International Journal of Economics, Commerce and Management
United Kingdom ISSN 2348 0386 Vol. 12, Issue 8, Aug 2024

https://ijecm.co.uk/

AGRO-INDUSTRY SUPPLY CHAIN MANAGEMENT PERFORMANCE ANALYSIS: PROBLEM SOLVING APPROACH THROUGH IMPORTANCE PERFORMANCE MATRIX MODEL ANALYSIS (CASE STUDY OF INDONESIA COCOA COMPANY)

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Abstract

The objective of this research is to obtain empirical evidence and find clarity from the research problem and a comprehensive way of effective solving in the supply chain management problem in cocoa processing industry. The method that be used in this study is a new combination of descriptive and verifiable methods using a variant-based SEM model, namely PLS (Partial Least Square) and a problem-solving method using the Agrotech-IPMA (Importance Performance Matrix Analysis) model based on SEM-PLS. The result of this research showed a new finding in supply chain management research that supply chain management practices and strategy influence to competitive advantage and impact to performance. Construct of competitive advantage showed main focus for the maintaining and supply chain strategy showed a low indicator as the last priority. Furthermore, indicator score of responsiveness and efficiency through competitive advantage of price given significant effect to the performance score. This result providing more great benefits for the decision-makers in effective problem solving to improve the performance of Indonesia's cocoa processing industry.

Keywords: Supply Chain, Strategy, Performance, Problem Solving Model, IPMA, SEM-PLS

INTRODUCTION

Cocoa is one of the plantation products commodities that has a fairly important role in economic activities in Indonesia. Cocoa is also one of Indonesia's export commodities that is quite important as a foreign exchange earner for the country in addition to oil and gas. Based on data from the International Cocoa Organization (ICCO) (2022), Indonesia ranks third in the world as a cocoa product processing country after the Netherlands and Ivory Coast. In addition, Indonesia is only sixth in the world as the largest producer of cocoa beans. The cocoa processing industry was able to contribute foreign exchange to more than USD1 billion in 2020 and 2021. Meanwhile, 85 percent or 319,431 tons of the total production volume of the cocoa processing industry has been exported to 96 countries, including to the United States, India, China, and Malaysia (Director General of Agro-Industry of the Ministry of Industry, 2021) (Kementerian, 2021). Currently, there are only 11 intermediate sector cocoa processing industries with a capacity of 739,250 tons per year where there has been a decline in the performance of the number of processing plants since 2015.

Furthermore, there are 900 chocolate processing industries, and 31 chocolate artisans (bean to bar) role in chocolate industry. As for the utilization of the large-scale cocoa processing industry, it has only reached 54 percent. The Ministry of Industry continues to strive to improve the performance of the processing industry, especially cocoa in Indonesia, to be more productive and globally competitive. Moreover, the cocoa processing industry is one of the industrial sectors that makes a significant contribution to the national economy. The government is also encouraging the development of the processing industry which has the potential to have even greater added value. Meanwhile, according to the Indonesia Cocoa Council (Dekaindo) (DEKAINDO, 2023), the main problem faced by the cocoa processing industry in the country is the gap between domestic demand and supply so as to effect the performance. To meet the needs of the industry, Indonesia is forced to import cocoa beans of around 253,000 tons per year, on the other hand, the Director of Annual Crops and Refreshers of the Ministry of Agriculture admitted that there are still number of obstacles in cocoa cultivation activities in the country. The results of previous research (Yunas et al., 2016),(Thatte et al., 2013) also show a phenomenon that is almost the same as the problems faced by Indonesia cocoa companies to date. The development of the supply chain integration model has not shown better results in terms of improving the company's performance, but the model can be used as a reference for the development of a new model in solving the performance problems of the cocoa processing industry. The use of multiple problem-solving models with a focus on supply chain management aspects and supply chain strategies will affect competitive advantage and impact the overall performance of the company.

Problem Identification

Based on the description of the problem phenomenon mentioned above, it can be seen that the problem of declining business performance of companies still occurs in the cocoa processing industry due to the low competitiveness of cocoa companies due to the implementation of ineffective supply chain management and the implementation of supply chain strategies that are not optimal. Seeing the urgency of the problems faced by Indonesia's cocoa processing industry, it is necessary to develop a comprehensive problem-solving model.

Problem Limitation

In accordance with the identification of the problem above, this study only limits the problems within the scope of business performance of Indonesia cocoa processing companies and effective ways to solve the problem.

Problem Formulation

Based on the identification and limitation of the problem above, the formulation of the problem is developed in the form of a Research Question (RQ) (research question) as follows:
How is the business performance model of large cocoa processing companies in Indonesia based on practical supply chain management factors, supply chain strategies, and competitive advantages, and how can an effective problem-solving model be used to improve the business performance of Indonesia's cocoa processing companies.

LITERATURE REVIEW

Supply Chain Management *(SCM)*

Supply chain management is a planning and collaboration of management activity (CSCMP, 2024). It is an effective way of managing the supply chain within the supply chain itself (Li, 2002). Variable SCM Practices consists of 5 sub-variables or dimensions, namely *Strategic Supplier Partnership, Customer Relationship, Level of information sharing, Quality of Information Sharing, Internal Lean Practices dan Postponement* (Li et al., 2005).

