21		21		

2A. Business Actors (42) (26 from Government Agencies and AOI), Internal Data.

Table 9. Responden Business Actors Characteristic.

City/Regency	Number	Province	Number	Age (years)	Number	Education Level	Number
Sukabumi Regency	3	West Java	4	25-35	-	Elementary School (SD)	-
	-	-	-	36-46	2	Junior High School (SMP)	-
	-	-	-	47-57	1	Senior High School (SMA)	-

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	-	-	-	58-70	-	Higher Education (PT)	3
Total	**3**	**3**	**3**	**3**	**3**	**3**	**3**
Cianjur Regency	6	West Java	6	25-35	2	Elementary School (SD)	-
	-	-	-	36-46	2	Junior High School (SMP)	-
	-	-	-	47-57	2	Senior High School (SMA)	3
	-	-	-	58-70	-	Higher Education (PT)	3
Total	**6**	**6**	**6**	**6**	**6**	**6**	**6**
Tasikmalaya Regency	5	West Java	5	25-35	1	Elementary School (SD)	-
	-	-	-	36-46	2	Junior High School (SMP)	-
	-	-	-	47-57	2	Senior High School (SMA)	3
	-	-	-	58-70	-	Higher Education (PT)	2
Total	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Bogor Regency	6	West Java	6	25-35	2	Elementary School (SD)	-
	-	-	-	36-46	2	Junior High School (SMP)	-
	-	-	-	47-57	1	Senior High School (SMA)	3
	-	-	-	58-70	1	Higher Education (PT)	3
Total	**6**	**6**	**6**	**6**	**6**	**6**	**6**
Depok	5	West Java	5	25-35	2	Elementary School (SD)	-
	-	-	-	36-46	1	Junior High School (SMP)	-
	-	-	-	47-57	2	Senior High School (SMA)	3
	-	-	-	58-70	-	Higher Education (PT)	2
Total	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Garut Regency	5	West Java	5	25-35	1	Elementary School (SD)	-
	-	-	-	36-46	3	Junior High School (SMP)	1
	-	-	-	47-57	-	Senior High School (SMA)	2
	-	-	-	58-70	1	Higher Education (PT)	2
Total	**5**	**5**	**5**	**5**	**5**	**5**	**5**
West Bandung Regency	6	West Java	6	25-35	2	Elementary School (SD)	-
	-	-	-	36-46	3	Junior High School (SMP)	-
	-	-	-	47-57	1	Senior High School (SMA)	3
	-	-	-	58-70	-	Higher Education (PT)	3

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Total	**6**	**6**	**6**	**6**	**6**	**6**	**6**
Ciamis Regency	5	West Java	5	25-35	1	Elementary School (SD)	-
	-	-	-	36-46	3	Junior High School (SMP)	-
	-	-	-	47-57	1	Senior High School (SMA)	2
	-	-	-	58-70	-	Higher Education (PT)	3
Total	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Grand Total	**42**	**42**	**42**	**42**	**42**	**42**	**42**
Outside West Java	**21**	**21**	**21**	**21**	**21**	**21**	**21**

2.B Business Actors, Business Capability Data.

Table 10. Responden Business Actors Characteristic.

Business Duration (years)	Number	Business Category	Number	Number of Members (people)	Number	Land Area (ha)	Number	Vegetable Production (tons)	Number	Revenue (Rp/month)	Number
1-5	12	Individual	7	1-10	5	1-2	14	0.25-0.5	25	<5,000,000	15
6-10											
>10	15	Group	35	1-30	37	3-4		>0.5	20	>5,000,000	27
Total	**42**		**42**		**42**		**42**		**42**		**42**

Table 11. Open-Ended Question Data.

Region	Local Vegetable Types	Export Vegetable Types	Largest Demand Areas	Domestic VCC Needs	Export VCC Needs	Marketing Channels	Value of Collaboration in Community
West Java	Pakcoy, mustard greens, spinach	Horenzo, pakcoy, lettuce	Bogor, Cipanas, Bandung, Jakarta	Marketing innovation, services, pricing, products	Quality, policies, distribution system	Online, organic circle, modern market	Price standards, sustainability, standardization
Outside West Java	Broccoli, spinach, water spinach	Lettuce	Prigen, Batu Malang, Central Java	Product innovation, marketing	Policies, quality		

3.Consumers of Organic and Conventional Vegetables (135 People).

Table 12. Responden Consumers Characteristic.

City/Regency	Number	Province	Number	Age (years)	Number	Education Level	Number
Sukabumi Regency	10	West Java	10	25-35	7	Elementary School (SD)	-
	-	-	-	36-46	3	Junior High School (SMP)	-
	-	-	-	47-57	-	Senior High School (SMA)	-

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	-	-	-	58-70	-	Higher Education (PT)	10
Total	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Cianjur Regency	15	West Java	15	25-35	5	Elementary School (SD)	-
	-	-	-	36-46	8	Junior High School (SMP)	-
	-	-	-	47-57	2	Senior High School (SMA)	10
	-	-	-	58-70	-	Higher Education (PT)	5
Total	**15**	**15**	**15**	**15**	**15**	**15**	**15**
Tasikmalaya Regency	15	West Java	15	25-35	8	Elementary School (SD)	-
	-	-	-	36-46	5	Junior High School (SMP)	-
	-	-	-	47-57	2	Senior High School (SMA)	8
	-	-	-	58-70	-	Higher Education (PT)	7
Total	**15**	**15**	**15**	**15**	**15**	**15**	**15**
Bogor Regency	20	West Java	20	25-35	5	Elementary School (SD)	-
	-	-	-	36-46	7	Junior High School (SMP)	-
	-	-	-	47-57	5	Senior High School (SMA)	10
	-	-	-	58-70	3	Higher Education (PT)	10
Total	**20**	**20**	**20**	**20**	**20**	**20**	**20**
Depok	25	West Java	25	25-35	5	Elementary School (SD)	-
	-	-	-	36-46	8	Junior High School (SMP)	-
	-	-	-	47-57	7	Senior High School (SMA)	12
	-	-	-	58-70	5	Higher Education (PT)	13
Total	**25**	**25**	**25**	**25**	**25**	**25**	**25**
Garut Regency	15	West Java	15	25-35	4	Elementary School (SD)	-
	-	-	-	36-46	6	Junior High School (SMP)	2
	-	-	-	47-57	1	Senior High School (SMA)	8
	-	-	-	58-70	4	Higher Education (PT)	5
Total	**15**	**15**	**15**	**15**	**15**	**15**	**15**
West Bandung Regency	25	West Java	25	25-35	5	Elementary School (SD)	-
	-	-	-	36-46	8	Junior High School (SMP)	-
	-	-	-	47-57	7	Senior High School (SMA)	3
	-	-	-	58-70	5	Higher Education (PT)	3

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Total	**25**	**25**	**25**	**25**	**25**	**25**	**25**
Ciamis Regency	10	West Java	10	25-35	4	Elementary School (SD)	-
	-	-	-	36-46	3	Junior High School (SMP)	-
	-	-	-	47-57	3	Senior High School (SMA)	4
	-	-	-	58-70	-	Higher Education (PT)	6
Total	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Total	**135**	**135**	**135**	**135**	**135**	**135**	**135**
Outside West Java	33	33	33	33	33	33	33

Table 13. Respondent Characteristics of Organic and Conventional Vegetables (200 respondents, internal data).

Region	Income (IDR)	Number	%	Age (years)	Number	%	Education Level	Number	%
West Java	< 2,000,000	30	15	25-35	66	33	Elementary School (SD)	-	-
	2.5 – 4,000,000	57	28.5	36-46	75	37.5	Junior High School (SMP)	3	1.5
	4.0 – 7,000,000	78	39	47-57	40	20	Senior High School (SMA)	106	53
	> 7,500,000	35	17.5	58-70	19	9.5	Higher Education (PT)	91	45.4
Total		**200**	**100**		**200**	**100**		**200**	**100**

Table 14. Organic Vegetable Consumption and Online Purchase Behavior.

Region	Consumes/Purchases Organic Vegetables	Number	%	Aware of Organic Vegetable Platforms	Number	%	Buys Organic Vegetables Online	Number	%
West Java	Yes	179	89.5	Lingkar Organik	63	31.5	Sometimes	71	35.5
	No	18	9	Kecipir	49	24.5	Ever	45	22.5
	Sometimes	3	1.5	edas	57	28.5	Never	84	42
				Sesa.id	33	16.5			
Total		**200**	**100**		**200**	**100**		**200**	**100**

4.2. Factor Analysis Results (Identification of Problem 1) - CFA

4.2.1. Demand Factor Analysis

Analysis of the Most Determining Factors for Organic Vegetable Demand
Goodness of Fit Test for the Factor Analysis Model Affecting Organic Vegetable Demand
Kaiser-Meyer-Olkin (KMO) and Bartlett's Test

The Kaiser-Meyer-Olkin (KMO) test is used as an initial test to determine whether the available data can be broken down into a set of factors (Santoso, 2015). The KMO test is also utilized to assess the model fit or **goodness of fit** of the factor analysis model for the demand of organic vegetables, using the chi-square statistical test. Factor analysis model criteria:

1. If the **p-value** or significance level (**sig**) is **< 0.05**, then the factor analysis model is **fit** or **good**.

