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# Assessing Supply Chain Collaboration for Sustainability in the Food Processing Industry: A Pilot of Investigation

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***Abstract***

*The pilot research focuses on quickly developing consumer goods by investigating the current cooperation and sustainability status in the distribution channel of the framework of the food industry. Research highlights different aspects of relationships between suppliers, customer participation, environmental responsibility, social impact, economic survival, ethical management and continuous improvement, and providing preliminary ideas for the regular business plan and the adjustment of sustainable development goals. Pilot study uses predefined questionnaires to collect data from a sample of a food processing company and use quantitative research to allow preliminary evaluation of the prevalence and significance of various supply and stable development initiatives. The collected data is associated with the selection of suppliers, joint activities to solve problems, developing suppliers, customer satisfaction measurement, information exchange practice, environmental management, ethical management and business operation principles. The results of pilot study are informed about the importance of partners' duties to achieve stability in the global supply network by providing valuable information on the company that handles food products prioritized in the operation of the supply chain to achieve stability in the global supply network by providing valuable information about distinguishing the areas for potential improvement and further research (Ramanathan et al., 2020).*

***Keywords:*** *Food industry, supply chain, Distribution channel stability, pilot research, social responsibility, environmental management, ethical management.*

## Introduction

In the framework of the food processing industry, especially consumer goods, the pressure to improve cooperation and stability is increasing. The growing awareness of consumers on environmental and social problems has made it possible for companies to accept more responsible and transparent operating models (Chen et al., 2017). This change requires a deeper understanding of how the company integrates stability into the management chain, from selecting suppliers to customer participation (AINCE et al., 2019). Cooperation with the supply chain is important for achieving goals in sustainable development fields. This is because it includes close work with suppliers, customers and other stakeholders, which increases efficiency, reduces waste, and ensures ethical practice (sa nchez-flores et al., 2020). In this context, stability deals with environmental management, social responsibilities and economic vitality, and the company requires that this side is balanced in the judgement -making activity.

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The common problem, such as the stable behavior of the supplier, are part of the dynamism of the business world, consistent with the triple approach of profitability, planets and people (Chebichii et al., 2022). Research on the collaboration of supply chains for sustainability is getting traction from business and jobs. Nevertheless, existing research tends to emphasize environmental and economic factors, and at the same time loses social problems such as child labor and individual development (Chen et al., 2017). Therefore, this study focuses on collaboration and stability in the field of collaboration and stability in the food industry, and try to determine the current trend, problems and improvement opportunities. The food industry should use sustainable management of environmental issues, customer expectations and regulatory requirements. Problem:

The food industry faces some important issues with reference to the cooperation & stability of the distribution channel. The food manufacturing industry should adopt sustainable practices to handle some critical issues related to the collaboration and stability of the supply chain. Pilot studies are regarded as serving multiple purposes focused on exploring the complexities of collaboration and sustainable methods in the food processing industry, as part of the wider food sector. Many companies are trying to effectively integrate the principles of stability into business operations. Often there is no clear strategy, inappropriate resources, and there is no insufficient commitment from senior executives. Effective cooperation with suppliers is important for improving the quality of the product, promoting sustainable practices and reducing risks.

**Objectives:**

**This pilot study aims to check the following objectives:**

Pilot studies are considered to set with multiple objectives designed to explore the complexities of supply chain collaboration and sustainability practices in the food processing industry within the framework of the food industry.

First, this study will comprehensively evaluate the supply cooperation status of food processing companies that focus on understanding the depth and width of the relationship between suppliers, customers and other major stakeholders. In addition, this study is trying to evaluate the degree of integration of food processing companies' business operations in consideration of the environment, social and economic aspects of sustainability. Furthermore, this research seeks to explore the connection between collaboration and the impact of stability to ascertain how collective efforts can enhance sustainability outcomes. Finally, exploratory studies will offer practical recommendations to food processing firms, supplying insights and strategies to strengthen collaboration and stability within the supply chain, thereby encouraging positive transformations..

**Methodology:**

In this pilot study, approaches were used based on data collection tests. The inspection form was distributed to the claimed participants and collected the answer. To ensure the reliability and reliability of the data, the data regularity is confirmed, and the Cronbach Alpha is designed to evaluate the internal consistency of the survey element. The details of the research methodology are as follows. Research Design: In the case of this pilot study, the explanatory design of the research was adopted to provide reviews and awareness related to the cooperation of supply chain, customer relationship and stability within the FMCG industry.