Supply Chain Strategy (SCS)

It is a strategy related to the policy and planning of the use of corporate resources that is integrated with corporate strategy to support long-term strategies. It is related to the company's policies and use of resources throughout the supply chain that is integrated with corporate strategy to support long-term strategies (F. Robert Jacobs, 2010), (Sun et al., 2009), (A. H. I.

Lee et al., 2018). SCS Variables consist of 3 indicators, namely Efficiency, *Responsiveness* and *Agile*. (R. Lee, 2021)

Competitive Advantage *(CA)*

Competitive advantage (Thatte et al., 2013), (Marstine, 2011) is an advantage over competitors gained by offering consumers greater value, either by means of lower prices or by providing greater benefits and service that justifies higher prices. The Competitive Advantage variable consists of 5 indicators, namely Price/cost, Quality, Delivery Dependability, Product Innovation dan Time to Market (Beske, 2014).

Company Performance *(BP)*

Company performance is the ability of a company based on certain standards or in accordance with plans/goals with the *Balanced Scorecard* (BSC) approach. (ITC, 2011), (Kaplan & Norton, 2000) use 4 (four) dimensions consisting of customer perspective, internal business perspective, innovation and learning perspective and financial perspective.

Problem Solving and IPMA (Importance Performance Matrix Analysis)

The problem-solving method used in general consists of 5 steps, namely identify problem, explore alternatives, select an alternative, implement the solution, and evaluate the solution (Fema, 2005) (Coates et al., 2019). Furthermore, problem solving can use IPMA in SEM-PLS. The use of IPMA in solving a case problem in SEM-PLS (*Partial Least Square*) has been introduced by Ringle C.M and Sarstedt M. (2016) by combining importance and performance variables known as impact-performance map matrix analysis, or priority map analysis.

Furthermore, the PLS-SEM standard study supports details about the relative significance of construction in structural models and explains the relationships between variables. As an alternative to analyzing the importance dimension (i.e., path coefficient), IPMA examines the performance dimension. IPMA involves five Steps (Hair et.al, 2017). The first step demands an examination of the fulfillment of the eligibility requirements to conduct the analysis. The second step represents the calculation of the performance value of the latent variable. To allow interpreting performance levels and comparing them, the third step is to analyze the value of importance (i.e., the meaning of construction) derived from the total effect (the sum of all indirect effects and direct effects in the structural model (Ringle C.M, et.al, 2020). In the fourth step, the creation of an interest-performance map for the selected construction is derived from the previous results using a scatter plot. In the fifth step, IPMA can be expanded at the indicator level to obtain accurate data on managerial measures that are highly likely to succeed (Hair.,

et.al. 2017). Therefore, IPMA expands the results of the standard PLS-SEM method (Ringle C.M, et.al, 2017)

Previous Research and State of Art

Based on the research conducted previously, it was found that there are differences and similarities in the variables that will be used in this study. The relationship is the same and close to the same as this study and is a reference in this study which is summarized and can be seen in Table 1. as follows: Based on the review of the results of previous research and this study, there is a GAP where this GAP is the State of the art as shown in Table 1.

Table 1. Research *GAP Matrix* (*State of the Art*)

No	Title	Author	Year	Supply Chain Management Practices	Supply Chain Strategy	Competitive Advantage	Business Performance
1	Supply Chain Management Practices In Small Retailers	James W. Hamister	2012	■			■
2	The Role of Supply Chain Management Practices (SCMP), Technology and Information Sharing Quality in the Firm's Performance: Comparative Structural Models	Dr. Nedra BahriAmmari	2013	■		■	■
4	Impact of SCM Practices of A Firm on Supply Chain Responsiveness and Competitive Advantage of A Firm	Ashis A, Thatte, Gonzaga, Subba S. Rao, T.S. Ragu- Nathan	2013	■		■	
5	The Moderating Effect Of Supply Chain Role On The Relationship Between Supply Chain Practices And Performance An Empirical Analysis	Lori S. Cook and Daniel R. Heiser	2011	■			■
6	Supply Chain Management Practices In Small Retailers	James W. Hamister	2012	■			■
7	The relationship of risk management systems to environmental uncertainty and strategies and their impacts Organizational Performance	Bambang Tjahjadi	2011		■		■
8	The Strategic Fit Between ''Competitive Strategy'' And ''Supply Chain Strategy'' In Indian Manufacturing Industry: An Empirical Approach	Gunjan Soni and Rambabu's daughter-in-law	2011		■		■
9	Study Of Relationship Between Supply Chain Management Strategy With Logistics Performance And Organizational Performance	Dr. Belghis BavArsad Dr. Abdol Hadi D.A, Fatemeh J.A.	2013		■		■

■ :already □ :not yet

The above matrix shows the results of previous researchers' research where no one has examined the overall variables and effective ways to solve problems.