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2. If the **p-value** or significance level (**sig**) is **> 0.05**, then the factor analysis model is **not fit** or **not good**, and data transformation is required.

The results of the **KMO and Bartlett's Test** in Table 1 indicate that the **KMO value** for the factor analysis model affecting the demand for **local and export organic vegetables** is **0.821**. The Bartlett's Test produced a **Chi-Square value of 658.91**, with a **significance value (sig) of 0.000**, which is well below 0.05 **(0.00 < 0.05).** This means that the available variables and samples are suitable for **factor analysis**.Therefore, the factor analysis model for the **demand for local and export organic vegetables** is appropriate, allowing further analysis, including **Factor Extraction and Rotation**.

Table 15. KMO Measurement Results and Bartlett's Test.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,821
Bartlett's Test of Sphericity	Approx. Chi-Square	658,906
	df	66
	Sig.	,000

Analysis of Eigenvalues, Factor Extraction, and Rotation

After conducting the goodness of fit test and confirming that the factor analysis model influencing the demand for local and export organic vegetables is valid, the next step is to perform an analysis of eigenvalues, factor extraction, and rotation.

Eigenvalues indicate the relative importance of each factor in explaining the variance of all analyzed variables. This study examines 12 variables suspected to influence the demand for local and export organic vegetables: Awareness (X_1), Behavior (X_2), Lifestyle (X_3), Knowledge (X_4), Availability (X_5), Price (X_6), Trust in Product (X_7), Quality Assurance (X_8), Community Certification (X_9), LSO Certification (X_{10}), Innovation Value (X_{11}), and Product Quality (X_{12}). The eigenvalues show the relative importance of each factor in explaining the variance among these 12 variables.

Based on Table 2, only three factors are formed. With one factor, the eigenvalue is above 1. With two factors, the eigenvalue remains above 1. With three factors, the eigenvalue is still above 1 (1.102). However, for four factors, the eigenvalue falls below 1 (0.980), meaning the factoring process must stop at three factors.

Thus, based on the eigenvalue analysis, it can be concluded that from the 12 analyzed variables, the demand for local and export organic vegetables can be summarized into only three main influencing factors.

Table 16. Results of Eigenvalues, Factor Extraction, and Rotation.

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,910	32,580	32,580	3,910	32,580	32,580	3,266	27,218	27,218
2	1,716	14,303	46,883	1,716	14,303	46,883	2,257	18,806	46,024
3	1,102	9,183	56,066	1,102	9,183	56,066	1,205	10,042	56,066
4	,980	8,163	64,229						
5	,825	6,874	71,103						
6	,751	6,255	77,359						
7	,628	5,235	82,593						
8	,519	4,325	86,919						
9	,444	3,703	90,621						
10	,431	3,588	94,209						

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11	,373	3,107	97,316
12	,322	2,684	100,000

Extraction Method: Principal Component Analysis.

The results from the **Initial Eigenvalues** serve as the basis for the factor extraction process. As shown in **Table 2**, the extracted factor values are the same as the **Initial Eigenvalues**, but only for the three formed factors. A rotation process is then carried out to further clarify which variables belong to **Factor 1, Factor 2, or Factor 3**. The result of this rotation process is the **final output** of the factor analysis.

Factor Loading and Validity Test of the Factor Analysis Model Influencing the Demand for Local and Export Organic Vegetables

The **Component Matrix** from the rotation process (**Rotated Component Matrix**) is presented in **Table 3**. This table clearly shows the final distribution of variables in the factor analysis. Each variable is assigned to a factor where it has the **highest factor loading value**, which must be **at least 0.5** or **less than -0.5**. If a variable does not reach a **factor loading of ±0.5** for any of the three factors, it is considered **invalid**.

Table 17. Rotated Component Matrix: Factor Loading Values of 12 Variables for the Three Formed Components.

	Factor (Component)			
	1	2	3	Result
Awareness (X_1)	,742	,148	-,176	valid Factor 1
Behaviour (X_2)	,805	,002	-,060	valid Factor 1
Life style(X_3)	,841	,058	,047	valid Factor 1
Knowledge (X_4)	,769	,128	-,067	valid Factor 1
Availability (X_5)	,172	,468	,596	valid Factor 3
Price(X_6)	-,154	,549	,042	valid Factor 2
Trust product (X_7)	,514	,405	,315	valid Factor 1
Quality Control (X_8)	,177	,676	,285	valid Factor 2
Community Certificatiom (X_9)	,338	,612	-,130	valid Factor 2
LSO Certification (X_{10})	,167	,806	-,159	valid Factor 2
Innovation Value (X_{11})	,472	,105	,308	UnValid
Quality Product (X_{12})	,234	,198	-,699	valid Factor 3

Extraction Method: Principal Component Analysis Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 6 iterations.

Based on **Table 3**, out of the **12 variables**, one variable was found to be **invalid**, namely **X_{11} (Innovation Value)**. The remaining **11 variables** have been successfully reduced into **three factors**, as follows:

1. **Factor 1** consists of **Awareness (X_1), Behavior (X_2), Lifestyle (X_3), Knowledge (X_4), and Trust in Product (X_7)**.
2. **Factor 2** consists of **Price (X_6), Quality Assurance (X_8), Community Certification (X_9), and LSO Certification (X_{10})**.
3. **Factor 3** consists of **Availability (X_5) and Product Quality (X_{12})**.

Naming the Factors

- **Factor 1: Consumer Internal Factors**
  Since all five variables in **Factor 1** have **positive factor loading values**, this factor can be named

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Consumer Internal Factors. This means that the **increasing demand** for **local and export organic vegetables** is influenced by **consumer awareness** of the importance of organic vegetable consumption, **healthier consumer behavior, a healthier lifestyle, greater consumer knowledge of healthy living,** and **higher trust in organic vegetable products**.

- **Factor 2: Product Exclusivity Factors**
  Since all four variables in **Factor 2** also have **positive factor loading values**, this factor can be named **Product Exclusivity Factors**. This indicates that the **higher demand** for **local and export organic vegetables** is driven by **higher product prices, clearer quality assurance, the presence of local and international organic community certifications, and LSO certification**.
- **Factor 3: Strength Factors**
  Since **Availability (X_5)** has a **positive factor loading value**, this suggests that the **increased availability** of organic vegetables in the market contributes to higher demand. However, **Product Quality (X_{12})** has a **negative factor loading value**, indicating that **as demand for organic vegetables increases, product quality tends to decrease**. This may be due to **consumer perception** that if vegetables appear **too perfect**, they might have been treated with **chemical pesticides**, making them **less desirable** compared to conventional vegetables.

4.2.2. Factor Analysis of Supply

Analysis of the Key Factors Determining the Supply of Organic Vegetables

1. Goodness of Fit Test for the Factor Analysis Model Affecting the Supply of Local and Export Organic Vegetables

1.1 Kaiser-Meyer-Olkin (KMO) and Bartlett's Test

The **Kaiser-Meyer-Olkin (KMO) test** is used as a preliminary test to determine whether the available data can be broken down into a number of factors (**Santoso, 2015**). The **KMO test** is also used to assess the **goodness of fit** of the factor analysis model for formal and informal sector rice seed using **chi-square statistical testing**.

The criteria for factor analysis modeling are as follows:

1. If the **p-value (significance level)** is **less than 0.05**, the factor analysis model is considered **fit or good**.
2. If the **p-value (significance level)** is **greater than 0.05**, the factor analysis model is considered **not fit or not good**, and **data transformation is required**.

The KMO and Bartlett's Test results in Table 1 show that the KMO value for the factor analysis model affecting the supply of local and export organic vegetables is 0.672. Additionally, the Bartlett's Test result shows a Chi-Square value of 326.32 with a significance level (sig) of 0.000, which is well below 0.05 (0.00 < 0.05). This indicates that the variables and sample used are suitable for factor analysis.

Therefore, the factor analysis model for the supply of local and export organic vegetables is valid, allowing for further analysis, including Factor Extraction and Rotation.

Table 18. KMO and Bartlett's Test Results.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**,672**
Bartlett's Test of Sphericity	Approx. Chi-Square	326,324
	df	55
	Sig.	,000

Eigenvalues Analysis, Factor Extraction, and Rotation

After conducting the goodness of fit test and confirming that the factor analysis model influencing the supply of local organic vegetables is valid, the next step involves Eigenvalues analysis, factor extraction, and factor rotation.

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Eigenvalues represent the **relative importance** of each factor in explaining the variance of all analyzed variables. In this study, **11 variables** were examined for their potential impact on the supply organic vegetables, including:Production output (X_1), Climate change (X_2), Government policy for the domestic market (X_3), Government policy for the export market (X_4), Quality assurance (X_5), Information technology (X_6), Capital access (X_8), Brand (X_9), Packaging (X_{10}), Community (X_{11}). Eigenvalues indicate the **relative importance of each factor** in calculating the variance of these **11 analyzed variables**.