**Sample Size:**

The sample of five companies has been selected for pilot research.

**Data Collection:**

We collected data using structured questionnaires.

**Data Analysis:**

Analyzed data using description statistics, regular tests and Cronbach alpha.

**Results:**

The collected data performed strict statistical analysis to obtain important information. Technical statistics were used to provide a comprehensive overview of the data set by summarizing the central trends and diversification of the research variables (Bhakane, 2015). The normality of the data was evaluated using the appropriate statistical test to ensure the implementation of the basic assumptions of the parametric statistical method. Cronbach Alpha, an interna consistency reliability measurement, is designed to assess the degree of measuring the same design of the elements of each scale (Noviana, 2021). The results of these tests are

presented in detail to provide a clear and simple presentation of the main conclusions.

With the objective of increasing clarity and facilitating interpretation, the result is presented using tables, drawings and graphics, so readers can easily understand the main trends and patterns of the data (Kim & Kim, 2008). Statistical analysis was performed using a special statistical software package that ensures the accuracy and reliability of the results. The explanation statistics briefly express the answers to each question to provide a clear picture of the opinions and practice of the company interviewed.

**Descriptive Statistics:**

The descriptive statistics were used to summarize the data collected from the questionnaire to provide an overview of each question (Mohamad et al., 2022). The answer is transformed into numerical estimates to facilitate the calculation of funds, standard deviations and interests, understanding the central trend and volatility of the data. For example, the funds for the quality of the supplier, the problem to improve the supplier, and the problem related to the quality of the supplier, which is a joint solution for the initiative, are designed to understand the average level of agreement. The ratio of the company that agrees or completely agrees with each statement is also calculated to provide the prevalence of each practice or the recognition measurement of the sample. Such explanatory statistics are the basis for further analysis and interpretation of data. Reliability Analysis: The reliability of the questionnaire was evaluated using Alpha Kronbach, which widely uses the reliability of internal consistency. Alfa Kronbach assesses the degree of measuring the same design that indicates the general reliability of the scale. The value of Cronbach alpha has a range of 0 to 1, and higher values indicate a larger internal consistency (Steinhauser et al., 2011). Cronbach alpha 0.7 or higher is allowed for research purposes in principle, suggesting that the scale element is measured sequentially (Ogunbiyi et al., 2019).
Reliability analysis results are presented with Kronbach's alpha coefficients for each scale or structure.

**Normality Test:**

"Normality of the data was evaluated using appropriate statistical tests such as the Shapiro-Wilk test (Shapiro & Wilk, 1965) or the Kolmogorov-Smirnov test (Kolmogorov, 1933; Smirnov, 1948)..."guaranteeing the basic assumptions of parameters statistical methods.

**Aiken-V Value of Tables for Pilot Studies-**

In this pilot study, the structured questionnaire in the AIKEN-V methodology is used, evaluated, and indicated that the value of the organization, the recognition of the stakeholders.] The questionnaire consists of sixty-three constructs and each constructs represents the used scale used, such as a five-point Likert scale. The results presented in Table 1 indicate the percentage of the respondents who favored each statement.

**Key Findings:**

This table shows several answers. Emphasize power and potential areas for improvement. â€ ¢ Powerful approval area: Some statements have received high advantage (more than 80%), which shows strong consent or positive perception. This includes:

- Quality as a major criterion for choice of suppliers (Construct 1)
- Joint solutions to suppliers' issues (document 2)
- Support provided by suppliers to improve quality (Q 3)
- Emphasis on human rights (32)
- Joint operation practical support (Q49)
- Measured target installation for improvement (Q 60)
- â¢ Low approval areas: multiple statements have received a favorable grade (less than 50%) that provide areas where recognition or practice can be less. This includes:
- Including major suppliers in target plans and settings (Q 4)
- Customer satisfaction measurement and evaluation (Q8)
- Regular evaluation of the importance of relationships with customers (Q11)
- Joint use of business knowledge on major business processes of trading partners (Q 15)
- Accuracy and reliability of information between trading partners (statements 19 and 22)
- Effect of environmental responsibility (Document 26)
- Employees for positive social deposits (document 30)
- Social projects affecting the welfare of the community (Statement 33)

- Emphasize the ethical behavior of business (50 documents)
- A consistent audit for the measurement and improvement identification (operator 61)

**General Trend:**

- There is a general tendency to recognize positive awareness in areas related to relationships with suppliers, behavior, and operation of the environment.
- Areas associated with interaction with customers, information exchange, social impact assessment, and ethical consideration show great volatility in answers.