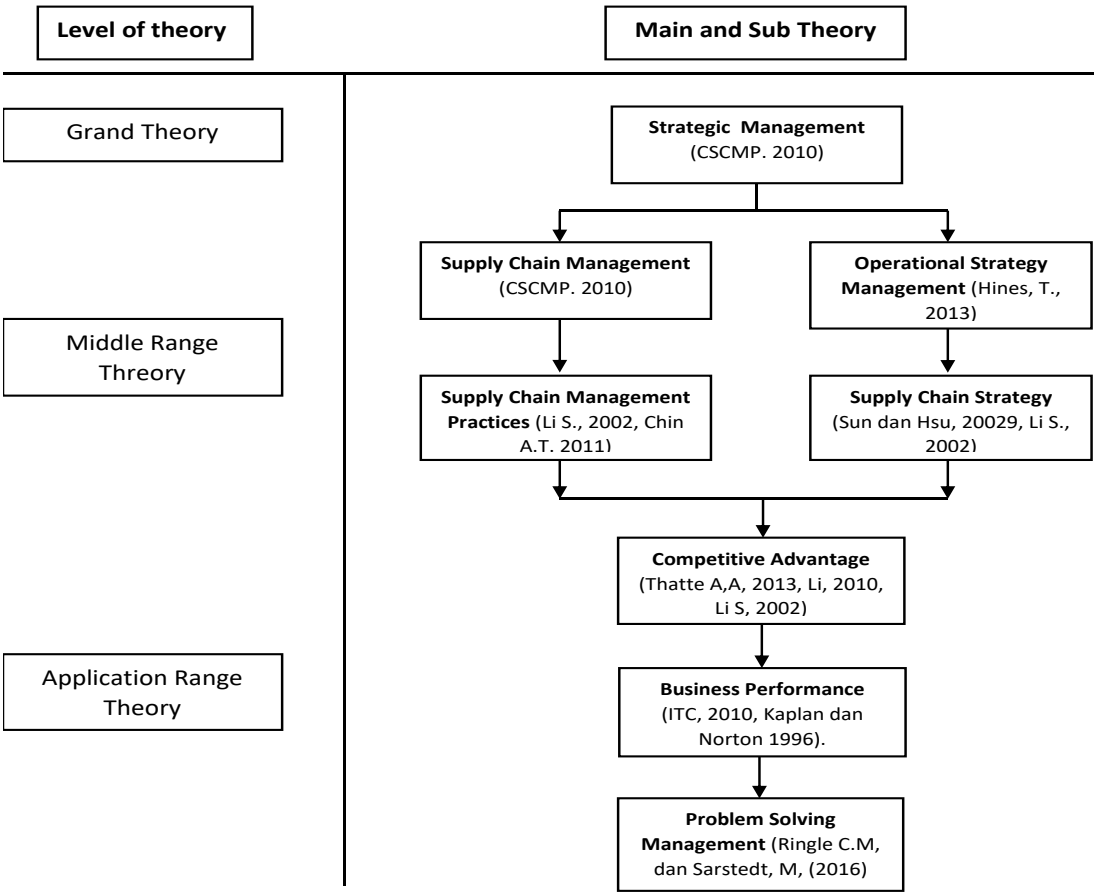

Figure 1 Diagram of the Researcher's Theory

Meanwhile, the framework of thought that has been described above, can be illustrated through Figure 2 below;

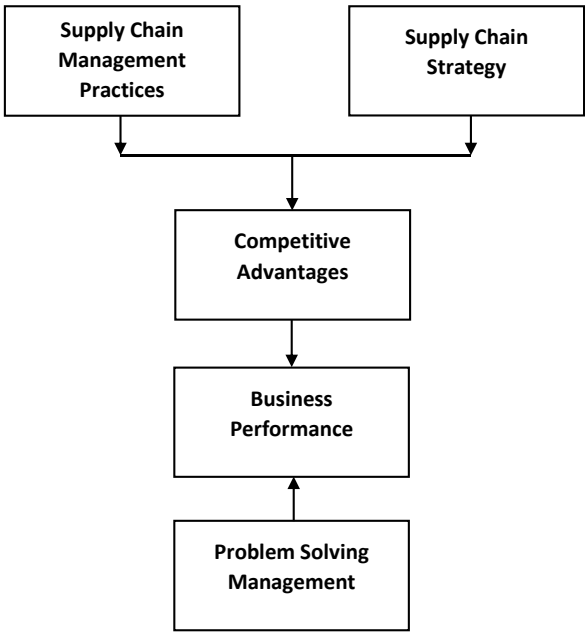

Figure 2. Thought Framework Chart

Based on the description of the framework of thinking mentioned above, the research paradigm is;

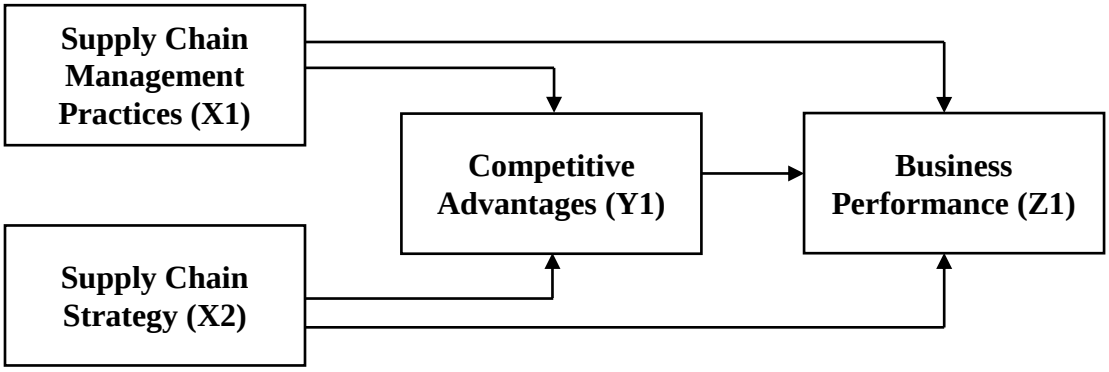

Figure 3. Research Paradigm

RESEARCH METHOD

Research Design

To achieve the research objectives, this research method uses a research design or research design that is *Descriptive* and *Verificative*. Data collection in this research method is emphasized on the method of data collection, both secondary data and primary data that meet the research rules. The steps taken are;

- Literature research, especially on several sources of data and information that are qualitative and quantitative
- The research was conducted through field visits, mainly on farmers, traders, chocolate factories, chocolate exporters, and associations (as respondents).
- Exploring various information from various sources, both from government agencies and academics and other stakeholders.
- Discussions are limited, especially by inviting relevant *stakeholders*.