Based on **Table 2**, only **three factors** were identified:

- With **one factor**, the eigenvalue remains above **1**.
- With **two factors**, the eigenvalues are still **above 1**.
- With **three factors**, the eigenvalue remains **above 1**, specifically **1.296**.
- However, with **four factors**, the eigenvalue drops **below 1** (**0.977**), meaning that the **factoring process must stop at three factors**.

Thus, based on the **Eigenvalues analysis**, it can be concluded that the **11 analyzed variables** can be summarized into **three main factors** that influence the **supply organic vegetables**.

Table 19. Eigenvalues, Factor Extraction, and Rotation Results.

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,660	24,178	24,178	2,660	24,178	24,178	2,083	18,940	18,940
2	1,513	13,757	37,934	1,513	13,757	37,934	1,906	17,328	36,268
3	1,296	11,781	49,715	1,296	11,781	49,715	1,479	13,448	49,715
4	0,977	8,883	58,598						
5	0,950	8,636	67,234						
6	0,843	7,664	74,898						
7	0,679	6,173	81,071						
8	0,630	5,727	86,799						
9	0,593	5,392	92,191						
10	0,514	4,677	96,868						
11	0,345	3,132	100,000						
Extraction Method: Principal Component Analysis.									

Factor Extraction and Rotation Process

The results from the **Initial Eigenvalues** serve as the foundation for the **factor extraction process**. The extracted factors, as shown in **Table 2**, retain the same values as the Initial Eigenvalues but only for the **three identified factors**. Next, the **rotation process** is applied to enhance clarity in **categorizing variables** into **Factor 1, Factor 2, or Factor 3**. The final output of this **rotation process** represents the **conclusive results of the factor analysis**.

2. Factor Loading and Validity Test of the Factor Analysis Model for Organic Vegetable Supply

The **Component Matrix** obtained after the **rotation process** (Rotated Component Matrix), presented in **Table 3**, provides a clearer and more structured **distribution of variables** in the **factor analysis**. Each **variable is assigned to the factor** where it has the **highest factor loading value**, with a minimum threshold of **0.5** or a **negative value lower than -0.5**. If a variable **fails to reach a factor loading value of ±0.5** for any of the **three factors**, it is considered **invalid**.

 doi:10.20944/preprints202504.1216.v1

Table 20. Rotated Component Matrix: Factor Loading Values of 11 Variables in the Three Identified Factors.

	Component			
	1	2	3	
Production (X1)	,432	,421	-,038	UnValid
Climate exchange (X2)	,544	,171	,108	Valid Factor 1
Domestic Market Policy (X3)	,814	,068	-,162	Valid Factor 1
Export Market Policy (X4)	,846	-,035	-,011	Valid Factor 1
Quality Assurance (X5)	,447	,507	-,023	Valid Factor 2
Information Technology (X6)	,107	,677	,169	Valid Factor 2
Capital acces (X7)	,096	,613	,011	Valid Factor 2
Brand (X8)	-,023	,749	-,100	Valid Factor 2
Packaging (X9)	-,026	-,103	,760	Valid Factor 3
Community (X10)	-,052	-,053	,738	Valid Factor 3
Role of Mentor (X11)	,023	,170	,528	Valid Fakcor 3

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 5 iterations.

Based on Table 3, out of the 11 variables, one variable is invalid, namely variable X1 (production output). Meanwhile, the remaining 10 variables have been successfully reduced into three factors:

1. **Factor 1** consists of Climate Change (X_2), Government Policy – Domestic Market (X_3), and Government Policy – Export Market (X_4).
2. **Factor 2** consists of Quality Assurance (X_5), Information Technology (X_6), Capital Access (X_7), and Brand (X_8).
3. **Factor 3** consists of Packaging (X_9), Community (X_{10}), and Role of Mentors (X_{11}).

Factor 1: Key Supporting Factor

Factor 1 includes Climate Change (X_2), Government Policy – Domestic Market (X_3), and Government Policy – Export Market (X_4). If named, this factor can be called the **Key Supporting Factor**. Since the factor loadings of these three variables are positive, this means that the increasing supply of local and export organic vegetables is influenced by the Key Supporting Factor, characterized by more stable climate conditions, government policies that support the growth of the domestic market, and policies that promote export market expansion. *(Further discussion can be added here.)*

Factor 2: Exclusive Factor

Factor 2 includes Quality Assurance (X_5), Information Technology (X_6), Capital Access (X_7), and Brand (X_8). If named, this factor can be called the **Exclusive Factor**. The positive factor loadings of these four variables indicate that the increasing supply of local and export organic vegetables is influenced by the Exclusive Factor, marked by better quality assurance, easier access to capital for farmers, improved farmer skills in utilizing information technology, and greater brand recognition of organic vegetable products. *(Further discussion can be added here.)*

Factor 3: Strengthening Support Factor

Factor 3 includes Packaging (X_9), Community (X_{10}), and Role of Mentors (X_{11}). If named, this factor can be called the **Strengthening Support Factor**. The positive factor loadings of these three variables indicate that the increasing supply of local and export organic vegetables is influenced by the Strengthening Support Factor, characterized by improved product packaging, a supportive organic farming community, and a better role of mentors in enhancing organic vegetable production. *(Further discussion can be added here.)*

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VCC B2C Model for Organic Vegetables (Development of the DART Model)

Multivariate Outlier Test

The multivariate outlier examination was conducted using the **Mahalanobis Distance (d^2) statistic** by testing the following hypotheses:

- **H_0**: The data does not contain multivariate outliers.
- **H_1**: The data contains multivariate outliers.

The decision criterion is to reject **H_0** for any row of data if the Mahalanobis Distance (d^2) exceeds the chi-square value **$\chi^2(p<0.001; k)$**, where **k** is the number of manifest variables (indicators).

The test results indicate that in this **Structural Equation Modeling (SEM) model**, **k = 47 indicators** or manifest variables, yielding a **chi-square value of $\chi^2(p<0.001;47) = 82.72$**. Among the total **200 data points**, **5 data points** have Mahalanobis Distance (d^2) values greater than the chi-square threshold of **82.72** (Table 1). As a result, **H_0 is rejected** for these data points, meaning that they contain multivariate outliers and must be removed from the analysis.

Meanwhile, the remaining data points have Mahalanobis Distance values below the chi-square threshold, indicating that they do not contain multivariate outliers. Consequently, the final dataset for further analysis consists of **195 respondent data points**. A complete report of this test is provided in **Appendix 1**.

Table 21. List of Data Containing Multivariate Outliers.

No.	Mahalanobis Distance (d^2)	Chi-square Value $\chi^2(p<0.001;47)$	Status
134	86.60316	82.72042	Outlier
136	198.005	82.72042	Outlier
137	198.005	82.72042	Outlier
138	198.005	82.72042	Outlier
161	82.85639	82.72042	Outlier

Multivariate Normality Test

The results of the normality test are shown in the following table (the complete results can be found in Appendix 2).

Table 22. Results of Univariate and Multivariate Normality Test.

Variabel Manifest	Univariate Normality		Multivariate Normality	
	Skewness and Kurtosis		Skewness and Kurtosis	
	Chi-Square	P-Value	Chi-Square	P-Value
X_5	0.210	0.900	335.377	0.000
X_3	1.613	0.446		
X_{1-1}	1.044	0.593		
X_{1-2}	0.119	0.942		
X_{1-3}	1.553	0.460		
X_{1-4}	3.044	0.218		
X_{1-5}	5.485	0.064		
X_{1-6}	1.255	0.534		
X_{1-7}	1.098	0.578		
X_{1-8}	0.701	0.704		
X_{1-9}	3.755	0.153		
X_{1-10}	0.738	0.691		
X_{1-11}	1.719	0.423		
X_{1-12}	2.569	0.277		

X_{2-1}	1.985	0.371
X_{2-2}	4.192	0.123
X_{2-3}	4.739	0.094
X_{2-4}	4.646	0.098
X_{2-5}	0.680	0.712
X_{2-6}	0.931	0.628
X_{2-7}	7.225	0.054
X_{2-8}	0.754	0.686
X_{2-9}	2.405	0.300
X_{2-10}	3.973	0.137
X_{2-11}	0.754	0.686
X_4	2.404	0.301
X_6	1.274	0.529
Y_{1-1}	0.627	0.731
Y_{1-2}	0.444	0.801
Y_{1-3}	0.005	0.997
Y_{1-4}	0.675	0.714
X_{7-1}	5.572	0.062
X_{7-2}	0.058	0.971
X_{7-3}	0.043	0.979
Y_{2-1}	3.044	0.218
Y_{2-2}	2.458	0.293
Y_{2-3}	1.104	0.576
Y_{2-4}	0.743	0.690
Y_{2-5}	1.862	0.394
Y_{2-6}	0.650	0.723
Y_{2-7}	2.705	0.259
Y_{2-8}	5.699	0.058
Y_{2-9}	0.062	0.970
Y_{2-10}	1.568	0.457
Y_{2-11}	1.230	0.541
Y_{2-12}	0.889	0.641
Y_{2-13}	0.682	0.711

Based on the table above, the results of the normality test for each variable (univariate normality) show that all manifest variables have p-values for Skewness and Kurtosis greater than 0.05. This indicates that none of the manifest variables have issues with univariate normality, meaning they can all be included in the next stage of analysis since the normality assumption, which is a fundamental requirement for SEM analysis, has been met. Meanwhile, the normality test results for all variables combined (multivariate normality) indicate that the multivariate normality assumption has not been met, as the p-value for Skewness and Kurtosis is 0.000, which is still less than 0.05. This means the data still faces normality issues at the multivariate level.

In principle, if the univariate normality assumption is fulfilled, the indicators can be considered normal. However, to address the issue of multivariate normality violations, adjustments will be made in the model estimation process by applying the Satorra-Bentler Scaled χ^2 method. This involves incorporating the asymptotic covariance matrix input in addition to the data covariance matrix input, which will generate a Goodness of Fit value to correct for data non-normality (Yamin, 2014). Therefore, the analysis will proceed with the manifest variables that have met the univariate normality assumption.

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Multicollinearity Test

The results of the multicollinearity test are shown in the table below (the complete results can be found in Appendix 3).

Table 23. Multicollinearity Test Results.

Variabel Manifest	**Collinearity Statistics**		**Result**
	Tolerance	**VIF**	
X_5	,425	2,354	Unmultikolinieritas
X_3	,325	3,073	Unmultikolinieritas
X_{1-1}	,471	2,124	Unmultikolinieritas
X_{1-2}	,446	2,242	Unmultikolinieritas
X_{1-3}	,369	2,711	Unmultikolinieritas
X_{1-4}	,416	2,405	Unmultikolinieritas
X_{1-5}	,632	1,582	Unmultikolinieritas
X_{1-6}	,673	1,485	Unmultikolinieritas
X_{1-7}	,556	1,799	Unmultikolinieritas
X_{1-8}	,553	1,809	Unmultikolinieritas
X_{1-9}	,558	1,791	Unmultikolinieritas
X_{1-10}	,490	2,043	Unmultikolinieritas
X_{1-11}	,662	1,510	Unmultikolinieritas
X_{1-12}	,804	1,244	Unmultikolinieritas
X_{2-1}	,681	1,469	Unmultikolinieritas
X_{2-2}	,680	1,470	Unmultikolinieritas
X_{2-3}	,515	1,943	Unmultikolinieritas
X_{2-4}	,492	2,033	Unmultikolinieritas
X_{2-5}	,604	1,655	Unmultikolinieritas
X_{2-6}	,605	1,653	Unmultikolinieritas
X_{2-7}	,699	1,431	Unmultikolinieritas
X_{2-8}	,670	1,493	Unmultikolinieritas
X_{2-9}	,747	1,339	Unmultikolinieritas
X_{2-10}	,729	1,373	Unmultikolinieritas
X_{2-11}	,776	1,289	Unmultikolinieritas
X_4	,369	2,710	Unmultikolinieritas
X_6	,517	1,934	Unmultikolinieritas
Y_{1-1}	,617	1,621	Unmultikolinieritas
Y_{1-2}	,223	4,494	Unmultikolinieritas
Y_{1-3}	,423	2,367	Unmultikolinieritas
Y_{1-4}	,422	2,372	Unmultikolinieritas
X_{7-1}	,223	4,475	Unmultikolinieritas
X_{7-2}	,323	3,092	Unmultikolinieritas
X_{7-3}	,523	1,910	Unmultikolinieritas
Y_{2-1}	,380	2,633	Unmultikolinieritas
Y_{2-2}	,480	2,084	Unmultikolinieritas
Y_{2-3}	,216	4,637	Unmultikolinieritas
Y_{2-4}	,520	1,922	Unmultikolinieritas
Y_{2-5}	,148	6,764	Unmultikolinieritas
Y_{2-6}	,383	2,613	Unmultikolinieritas
Y_{2-7}	,648	1,544	Unmultikolinieritas
Y_{2-8}	,283	3,537	Unmultikolinieritas
Y_{2-9}	,434	2,303	Unmultikolinieritas
Y_{2-10}	,198	5,045	Unmultikolinieritas

$Y_{2\text{-}11}$	,598	1,672	Unmultikolinieritas
$Y_{2\text{-}12}$	,423	2,363	Unmultikolinieritas
$Y_{2\text{-}13}$	,524	1,908	Unmultikolinieritas

The results of the multicollinearity test indicate that the tolerance values for all manifest variables are within an acceptable range. This is evidenced by the VIF values for all manifest variables, none of which exceed 5. Therefore, it can be concluded that there is no excessively high correlation between any manifest variable/indicator and another. As a result, all manifest variables/indicators are free from multicollinearity, allowing them to proceed to the next stage of testing

After all the initial assumption tests have been completed, the next step is to perform the SEM model estimation. The initial estimation results using LISREL software version 8.80 produced the Standardized Loading Factor (SLF) values for each exogenous and endogenous indicator/variable, as presented in the following Table 24:

Table 24. the Standardized Loading Factor (SLF) Values for Each Exogenous and Endogenous Indicator/Variable.

Variable	SLF (λ_i)	Error	t-Statistic	Status
Risk/Benefit (ξ5)				
X_5	0.56	0.03	10.59	Valid
Dialogue (ξ3)				
X_3	0.59	0.11	12.71	Valid
Demand (ξ1)				
Awareness ($X_{1\text{-}1}$)	0.69	0.52	10.40	Valid
Behavior ($X_{1\text{-}2}$)	0.71	0.49	10.82	Valid
Lifestyle ($X_{1\text{-}3}$)	0.80	0.37	12.65	Valid
Knowledge ($X_{1\text{-}4}$)	0.74	0.46	11.38	Valid
Availability ($X_{1\text{-}5}$)	0.77	0.40	10.39	Valid
Price ($X_{1\text{-}6}$)	0.73	0.47	11.21	Valid
Product trust ($X_{1\text{-}7}$)	0.55	0.69	7.91	Valid
Quality assurance ($X_{1\text{-}8}$)	0.57	0.68	6.63	Valid
Community certification ($X_{1\text{-}9}$)	0.66	0.56	7.72	Valid
LSO certification ($X_{1\text{-}10}$)	0.23	0.95	2.99	Not Valid
Innovation value ($X_{1\text{-}11}$)	0.70	0.51	9.42	Valid
Product quality ($X_{1\text{-}12}$)	0.71	0.50	10.82	Valid
Supply (ξ2)				
Production output ($X_{2\text{-}1}$)	0.73	0.47	9.87	Valid
Climate change ($X_{2\text{-}2}$)	0.67	0.55	8.97	Valid
Government policy - domestic market ($x_{2\text{-}3}$)	0.50	0.75	6.45	Valid
Government policy - export market ($X_{2\text{-}4}$)	0.81	0.34	9.85	Valid
Quality assurance ($X_{2\text{-}5}$)	0.73	0.47	9.95	Valid
Information technology ($X_{2\text{-}6}$)	0.73	0.47	8.80	Valid
Capital access ($X_{2\text{-}7}$)	0.25	0.94	3.15	Not Valid
Brand ($X_{2\text{-}8}$)	0.83	0.31	9.70	Valid
Packaging ($X_{2\text{-}9}$)	0.72	0.49	8.09	Valid
Community ($X_{2\text{-}10}$)	0.58	0.66	6.46	Valid
Role of companions ($X_{2\text{-}11}$)	0.60	0.64	6.65	Valid
Access (ξ4)				
X_4	0.57	0.73	15.98	Valid
Transparency (ξ6)				
X6	0.52	0.73	18.26	Valid
Sustainability (ξ7)				

 doi:10.20944/preprints202504.1216.v1

Economic (X_{7-1})	0.50	0.38	3.87	Valid
Social (X_{7-2})	0.26	0.93	2.87	Not Valid
Environmental (X_{7-3})	0.50	0.29	2.47	Valid
VCC / Value Co-Creation (η1)				
Co-learning (Y_{1-1})	0.92	0.11	13.29	Valid
Co-service (Y_{1-2})	0.89	0.58	11.25	Valid
Co-design (Y_{1-3})	0.92	0.50	13.30	Valid
Co-innovation (Y_{1-4})	0.91	0.14	17.66	Valid
Marketing Platform (η2)				
Attractive website (Y_{2-1})	0.28	0.92	3.94	Not Valid
Attractive content (Y_{2-2})	0.89	0.21	15.62	Valid
Communicative (Y_{2-3})	0.90	0.18	16.10	Valid
Informative (Y_{2-4})	0.22	0.95	3.07	Not Valid
User-friendly (Y_{2-5})	0.78	0.38	12.91	Valid
Affordable cost (Y_{2-6})	0.80	0.36	13.21	Valid
Flexible and dynamic (Y_{2-7})	0.74	0.45	11.33	Valid
Detailed segmentation (Y_{2-8})	0.73	0.46	11.15	Valid
Measurable results (Y_{2-9})	0.76	0.42	11.80	Valid
System control and evaluation (Y_{2-10})	0.33	0.89	4.62	Not Valid
Benefit value (Y_{2-11})	0.82	0.33	13.31	Valid
Environmental value (Y_{2-12})	0.87	0.24	14.49	Valid
Certification/legality value (Y_{2-13})	0.80	0.35	12.96	Valid

Based on the table above, there are manifest variables that still have SLF values less than 0.50 and insignificant *t*-values. These include the manifest variables: **LSO Certification (X_{1-10}), Capital Access (X_{2-7}), Social (X_{7-2}), Attractive Website (Y_{2-1}), Informative (Y_{2-4}),** and **System Control and Evaluation (Y_{2-10})**. These six manifest variables were subsequently removed, and a re-estimation was conducted. The results of the re-estimation after removing these variables are presented below (the original LISREL output can be found in Appendix 4).