This study uses two types of questionnaires, namely questionnaires intended for *descriptive* assessment, which are used to describe each variable related to the first hypothesis. The second questionnaire is intended for *explanatory* assessment which is used to find out the relationship between one variable and another related to the research hypothesis. The questionnaire used in this study uses *a Likert scale*.

Source and Method of Determination of Data/Information

The study used the population of the cocoa processing industry spread throughout Indonesia and registered with the Ministry of Industry (including data from the Indonesia Cocoa Industry Association (AIKI) and the Indonesia Cocoa and Chocolate Industry Entrepreneurs Association (APIKCI) with total 35 business units.

Design Analysis and Hypothesis Test

This study also uses 2 stages of the process (table 2), the first step is the process stage of describing each variable related to the hypothesis and analysing the relationship by using a variant-based Structural Equation Model (SEM) test tool or component, namely PLS (Partial Least Square) using PLS4 software tools. The equation model in the study consists of the Inner Model describing the relationship between variables based on substantive theory and the outer model is often called the outer relation or measurement model, which defines how each block of indicators relates to its latent variable. The second stage is the process of determining and how to solve problems effectively based on the results of the first stage using the SEM-PLS-based IPMA (Importance Performance Matrix Analysis) tool.

Table 2. 2 Stages of the Research

Research stage	Type/Method	Analytical Tools
First	Descriptive Analysis → Verificative Analysis	SPSS
Second	Effective Problem Solving Analysis	SEM-PLS IPMA-SEM PLS

In order to obtain analysis results that meet the research objectives and test the hypothesis proposed in the study, the data analysis used in this study generally consists of two analysis designs, namely descriptive analysis and verificative analysis. Descriptive analysis uses a descriptive statistical method with SPSS analysis tools. Meanwhile, the verificative analysis aims to test research hypotheses related to the relationship between variables of supply chain management practices, supply chain strategies, competitive advantages and supply chain strategies that have an impact on business performance where in the framework of the relationship can be seen a structural equation model (Sequential Equation Model-SEM) which is based on variants, namely the *Partial Least Square* approach (PLS).

The model above shows the relationship between variables and each indicator that affects them and the relationship between endogenous latent variables and exogenous variables. The indicators that make up this model are the reflective. The degree of influence and implication of each variable as identified in the hypothesis will be shown from the relationship. Hypothesis testing was carried out with the help of SPSS26, SmartPLS4 software.

Effective Problem Solving with IPMA

The application of the findings of this study is expected to provide added value and benefits for the purpose of solving supply chain problems in Indonesia's cocoa processing industry. Problems that may arise in the supply chain are how to manage the supply chain efficiently and effectively, competitive advantage and the implementation of the right strategy, which has an impact on the company's performance. For this reason, a comprehensive problem-solving model is needed.

According to Claudi H et.al (2010), problem solving using IPMA (Importance Performance Matrix Analysis) analysis based on SEM-PLS allows identifying management activities in terms of problem solving and improvement. Meanwhile, Ringle C.M, and Sarstedt, M, (2016) in their research that the use of IPMA is one of the useful analytical approaches in PLS-SEM that expands the standard results of path coefficient estimation by considering the mean value of the latent variable score. IPMA is included in a series of methods that are very useful for generating additional findings and conclusions. By combining the analysis of the importance and performance dimensions, IPMA makes it possible to prioritize construction to improve the construction of specific targets. In this study, a problem-solving analysis was used using the Agrotech-IPMA (Importance Performance Matrix Analysis) model based on SEM-PLS which has been modified based on the Ringle CM and Sarstedt (2016) models with the following stages;

1. Identification and Application in Industry

The application in the industry starts from the formulation of goals, namely to find solutions in determining the efforts that need to be made in terms of the ability to analyze problems. Therefore, the implementation plan of applied actions needs to be elaborated so that it can improve the company's performance.

2. Strategy Formulation

The draft strategy formulation provides an overview of the recommendations given which are short-term, medium-, and long-term.

3. Implementation of Strategy

The design of the implementation of strategies that can be carried out is based on the order of priority and probability. Alternative strategies are determined based on the results of the research by considering the internal and external environment

4. Implementation of Monitoring and Evaluation

The design stage of monitoring and evaluation implementation is the final stage which aims to assess the effectiveness of the implementation of the research application.

RESULTS AND DISCUSSION

The Influence of Supply Chain Management Practices, Supply Chain Strategies and Competitive Advantages on Performance

Validity Test

The convergent validity of the measurement model with reflexive indicators is assessed based on the correlation between the item score or component score and the construct score. The score is shown through the results of cross loading processing as shown in Table 4.92. From the table, it is shown that all the correlation scores of the indicator components to their construction are more than 0.7 so that these components have a high individual reflexive size.