Table 25. the Standardized Loading Factor (SLF) Values for Each Exogenous and Endogenous Indicator/Variable.

Variable	SLF (λ_i)	Error	t-Statistic	Status
Risk/Benefit (ξ5)				
X_5	0.56	0.03	10.59	Valid
Dialog (ξ3)				
X_3	0.59	0.11	12.71	Valid
Demand (ξ1)				
Awareness (X_{1-1})	0.69	0.52	10.40	Valid
Behavior (X_{1-2})	0.71	0.49	10.82	Valid
Lifestyle (X_{1-3})	0.80	0.37	12.65	Valid
Knowledge (X_{1-4})	0.74	0.46	11.38	Valid
Availability (X_{1-5})	0.77	0.40	10.39	Valid
Price (X_{1-6})	0.73	0.47	11.21	Valid
Product Trust (X_{1-7})	0.55	0.69	7.91	Valid
Quality Assurance (X_{1-8})	0.57	0.68	6.63	Valid
Community Certification (X_{1-9})	0.66	0.56	7.72	Valid
Innovation Value (X_{1-11})	0.70	0.51	9.42	Valid
Product Quality (X_{1-12})	0.71	0.50	10.82	Valid
Supply (ξ2)				
Production Output (X_{2-1})	0.73	0.47	9.87	Valid
Climate Change (X_{2-2})	0.67	0.55	8.97	Valid

Government Policy on Domestic Market (X_{2-3})	0.50	0.75	6.45	Valid
Government Policy on Export Market (X_{2-4})	0.81	0.34	9.85	Valid
Quality Assurance (X_{2-5})	0.73	0.47	9.95	Valid
Information Technology (X_{2-6})	0.73	0.47	8.80	Valid
Brand (X_{2-8})	0.83	0.31	9.70	Valid
Packaging (X_{2-9})	0.72	0.49	8.09	Valid
Community (X_{2-10})	0.58	0.66	6.46	Valid
Companion Role (X_{2-11})	0.60	0.64	6.65	Valid
Access (ξ4)				
X_4	0.57	0.73	15.98	Valid
Transparency (ξ6)				
X_6	0.52	0.73	18.26	Valid
Sustainability (ξ7)				
Economy (X_{7-1})	0.50	0.38	3.87	Valid
Environment (X_{7-3})	0.50	0.29	2.47	Valid
VCC / Value Co-Creation (η1)				
Co-learning (Y_{1-1})	0.94	0.11	15.29	Valid
Co-service (Y_{1-2})	0.89	0.58	11.25	Valid
Co-design (Y_{1-3})	0.92	0.50	13.30	Valid
Co-process (Y_{1-4})	0.91	0.14	17.66	Valid
Marketing Platform (η2)				
Attractive Content (Y_{2-2})	0.89	0.21	15.62	Valid
Communicative (Y_{2-3})	0.90	0.18	16.10	Valid
User-Friendly (Y_{2-5})	0.78	0.38	12.91	Valid
Affordable Cost (Y_{2-6})	0.80	0.36	13.21	Valid
Flexible and Dynamic (Y_{2-7})	0.74	0.45	11.33	Valid
Detailed Segmentation (Y_{2-8})	0.73	0.46	11.15	Valid
Measurable Results (Y_{2-9})	0.76	0.42	11.80	Valid
Value Benefit (Y_{2-11})	0.82	0.33	13.31	Valid
Environmental Value (Y_{2-12})	0.87	0.24	14.49	Valid
Certification/Legality Value (Y_{2-13})	0.80	0.35	12.96	Valid

Based on the table above, all manifest variables have SLF values ≥ 0.50, error variance values ≥ 0, and significant t-values. Therefore, the next test can be carried out, namely the reliability test of the measurement model.

Reliability Analysis of the Measurement Model – Confirmatory Factor Analysis (CFA) and Structural Model

This analysis is conducted by calculating the values of Construct Reliability (CR) and Average Variance Extracted (AVE) from the Standardized Loading Factors (SLF or λ_i) and the measurement errors (e_i) using the following formulas: Measurement errors (e_i) using the following formulas:

$$CR = \frac{(\sum \lambda_i)^2}{(\sum \lambda_i)^2 + \sum e_i}$$

$$AVE = \frac{\sum(\lambda_i)^2}{\sum(\lambda_i)^2 + \sum e_i}$$

The results of the reliability analysis of the model are presented in the following table.

Table 26. The Reliability Analysis of The Model.

Causal Relationship	SLF (λ_i)	Error	AVE	CR
ξ5 ← X5	0.56	0.03	0.91	0.91
ξ3 ← X3	0.59	0.11	0.76	0.76
ξ1 ← X1-1	0.69	0.52		
ξ1 ← X1-2	0.71	0.49		
ξ1 ← X1-3	0.80	0.37		
ξ1 ← X1-4	0.74	0.46		
ξ1 ← X1-5	0.77	0.40		
ξ1 ← Y1-6	0.73	0.47	0.50	0.91
ξ1 ← X1-7	0.55	0.69		
ξ1 ← X1-8	0.57	0.68		
ξ1 ← X1-9	0.66	0.56		
ξ1 ← X1-11	0.70	0.51		
ξ1 ← X1-12	0.71	0.50		
ξ2 ← X2-1	0.73	0.47		
ξ2 ← X2-2	0.67	0.55		
ξ2 ← X2-3	0.50	0.75		
ξ2 ← X2-4	0.81	0.34		
ξ2 ← X2-5	0.73	0.47	0.50	0.90
ξ2 ← Y2-6	0.73	0.47		
ξ2 ← X2-8	0.83	0.31		
ξ2 ← X2-9	0.72	0.49		
ξ2← X2-10	0.58	0.66		
ξ2 ← X2-11	0.60	0.64		
ξ4 ← X4	0.57	0.73	0.76	0.76
ξ6 ← X6	0.52	0.73	0.90	0.90
ξ7 ← X71	0.50	0.38	0.56	0.72
ξ7 ← X73	0.50	0.29		
η1 ← Y2=3	0.94	0.11		
η1 ← Y2-3	0.89	0.58	0.84	0.95
η1 ← Y2-3	0.92	0.50		
η1 ← Y2-4	0.91	0.14		
η2 ← Y2-2	0.89	0.21		
η2 ← Y2-3	0.90	0.18		
η2 ← Y2-5	0.78	0.38		
η2 ← Y2-6	0.80	0.36		
η2 ← Y2-7	0.74	0.45	0.66	0.95
η2 ← Y2-8	0.73	0.46		
η2 ← Y2-9	0.76	0.42		
η2 ← Y2-11	0.82	0.33		
η2 ← Y2-12	0.87	0.24		
η2 ← Y2-13	0.80	0.35		

According to Yamin (2014), the criteria for good reliability are having an Average Variance Extracted (AVE) value ≥ 0.50 and a Construct Reliability (CR) value ≥ 0.70. Based on the table above, it is evident that the Construct Reliability and Average Variance Extracted values of the latent variables Risk/Benefit (ξ5), Dialogue (ξ3), Demand (ξ1), Supply (ξ2), Access (ξ4), Transparency (ξ6), Sustainability (ξ7), VCC / Value Co-Creation (**η**1), and Marketing Platform (**η**2) have met these criteria.

This indicates that the reliability of the measurement model is good and that all latent variables in this model are supported by the data. The next step is to estimate the model and conduct the subsequent test, which is the **Goodness of Fit** test.

Table 27. Results of Measurement Model Goodness of Fit Test.