Table 3. Cross Loading *Value* for the Influence of Supply Chain Management Practices and Supply Chain Strategy on Business Unit Performance through Competitive Advantage

	BP	CA	EU	SCM	SCS
BP1	**0.934588**	0.715299	0.708634	0.721706	0.851777
BP2	**0.938777**	0.806397	0.605859	0.802669	0.952492
BP3	**0.944248**	0.756756	0.761548	0.805250	0.898094
BP4	**0.907274**	0.678057	0.667532	0.711458	0.832771
CA1	0.535012	**0.716110**	0.755861	0.666189	0.562278
CA2	0.705575	**0.888742**	0.557205	0.795685	0.801524
CA3	0.756279	**0.923359**	0.545169	0.834270	0.842241
CA4	0.597226	**0.843175**	0.549156	0.769854	0.678332
CA5	0.800923	**0.921723**	0.766466	0.893231	0.822299
SCM1	0.631227	0.841125	0.579022	**0.852260**	0.685733
SCM2	0.619057	0.782754	0.510027	**0.856121**	0.713110
SCM3	0.782119	0.800691	0.744673	**0.933402**	0.791065
SCM4	0.787539	0.857496	0.703136	**0.914139**	0.810671
SCM5	0.844661	0.864270	0.747737	**0.951806**	0.882595
SCM6	0.749776	0.836889	0.844063	**0.894203**	0.750987
SCS1	0.913615	0.781749	0.685876	0.753138	**0.947702**
SCS2	0.804586	0.811970	0.426272	0.781081	**0.915009**
SCS3	0.924099	0.816979	0.737591	0.847592	**0.914147**

SCM: Supply Chain Management Practices, SCS: Supply Chain Strategy,
BP: CA Business Unit Performance: Competitive Advantage

The validity of convergence is also indicated by an AVE (Average Variance Extracted) value of more than 0.5 as shown in Table 4 below.

Table 4. Quality *Criteria* Influence of Supply Chain Management Practices, Supply Chain Strategy on Business Unit Performance through Competitive Advantage

	AVE	Composite Reliability	R Square	Cronbachs Alpha	Communality	Redundancy
BP	0.867377	0.963174	0.634288	0.949057	0.867377	0.547018
CA	0.743157	0.934861	0.875229	0.911346	0.743157	0.053441
SCM	0.811952	0.962774		0.953280	0.811952	
SCS	0.857015	0.947302		0.916427	0.857015	

SCM: Supply Chain Management Practices, SCS: Supply Chain Strategy,
BP: Business Unit Performance CA: Competitive Advantage

Reliability Test

To measure the reliability of the model*, Composite Reliability* or *Cronbach's Alpha* is used. For *confirmatory purposes*, the model is considered reliable if the composite reliabilities value is greater than 0.7. Other experts require reliability of more than 0.8 (Daskalakis & Mantas, 2008: 288). Based on the results shown in figure 4, the Composite Reliability and Cronbach's Alpha values are above 0.8 which means that they are reliable for each of the constructs required for this confirmatory study.

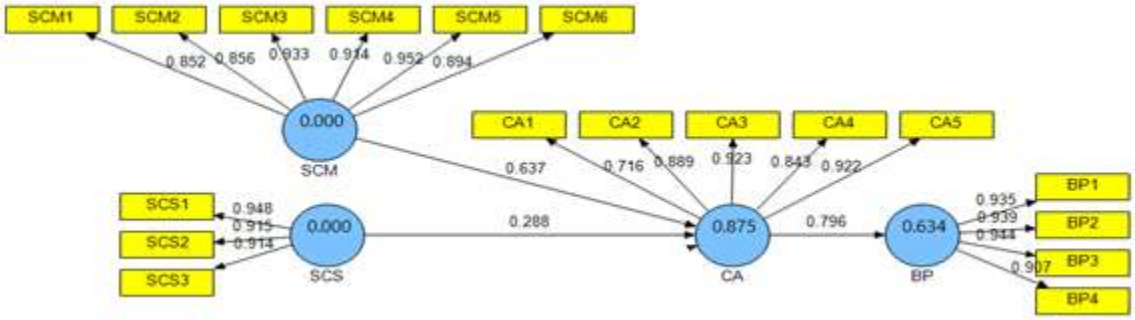

Figure 4. Path Diagram of the Influence of Supply Chain Management Practices and Supply Chain Strategies on Business Unit Performance through Competitive Advantage
(Source: SmartPLS 3.2.4 data processing results)

The results of statistical calculations using SmartPLS software version 3.2.4 to test the hypothesis about the influence of supply chain management practices, supply chain strategies on competitive advantage that have implications for business unit performance are presented in Table 5.

Table 5. Path Coefficient Score

	Original Sample	T Statistics
CA -> BP	0.796422	9.961189
SCM -> CA	0.636521	3.380227
SCS -> CA	0.288157	1.855073

Results of Analysis and Discussion of the IPMA Model

Based on the results of the research, an effective problem-solving with the IPMA model which consists of strategy formulation, strategy implementation and monitoring and evaluation implementation.

Application of IPMA Model in the Chocolate Processing Industry

As for the application in the industry, it starts from the identification and purpose of this research, so the purpose of application in the industry is to find solutions in determining the

efforts that need to be made in terms of the ability to analyze the problems of supply chain management practices and the implementation of effective supply chain strategies. Therefore, the proposed application in the industry is adjusted to the applied actions described in the finding model.