Goodness of Fit Measure	Fit Criteria	Estimate	Description
Chi-Square Statistic	Smaller value	466.113	Marginal Fit
P-value	P > 0.05	0.000	Marginal Fit
Non-Centrality Parameter (NCP)	Smaller value	239.113	Good Fit
RMSEA (Root Mean Square Error of Approximation)	0.05 ≤ RMSEA ≤ 0.08 is good fit; RMSEA < 0.05 is close fit; RMSEA > 0.08 is marginal fit	0.0728	Good Fit
Expected Cross-Validation Index (ECVI)	Closer ECVI value to the saturated model than the independence model indicates good fit	2.835	Good Fit
ECVI for Saturated Model		2.774	
ECVI for Independence Model		7.662	
Independence AIC	AIC value closer to the saturated AIC than the independence AIC indicates good fit	1524.807	Good Fit
Model AIC		564.113	
Saturated AIC		552.000	
Independence CAIC	CAIC value closer to the saturated CAIC than the independence CAIC indicates good fit	1623.669	Good Fit
Model CAIC		774.731	
Saturated CAIC		1738.336	
Normed Fit Index (NFI)	Range 0–1; higher is better. NFI ≥ 0.90 = good fit; 0.80 ≤ NFI < 0.90 = marginal fit	0.803	Marginal Fit
Non-Normed Fit Index (NNFI)	Range 0–1; higher is better. NNFI ≥ 0.90 = good fit; 0.80 ≤ NNFI < 0.90 = marginal fit	0.907	Good Fit
Comparative Fit Index (CFI)	Range 0–1; higher is better. CFI ≥ 0.90 = good fit; 0.80 ≤ CFI < 0.90 = marginal fit	0.927	Good Fit
Incremental Fit Index (IFI)	Range 0–1; higher is better. IFI ≥ 0.90 = good fit; 0.80 ≤ IFI < 0.90 = marginal fit	0.930	Good Fit
Relative Fit Index (RFI)	Range 0–1; higher is better. RFI ≥ 0.90 = good fit; 0.80 ≤ RFI < 0.90 = marginal fit	0.769	Marginal Fit
Standardized RMR	≤ 0.05 = good fit; 0.05 < RMR ≤ 0.09 = close fit; RMR > 0.09 = marginal fit	0.0804	Close Fit

Goodness of Fit Index (GFI)	Range 0–1; higher is better. GFI ≥ 0.90 = good fit; 0.80 ≤ GFI < 0.90 = marginal fit	0.931	Good Fit
Adjusted Goodness of Fit Index (AGFI)	Range 0–1; AGFI ≥ 0.90 = good fit; 0.80 ≤ AGFI < 0.90 = close fit; AGFI < 0.80 = marginal fit	0.894	Marginal Fit

Based on the table above, the analysis results indicate that almost all absolute Goodness of Fit (GoF) measures such as RMSEA, NCP, ECVI, AIC, CAIC, NNFI, CFI, IFI, and GFI show good fit values. Only one absolute GoF measure, namely the Chi-Square statistic and its p-value, indicates a marginal fit. Furthermore, the incremental GoF measures also show good fit values, such as NNFI, CFI, and IFI. Thus, it can be concluded that the overall fit of the measurement model is quite good (Good Fit).

Interpretation of SEM Model Analysis Results

After fulfilling all assumption tests, the output of the LISREL Structural Equation Model (SEM) analysis is presented as follows:

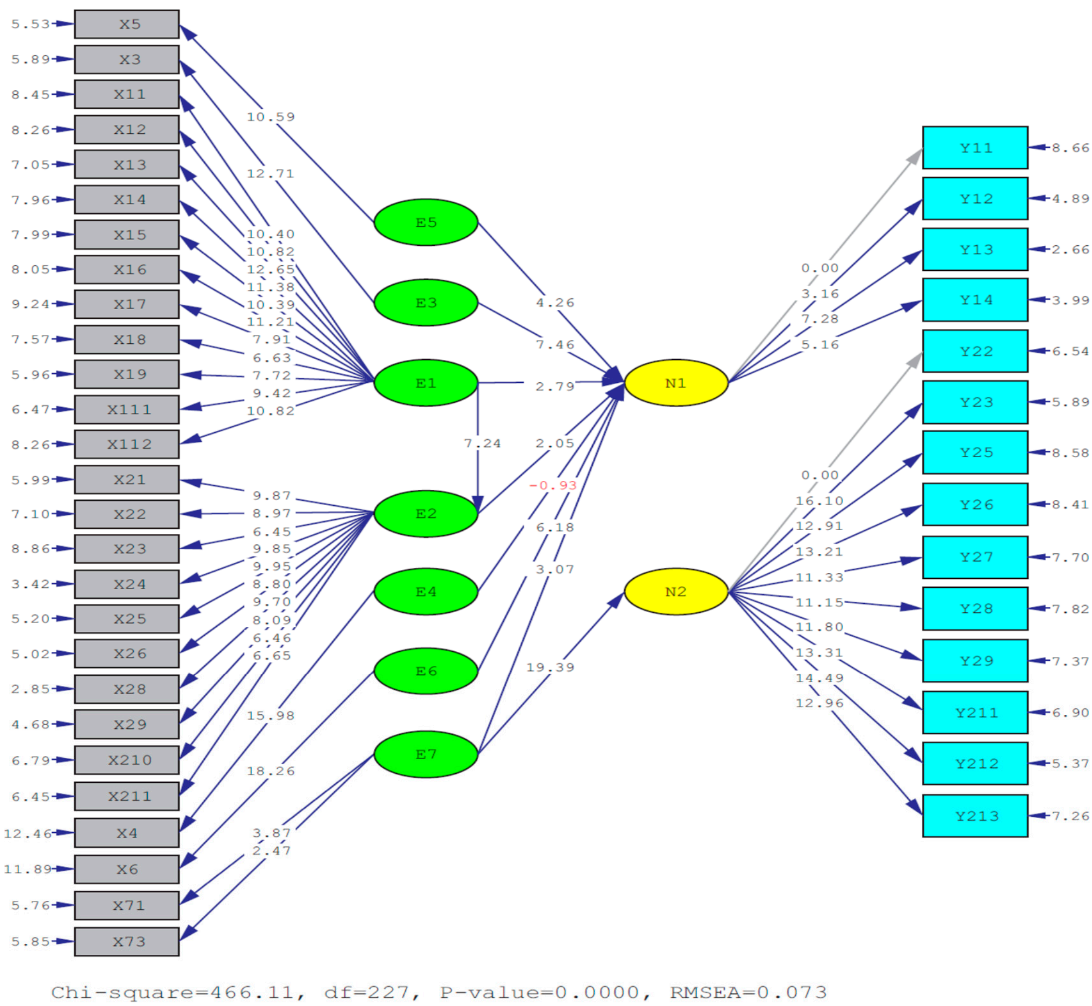

Figure 6. Significance Level of Path Coefficients from SEM Model Estimation Results (Lisrel).

The SEM model can be translated into the following structural equations (the complete results can be found in Appendix 6):

$$\xi 2 = 0.693\ \xi 1 \quad \ldots\ldots\ldots\ldots\ldots\ldots..(1)$$

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$$\eta 1 = 0.279\,\xi 5 + 0.485\,\xi 3 + 0.182\,\xi 1 + 0.131\,\xi 2 - 0.0577\,\xi 4 + 0.287\,\xi 6 + 0.154\,\xi 7 \quad \ldots\ldots\ldots\ldots\ldots\ldots..(2)$$

$$\eta 2 = 0.751\,\xi 7 \quad \ldots\ldots\ldots..(3)$$

The path coefficient values from the structural equations above, along with their significance levels, are presented in the following table:

Table 28. Path Coefficients and Significance Levels of Variables.

Latent Variable	Path Coefficient (γ_i/β_i)	t-value	Status
Effect on Supply (ξ2)			
Demand (ξ1)	0.693	7.245	Significant **
R^2 = 0.480			
Effect on VCC / Value Co-Creation (η1)			
Risk/Benefit (ξ5)	0.279	4.257	Significant **
Dialogue (ξ3)	0.485	7.456	Significant **
Demand (ξ1)	0.182	2.795	Significant **
Supply (ξ2)	0.131	2.048	Significant **
Access (ξ4)	-0.0577	-0.932	Not Significant
Transparency (ξ6)	0.287	6.183	Significant **
Sustainability (ξ7)	0.154	3.073	Significant **
R^2 = 0.743			
Effect on Marketing Platform (η2)			
Sustainability (ξ7)	0.751	19.386	Significant **
R^2 = 0.625 (62.5%)			

Note: (**) significant at the 99% confidence level **Source:** Primary data, processed in 2023.

Based on the Structural Equation and the Table above, several conclusions can be drawn: At the 99% confidence level, Demand (ξ1) has a significant effect on Supply (ξ2). Furthermore, at the same confidence level, Risk/Benefit (ξ5), Dialogue (ξ3), Demand (ξ1), Supply (ξ2), Transparency (ξ6), and Sustainability (ξ7) have significant effects on VCC / Value Co-Creation (η1), while the variable Access (ξ4) has no effect on VCC / Value Co-Creation (η1). Additionally, at the 99% confidence level, Sustainability (ξ7) has a significant effect on the Marketing Platform (η2). The following sections elaborate further.

5. Discussion

Discussion of the Effect of Demand (ξ1) on Supply (ξ2)

Based on the Table, the latent variable Demand (ξ1) simultaneously explains the variation in the latent variable Supply (ξ2) with a coefficient of determination (R^2) of 0.480 or 48%.

The latent variable Demand (ξ1), consisting of the manifest variables: Awareness ($X_{1\text{-}1}$), Behavior ($X_{1\text{-}2}$), Lifestyle ($X_{1\text{-}3}$), Knowledge ($X_{1\text{-}4}$), Availability ($X_{1\text{-}5}$), Price ($X_{1\text{-}6}$), Trust in product ($X_{1\text{-}7}$), Quality assurance ($X_{1\text{-}8}$), Community certification ($X_{1\text{-}9}$), Innovation value ($X_{1\text{-}11}$), and Product quality ($X_{1\text{-}12}$), has a positive and significant effect (99% confidence level) on the latent variable Supply (ξ2), which consists of: Production yield ($X_{2\text{-}1}$), Climate change ($X_{2\text{-}2}$), Domestic market government policy ($X_{2\text{-}3}$), Export market government policy ($X_{2\text{-}4}$), Quality assurance ($X_{2\text{-}5}$), Information technology ($X_{2\text{-}6}$), Brand (X2-8), Packaging ($X_{2\text{-}9}$), Community ($X_{2\text{-}10}$), and Extension support ($X_{2\text{-}11}$). This indicates that improvements in demand indicators for organic vegetables will encourage an increase in their supply. Conversely, if demand indicators decline, the supply will also decrease.

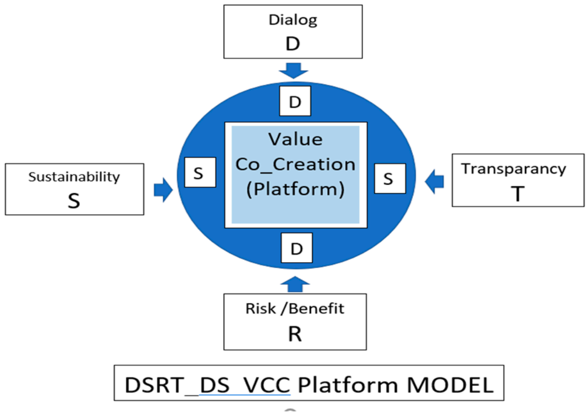

Figure 7. New DSRT VCC Model.

Germany's organic wholesale market is projected to increase by 13.8% from 2024 to 2030, due to producers' understanding of consumer demand factors such as product quality, pricing, and product safety assurance (Ministry of Trade, RI, 2013). The supply of organic products in the Mekar Tani Jaya farmer group has increased following the acquisition of SNI: 6729:2016 certification across 94% of its organic production processes. As previously understood, consumers who prioritize product quality standards are more satisfied with the implementation of SNI organic certification (Maryowani, 2012). The largest organic vegetable producer in Cibodas, Bandung Regency, 'Saung Organik', has adopted post-harvest handling strategies such as eco-friendly packaging, product labeling for safety, and INOFICE certification for packaging houses, contributing to high demand from distributors and modern markets to become loyal customers.

Research Contribution to the Organic Agriculture Business. The results of this study make a significant contribution to the practice of sustainable organic agriculture. Challenges remain in implementing environmentally friendly and sustainable agricultural practices, particularly across various agribusiness subsystems: in the upstream input supply, on-farm production or cultivation processes, downstream in marketing and distribution, as well as in the supporting subsystems related to partnership institutions.

The Value Co-Creation (VCC) Business-to-Customer (B2C) model for organic vegetables offers new insights into both theory and practice of sustainable organic farming by examining the dynamics of demand and supply for organic vegetables. The Collaborative Business Model serves as a standard for conducting business in the organic vegetable sector specifically, and organic farming practices more broadly. The creation of shared value between producers and consumers (value co-creation) in the B2C context—through innovations such as co-learning, co-service, co-design, and co-process—can guide business practitioners and organic vegetable farmer groups in applying these elements as part of their marketing strategies.

Marketing of organic vegetables can experience increased supply as a result of higher demand driven by a broader customer segment across various age groups, income levels, behaviors, and lifestyles. The marketing platform, which is built upon VCC principles for organic vegetable commodities, has proven effective and beneficial for consumers from Baby Boomers to Gen X, Y, Millennials, and Gen Z. The development of co-learning, co-service, co-design, and co-process features on the marketing platform can further boost demand, which in turn increases supply.

One of the key contributions of this research lies in its emphasis on the importance of increasing demand for organic vegetables not merely through production processes, which tend to focus solely on profitability. In reality, field data show that consumption of organic vegetables remains low due to higher prices compared to conventional vegetables. In fact, the cost of organic vegetable production is often lower than that of conventional farming. The price of organic vegetables is aligned with their production value—higher prices reflect higher quality. However, lower-income consumers still face challenges in accessing healthy vegetables.

 doi:10.20944/preprints202504.1216.v1

6. Congclusion

The following are the conclusions from the research conducted: The demand and supply of organic vegetables in West Java need to consider prices that align with market equilibrium and ensure that the quantity of each type is appropriately prepared by each organic vegetable business. The sustainable B2C VCC (Value Co-Creation) model for organic vegetables is the **DSRT model**, which enhances the existing **DART model**. Therefore, a shift in mindset is needed: the value of organic vegetables should be based on necessity rather than price. When all stakeholders—farmer groups, entrepreneurs, and consumers—understand the intrinsic value of organic vegetables as a basic need, rather than a luxury item, demand will naturally increase, followed by a rise in supply.

Author Contributions: Conceptualization, K.R.N, D.Y, W.K.A and T.L; Data curation K.R.N; Formal analysis K.R.N and D.Y; Funding acquisition D.Y; Investigation K.R.N and W.K.A; Metodology K.R.N. D.Yand T.L; Project administration : D.Y; Resourches W.K.A and T.L; Software K.R.N; Suvervisor; T.L; Validation K.R.N, D.Y, and T.L; Vicualization K.R.N; Writing- original draft ; K.R.N; Writing-review and editing K.R.N, D.Y, W.K.A and T.L; All aouthors have read and agreed to the published version of the manuscript. version of the manuscript.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable

Data Availability Statement: data will be made available upon request

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Adesemowo, Abayomi Alli A, Arogundacle. 2020. Aplikasi Seluler Marketspace Cerdas Untuk Memasarkan Product Organic. Proceeding.
2. Alse Fagestrom and Geogrghita Ghinea. 2020. Co Creation of Value Trough Social Network Marketing, A Field Experience Using Facebook Campaign to Increase Conection Rate. Human Interval Journal, Part II.HC II.2011 Sringer-US lag Berlin Heideberg.2020
3. Arif Zulkifli. 2020. Green Marketing Redefinition Of Green product, Green Price, Green Place, Green Promotion. Graha Ilmu Jakarta
4. B Evanddisson, G Nog CZ, MiinR Fithi. 2011. Does Service Dominat Design Resnet In a Boller Service Sistem? Journal Service Management.
5. Becoause, R,Harjiyatni, F. R. , Princess, W. H. , Kresnanto, N. C. 2021. Green behavior in organic products: Policies approach. Journal
6. Boz Ismet. 2019. Possibilities of Improving Organic Farming In Turkey. International Journal.Proceedings
7. Budi Kusumo RA, Charina A. 2021. Communication Network Analysis on Organic Vegetable agribusiness in West Bandung Regency. Journal of Counseling Vol.17 no.2
8. Buyun Liu, Cyntia L, etAll. 2022. Perspective Organic Food Consumption During Pregancy and Thev Potential Effect on Maternal and Of Bring Healt. Owral Pre Prof Journal.
9. Christine HvitsandaRuth Kjærsti Raanaasb SigridGjøtterudc Anna Marie Nicolaysena. 2022. Establishing an Agri-food living lab for sustainability transitions: Methodological insight from a case of strengthening the niche of organic vegetables in the Vestfold region in Norway. Journal Agricultural System.
10. DahlStrom, P.2020. Green Marketing opportunity for Innovation, New York, Book Surge
11. Deliana Y. 2018. Business Model for Promoting Organic Vegetables. IOP Converece Series Erath and Enviromental Sciece
12. __________ 2012. Market Segmentation of Organic Product at Bandung West Java Indonesia International Journal
13. _. 2012. Customer preference On Organic and An Organic Vegetables in Bandung West Java Indonesia. International Journals
14. . 2012. Hierachy of Customer Decision in Buying Organic Vegetable in Bandung West Java Indonesia. International Journals