Strategy Formulation with IPMA Model

Referring to the proposed implementation in the industry above, the formulation of the strategy begins with a strategy mapping that provides an overview of short-term, medium-, and long-term recommendations. In mapping the strategy, an analysis will be carried out on the most important factors that have an impact (effect) and the performance that affects it. This analysis used SmartPLS 3.2.4 software with a feature called IPMA (Importance Performance Matrix Analysis) where in this analysis there are 2 (two) components, namely Importance factors and Performance factors where from the plot results of each variable and dimension will be seen in the matrix which is divided into 4 quadrants. Each quadrant gives a meaning where, according to Martia and James (1977), interpret the quadrant as follows; Quadrant 1 means low priority, quadrant 2 means possibly overkill, quadrant 3 means keep up with the good work, quadrant 4 means concentrate here. The results of the IPMA analysis for the construction score between performance and total effect can be seen in Table 6 and Figure 5 below.

Table 6. IPMA Construct Performance Score vs Total Effect

No	Construction	LV Index Value	LV Performance	Total Effect
1	BP	15.693	50.216	-
2	CA	11.880	50.585	1.158
3	SCM	17.103	50.962	0.467
4	SCS	12.660	48.577	0.271
	Avg	14.292	49.731	0.486

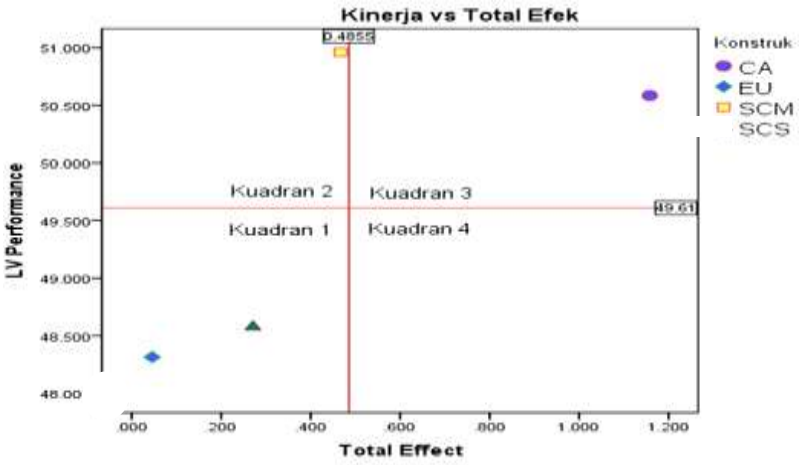

Figure 5. IPMA performance construct score vs total effect

Meanwhile, the IPMA indicator score between performance and total effect can be seen in Table 7 and Figure 6 below;

Table 7. IPMA Performance Indicator Score vs Total Effect

Performance / Index - Indicators

No	Indicators	MV Performance	Total Effect
1	BP1	50.571	0.264
2	BP2	56.883	0.262
3	BP3	48.571	0.154
4	BP4	45.238	0.319
5	CA1	53.810	0.249
6	CA2	53.571	0.170
7	CA3	50.476	0.218
8	CA4	47.755	0.189
9	CA5	46.286	0.174
10	SCM1	53.968	0.180
11	SCM2	64.524	0.150
12	SCM3	48.286	0.180
13	SCM4	42.857	0.194
14	SCM5	41.654	0.101
15	SCM6	53.143	0.195
16	SCS1	50.857	0.289
17	SCS2	57.959	0.313
18	SCS3	39.524	0.398
	Avg	49.992	0.227

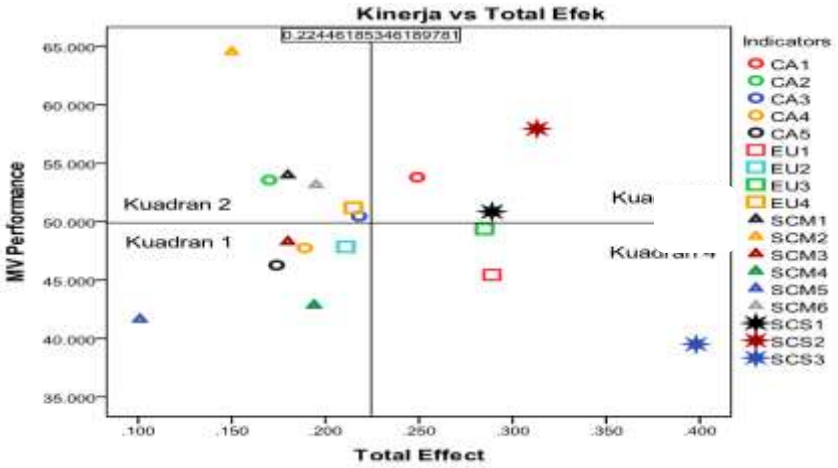

Figure 6. IPMA performance construct score vs total effect

The results of the analysis of performance and total effects for the construct show that the competitive advantage (CA) construct shows the highest score of 50,585 for performance and a score of 1,158 for total effect and is in quadrant 3, meaning that performance needs to be maintained through its competitive advantage. Meanwhile, the lowest score is supply chain strategy (SCS) with a performance score of 48,577 and a total securities score of 0.271 which is in quadrant 1 which means it is the last priority.

Based on the results of the analysis of performance and total effects for the indicator, it shows that the SCS2 supply chain strategy indicator (responsiveness) shows the highest score of 57.959 for performance and a score of 0.313 for total effect and is in quadrant 3 together with the SCS1 supply chain strategy (efficiency) and CA1 (price/cost) competitive advantage, meaning the responsiveness strategy and operational efficiency through competitive advantage from price/cost will improve the business performance of Indonesia's cocoa processing industry. Meanwhile, the lowest score is the SCS3 (Agile) supply chain strategy indicator with a performance score of 39,524 and a total effect score of 0.398 in quadrant 1 together with supply chain management practices (SCM 3- Level of information sharing) (SCM 4-Quality of information) (SCM 5- Internal lean system), competitive advantage (CA4-Delivery dependability and CA5 - Product innovation) which means it is the last priority. Meanwhile, the top priority to be considered so that the business performance of Indonesia's cocoa processing industry improves through competitive advantage is the indicator in quadrant 4, namely the SCS3 (Agile) supply chain strategy which emphasizes flexibility, adaptability, and collaboration to face rapid and unexpected changes in the business environment.

Implementation of Strategy Based on the IPMA Model

Based on the mapping of the strategy made, a proposal for the implementation of a strategy that can be carried out is prepared based on the order of priorities and probabilities that can be implemented by the company. Alternative strategies are determined based on the results of the research by considering the internal and external environment in carrying out effective supply chain management practices and supported by effective strategies. For this reason, the operational steps that will be carried out are steps based on the results of the formulation/mapping of the business strategy above according to the order of quadrants 4 and 3 and while quadrant 2 which is included in the category of excessive resources and quadrant 1 in *the low priority* category is not discussed because it is not a priority and is listed in Table 8.

Table 8. Strategy Operationalization

No	Quadrant	IPMA Variable	IPMA indicator	Operational Steps
1	Four (4)	-	- Technology uncertainty - Supplier uncertainty - Supply chain strategy	- Building good relationships with process technology suppliers - Building good relationships with raw material suppliers on a sustainable basis - Implementing a system that is able to adapt to market changes
2	Three (3)	Competitive Advantage (CA)	-	- Implementing the most competitive and cheap price variants - Implementing quality variants that customers can accept - Be consistent with promises to customers to meet requirements

				- Continue to innovate new products - Improving the ability to enter the market quickly through market research.
			- Competitive advantage (Price/Cost) - Supply chain strategy (efficiency) and (*Responsiveness*)	- Implementing the most competitive and cheap price variants - Implementing efficiencies in every supply chain - Implement a flexible system in process, distribution and logistics and be able to adapt to market conditions by continuously monitoring current market trends
3	Two (2)	Supply Chain Management Practice	-	- Maintaining an efficient and effective implementation situation starting from; o Cooperation with strategic suppliers o Establish better relationships with existing and new customers o Improving effective information dissemination o Improving the quality of information o Application of *lean system* o *Application of postponement system*
			- Practical supply chain (strategic supplier cooperation), (customer relations) and Postponement - Competitive advantages (Quality) and (*delivery dependability*)	- Maintaining cooperation with suppliers - Maintain relationships with customers - Improve product quality - Improve the ability to meet customer requirements

Proposed Implementation of Monitoring and Evaluation

In accordance with the stages of formulation/mapping described in the formulation of strategies in operational exposure, it is followed by a proposal for the implementation of monitoring and evaluation starting with the elaboration of a detailed action plan including the division of duties and responsibilities in implementation and arranged in stages described on the *time schedule* and accompanied by a budget if needed in accordance with the action plan. The action plan carried out is listed in Table 9 below;

Table 9. Action Plan

No	Recommendations	Person in Charge	Implementation Time
1	- Building good relationships with suppliers in terms of process technology through *strategic partnerships.* - Building good relationships with raw material suppliers on a sustainable basis by participating in *continuously improve-ment* programs. - Implement an integrated system and be able to adapt to market changes by continuing to conduct market research	- Purchase section - Purchase section - Marketing Section	Compliant with annual plan and 5-year plan
2	- Implementing the most competitive and cheap price variants through efficiency in each supply chain. - Implementing quality variants that customers can accept through new product innovation	- Marketing section - Operation section - Sales Section	Compliant with annual plan and 5-year plan

	- Consistent with meeting customer requirements through improvements along the supply chain. - Implement flexible systems in process, distribution and logistics and able to adapt to market conditions by continuously monitoring current market trends.	- R&D Section - Marketing and operation	
3	- Implementing an efficient and effective program; o Cooperation with strategic suppliers o Establish better relationships with existing and new customers o Improves effective information dissemination o Improving the quality of information o Application of *lean system* o Application of *postponement system*	- Purchase section - Marketing section - Marketing section - Marketing section - Operation section	Compliant with annual plan and 5-year plan
4	- Maintain cooperation with suppliers - Maintain relationships with customers - Improve product quality - Improve the ability to meet customer requirements	- Purchase section - Marketing section - Operation section - Sales Section	Compliant with annual plan and 5-year plan

The next stage is the proposal for the implementation of monitoring and evaluation which is the final stage in the application of research findings which aims to assess the effectiveness of the implementation of the recommended implementation proposals and become the right action to be implemented and show results in the form of indicators that can be measured as a verification tool that the solutions that have been provided are appropriate in their implementation and are expected to provide solutions for the cocoa processing industry. The proposed plan for the implementation of monitoring and evaluation can be seen in Table 10 below;