15. . 2016. A Picture Is Worth a Thousand Words Understanding Consumer Interaction in Organic Packaging. International Journals
16. . 2016. Marketing & Value Chain of Gedong Gincu Mango with Its Labeling and Packaging
17. . 2019. Generation Green Marketing. Scientific Oration at the Inauguration of Professors Unpad
18. _. 2019 The Role of Green Marketing for Sustainable Agriculture. Books of Kotler, Philip and Amrstrong Gary. 2008 Principles of Marketing. InEdition Volume 12. Jakarta Erlangga
19. . 2008. Principles of Marketing. Volume II 12th Edition. Jakarta Erlangga . 2009. Marketing Management. Volume I 13th Edition. Jakarta Erlangga
20. ____________. 2009. Marketing Management. Volume II 13th Edition. Jakarta Erlangga
21. Fakhrul Islam M and Karim Z. 2021. Sustainable Agricultural Management Practices and Ebterprise Development for Coping with Global Climate Change. ChapterBook.
22. Fan Jun. 2019. Influence of Virtual CSR Gamification Design Element On Customers Antiniance Intention Of Participing In Social Value Co Creation The Mediation Effect Psycological. www. New emerald/Insight. 13555855
23. Granroos C and Heinonen K. 2015.Value Co Creation : Critical Reflections. Hanken Scholl Economic. Book
24. Hakseung Sin, Richard R Perolue, Mario Pandelowrence. 2020. Managing Customer Review For Value Co Creation A Emporment Theori Perspective. Travel Research of Journal.
25. Hasibuan I. 2020. Organic Farming – Principle and Practical. Tidar Media Jakarta. Book
26. Hubies M, Najib M, Widyastuti, Wijaya NH. 2013. Farmer-Based High Value-Added Organic Food Production Strategy. JIPI -Indonesian Journal of Agricultural Sciences. December
27. Hunger, J. David & Thomas L. Wheelen, 2003 Manajemen Strategi edisi II. Yogyakarta
28. J Chong G Chen, D Zheng. 2020. Design Entroppy Theory a New Design Methodologys Smart PSS Development. Journal
29. Katrien Vorleya. 2015. The Co Creation Experience From The Customer Perspective Its Measurenment And Theterminants. www.emerald insight.com/1757-58118 htm
30. Kattel RR, Nainabasti A.2020. Consumers Attributes and Preference Organic on Organic Agriculture Product in Nepal. Proceedings of the AgriculturaleMarketing Conference
31. Kementrian Perdagangan RI. 2013.n Market Brief Pasar Produk Organik di Jerman. ITPC Hamburg.
32. Khairawati S. 2021. Marketing Mix Strategy in Marketing 5.0 Articles
33. Kartajaya Hermawan. (2009). New Wave Marketing, The World is Still Round the Market is Already Flat. English: Gramedia.
34. Kondraslka, IC daTytarenko L, Kalnik O, Novytska I. 2018. The Blockchain Technology as a New Approach of Promoting Organic Product to The Market. International Journal of Enginering and TechnologyVol.August 7 (790-795)
35. Kotler, P, Kertajaya H, Setiawan i. 2021. Marketing 5.0 Technology for Humanity. E- Book, Wiley New York.
36. Kritiadi A, Hartoyo. Yusuf E, Sukandar D. 2021. Online Modeling of Community Relations Management in the formation of value co creation in the BroadBand Cellular Telecommunications Industry of Indonesia. Journal
37. Laura TM, Vand Grint, Anthony M , Evans Olgastarova. 2021. Good Eats, Bad Intentions? Repotational Cost Of Organic Consumption . Environmental Psychology Journal.
38. Maulana E, A 2021. Qualitative Methodology in Marketing. Pustaka Etnomark Jakarta. Book
39. Mayrowani. 2012. Developing Organic Agriculture in Indonesia. Journal
40. Miles, M.B & Huberman A.M. 1984, Qualitative Data Analysis. Translation by Tjetjep Rohendi Rohidi. 1992. Jakarta: University of Indonesia Publishers.
41. Millis, John W, S Walker, Orville CJR. 2010. Marketing Management a Strategic Decision Making-Approuch (7th edition). Singapore. MC eawhill.
42. MónicaDuque-AcevedoabLuisJ.Belmonte-UreñabEduardoTerán YépezcFranciscoCamacho-Ferrea. 2022. Sustainability and circularity in fruit and vegetable production. Perceptions and practices of reduction and valorization of agricultural waste biomass in south-eastern Spain. Journal Of Enviromental Management

 doi:10.20944/preprints202504.1216.v1

43. N Brahnosa, K Nojer, H Want Der Hart.2020. Innovatife a public Service Design Developing A Co Creation Tool For Publick Service Innovative. Journal
44. Nusraningrum D, Santoso S, Gunawijaya J, Gading DK. 2021. Green Operation Management with Green Business and green Marketing Perspective. Psycology and Education Journal.
45. Oesman, Yevis Marty. 2010. Successfully Managing Marketing MIX, CRM, Customer Value,Customer Dependency. Bandung Alfabeta
46. Ottman, J.A. 1998. Green Marketing of Oppourtunity for Innovation. New York-Book Surge
47. O Wewthen, P Greffen. 2017. Designing Service Dominant Business Model. Journal
48. Patten J. 2010. Green Intention, creating a green value Stream to Compete and Wind. International Journals.
49. Pe'pin A, Morel K Hayo MG Van der Werf. 2021. Data on Structure and Farming Practicies of France Organic Vegetables Farm. With focuse on The Use of Input and the Socio-Economic Context. International Journals.
50. Prime, T. 2014. Financing System for Applications in High-Value Horticultural Supply Chain Management. National Journals
51. . 2016. Durian Suply Chain Characteristic Indonesia. National Journals
52. . 2016. Lingking Mango Farmer to Dynamic Market Through Transpparant Margin Parnership Model. International Journals.
53. Pistol L. 2020. The & 7Ps and 1G that Rule in The Digital World the Marketing Mix. Chapterbook
54. Prahalad, C.K. (2004):"The co-creation of value,". Emerald Journals database: vol. 68, p.23.
55. Purnomowati, NH Asrihaspari, A. 2021. Green Community Empowerment Business Model to Recognize Solo Green City: A Case Study. Scientific Journal of Management.
56. Rajadurai J Zahari A, at all. 2021. Investigating Green Marketing Orientation Practices Green Small and Medium Enterprise. International Journal
57. Rahmawanti, A.F.D. 2011. Pengaruh Gamification Pada Program Loyalitas Terhadap Pengguna Marketplace Dengan Menggunakan Expectation Confirmation Model ECM. Skripsi
58. Rahmawati M, Ruslan A, Bandarsyah D. 2021. The Era of Society 5.0 as The Uniffication of Humans and Technology A Litertur reviw on Materialism and Existentialism. Journal. IOP Conference Series.
59. Ramjan. K.R. 2020. Bringing The Individual In to The Co Creation Of Value. Service Marketing . Vol 33. No.7
60. Razo, Zapala, EK Chew, D Sangragi. 2018. VIVA, Visual Language to Design Value Co Creation. Journal
61. Rizqianingsih, DU, Widodo, A. 2021. The Effect of Green Marketig and Service Quality on Customer Loyalty with Customet Satisfaction as an Intervening Variable (Case Study at Strutbuck Coffee Surabaya). Journal
62. Renata Lúcia Magalhães deOliveiraaIgor VieiraSantosaGuilherme FonsecaGracianobAndré AugustoCunha LibâniobLeiseKelli de OliveirabLílian dos Santos Fontes PereiraBracarensec. 2021. A sustainable approach for urban farming based on city logistics concepts for local production and consumption of vegetables. Journal research In Transportation Economics.
63. Sagita Chan SRO. 2021. Horticultural Plant Seeding and Breeding Industry in Indonesia: Current Conditions and Business Opportunities. Hortuscholer's journal. Vol 2 No.1Setyowati L, Nasir Ahmad D. 2021. Utilization of Big Data in the Era of technology 5.0. Journal of Community Service Vol.1 No,2.
64. Setiawan,I, Supyandi.D, Rasiska S, Judawinata G. 2018. Pertanian PostModern ; Jalan Tengah Vertikal Generasi Era Bonus Demografi Membangkitkan Peradaban Nusantara. Penebar Swadaya. Jakarta
65. Seungwoa Hen, Yokyung Lee. 2022. Analisis Of The Impact and Lyfe Stile Consumption Organic Food In South Korea. Helion Jornal .
66. Sugiono. 2012. Quantitative, Qualitative, and R and D Research Methods. Bandung Alfabeta
67. Sukmawani, R. 2018. Methods of Determining Superior Commodities. UMMI Perss.
68. Sukojo Herdin, Sumanto Radi X A. 2012. 7P Marketing Mix Analysis (Product, Price, Place, Participant, Process, Phisical Evident). Nasional Journal
69. Voronka Q Yu and Kovaleva IV. 2020. The Sustainable Socio-economic Development Of Rural Areas inTerm of Development of Organic Farming. Jurnal Sucita S, Novan Prasetya M. 2021.Indonesia

doi:10.20944/preprints202504.1216.v1

Singapore Cooperation in Export of Imports of Agricultural Commodities 2018. Fisk Journal April Vol.2 No.1.

70. Yud Buana, Iasnawirakma, dkk. 2019. Konseptualisasi Value Co Reation Dalam Konteks Customer To Customer (C2C). Jurnal Pengabdian dan Kewirausahaan. Vol 3. No.1
71. Wai Kuan Alice,Cheac Asaro Aigbogun. 2022. Exploring Attitude Behaviour Incontsitent In Organic Consumption Daring Covid 19 Pandemic In The Kiang Valley Malaysia. Cleaner and Responsible Consumption Journal.
72. Weiping Yu, Mingli He, Xiaoyun Han and Jun Zhou. 2021. Value Acquistion Value Co Creation The Impact Of Preceived Organic Grocerant Value On Customer Engagement Behaviour Through Brand Trust . Frontresrin Psychology Journal. October . DOI . 10.3389/fpsyg. 2022.990545
73. Juga 40 referensi terkait VCC platform product sayuran organic