Table 10. Proposed Monitoring and Evaluation Plan

No	Variables/Indicators Recommended	Evaluation Plan Performance	Monitoring Plan	Expected results
1	- Building good relationships with process technology suppliers - Building good relationships with raw material suppliers on a sustainable basis - Implementing a system that is able to adapt to market changes	- Number of new suppliers - Number of new suppliers - The creation of a system that is able to meet *customer* demands in any condition	- Periodic visits to suppliers - Periodic visits to raw material suppliers - Meetings with stakeholders on a regular basis	- Suppliers are more loyal and provide *value added* - Able to meet customer requirements and see better market conditions
2	- Implementing the most competitive and cheap price variants - Implementing quality variants that customers can accept - Be consistent with promises to customers to meet requirements	- Price variants are available from the cheapest to the highest - Available range *of quality* products - Number of customer feedback and complaint	- Competitor price evaluation and price monitor - Product quality audit - Monitor customer input and	- *Profit* and all *financial* parameters increase - *Cost of production* decrease

	- Continue to innovate new products - Implementing a flexible system in process, distribution and logistics and being able to adapt to market conditions by continuously monitoring current market trends	evaluations - Number of new products - The creation of an integrated system starting from the process to the *customer*	complaints - Monitor the number of new products - Monitor market research results and customer demand	- New products received by customers - The system runs well
3	- Maintaining an efficient and effective program through; o Improves effective information dissemination o Improving the quality of information o Application of *lean system* o Application of *the postponement system*	- The amount of information obtained and sent to customers and suppliers - Evaluation of the information sent - *Lean system* applied - *Postponement system* implemented	- Monitor responses and information sent and obtained periodically - Monitor information quality - Monitor system deployment consistently - Monitor system deployment consistently	- Accelerate decision-making - Efficiency and *cost of pro-duction* decreased and productivity increased
4	- Improve product quality	duct quality is guaranteed and there are no customer and supplier complaints	lement *total quality assurance* in every supply chain	sts decrease and customers are satisfied.

CONCLUSION AND RECOMMENDATIONS

Competitive advantage is greatly influenced by supply chain management practices and supply chain strategies, this is because factors related to supply chain management practices such as effective strategic supplier partnership factors will encourage cost reduction, improve product quality and ease of new product innovation, customer relationship factors will improve product quality based on feedback, accelerate new product innovation, high delivery dependability and effective time to market. Simultaneously, supply chain management practices and supply chain strategies have a positive and very significant influence on competitive advantage.

The performance of business units is greatly influenced by competitive advantage. This is explained that the high influence of competitive advantage on the business performance of the cocoa processing industry is suspected to be due to competitive advantage factors such as price/cost, quality, delivery dependability, product innovation and time to market that can affect business performance.

The performance of business units is greatly influenced by supply chain management practices and supply chain strategies through competitive advantage. Meanwhile, simultaneously the performance of business units through competitive advantage is greatly influenced by supply chain management practices and supply chain strategies. The magnitude of the influence of supply chain management practices, supply chain strategies on business performance through competitive advantage is suspected to be due to the factors of supply

chain management practices such as strategic supplier partnerships, customer relationships, level of information sharing, quality of information sharing, internal lean system and postponement It has been applied in the cocoa processing industry, while the strategies carried out are allegedly able to affect the performance of the cocoa processing industry such as efficiency, responsiveness principles and *agile* principles applied to the supply chain.

Based on the results of the analysis using the IPMA matrix which aims to determine priorities in effective problem solving, the results are obtained that competitive advantages need to be maintained to improve business performance, while supply chain management practices need to allocate resources because of high performance but do not bring high impact. Meanwhile, supply chain strategy is the last priority in improving business performance. The most important indicator to be done for improvement is the supply chain strategy indicator, responsiveness. Meanwhile, the indicators that need to be maintained are the price competitive advantage indicator and the agile supply chain strategy indicator, while other indicators are the last priority in improving business performance.

RECOMMENDATIONS

Supply chain management practices have not been fully successful, and effective; therefore, improvements are needed related to the implementation of postponement systems at the operational level where companies need to invest in the provision of systems and improve skills at the operational level that are able to innovate and reengineer so that they can adapt to more specific customer demands.

Indonesia's cocoa industry business units have not fully implemented an effective supply chain strategy. Therefore, it is necessary to carry out a strategy related to the application of agile principles where the ability of the processing industry is needed to be able to adapt to rapid and dynamic market changes. The level of competitive advantage of Indonesia's cocoa industry business units is still not entirely superior, therefore it is necessary to make improvements related to the cost/price aspect through a competitive strategy with cost optimization along the supply chain that provides value above the average of its competitors. In addition, it is also necessary to apply a competitive /competitive price bidding strategy or a cheaper price offer than competitors. The performance of Indonesia's cocoa industry business units is not entirely in the good category; therefore, it is necessary to make improvements related to the aspect of growth and learning perspective through improving employee competencies in supporting the company's success, the ability of information systems to accommodate company dynamics and comfortable and conducive working environment conditions in motivating employees.

Further research is needed by considering the factors of supplier partnership, customer relationship, level of information sharing, quality of information sharing, lean system, and postponement as well as other factors that can affect supply chain performance such as integrated logistics, integration process and supply chain integration.

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