**Implications for the Pilot Study:**

The preliminary results provide valuable information on improving research tools and focus on further research. To understand the main factors that contribute to these positive ideas, you can further study high levels of areas. On the contrary, low-approval areas must pay more careful attention to determine the areas that require potential gaps or improvements.

**Key Results:**

This analysis provided convincing evidence of internal consistency in all configurations. Alpha knowledge of Kronbach varies from 0.905 to 0.950, which generally shows high internal reliability, exceeding 0.70 [CITE: X]. In particular, the interaction with the stakeholders showed the highest reliability (î ± = 0.950), and the relationship with the supplier was the lowest, but it was still reliable (FFIC ± = 0.905). The total reliability of the total tool with 63 points was very high (± = 0.993).

**Results Interpretation:**

These results provide convincing support for the reliability of the measurement scale used in this study. Constantly high alpha coefficients indicate that the element effectively measures its structure, minimizes any error, and ensures stable measurements. Excellent ordinary alpha checks the stable internal consistency of the tool. Effects on pilot studies: Sustainable reliability results are important for this pilot study. Alpha, knowledge of high Kronbach confirms that the tool provides a stable and consistent measurement. These results support the progress in a larger study, confirming the use of the tool and confidence in the integrity of the data and the ability to get stable results. Results and discussions: Pilot studies based on data collected from small food processing companies' samples show an interesting understanding of the cooperation and stability of the supply chain. Relationships with suppliers: The average score of relationship management with suppliers is 3.92, with a standard deviation of 0.75. In principle, it indicates that the company maintains a positive relationship with the supplier, but there is a place to improve.

**Customer Relationship Management:**

Customer relations management suggests that the average of 0.62 scores with a standard deviation of 0.62, which determines priorities and effectively manages relationships with customers.

**Information exchange:** Information exchange has an average of 3, 85 points with a standard deviation of 0.81. This shows that information is exchanged, but there may be inconsistency or delays to solve.

**Environmental Responsibility:**

The average environmental responsibility is 3, 68 points and the standard deviation is 0.90. This represents an intermediate environmental responsibility between companies.

**Social responsibility:** The average score of social responsibility is 3.75, with a standard deviation of 0.85, which shows the appropriate dedication to social responsibility.

**Economic vitality:** The average score of economic survival is 4.02 and the standard deviation is 0.70.

**Interaction with Stakeholders:**

The participation of the stakeholder has an average of 3, 95 points of 0.78, which represents the level of interaction with various stakeholders.

**Control:** The management has an average of 3.88 points of 0.83 and shows medium management practices.

**Integration of stability:** The integration of stability has an average point of 0.88 with a standard deviation of 0.88, indicating that stability has been integrated into business practices.

**Continuous Improvement:**

The average score of continuous improvement is 3.90, which is 0.76, which suggests that it is striving for continuous improvement in principle. The description statistics provide a fundamental understanding of the central trends and volatility of the framework of the data set to lay the foundation for more complex analysis. In the context of environmental and social aspects of the difference between companies, they emphasize the importance of considering various perspectives

and priorities in solving sustainability problems (Kim & Kim, 2020). The result suggests a positive tendency to integrate stability into business practices and has an accent that is strong in customer relationships and economic vitality. The correlation analysis showed a significant positive relationship between many major designs. In particular, a strong correlation between suppliers' relationship management and information exchange ($R = 0.72$, $p < 0.01$), relationship management and relationships with customers, participation of stakeholders, environmental responsibility and stability integration were observed. This correlation emphasizes the effects of the overall effects of the relationship between various business practices and the effects of supply chains and the results of sustainability. For example, a strong correlation between relationship management and information exchange with suppliers suggests that it is intricately linked to the appropriate and accurate information exchange when it is effective cooperation with the supplier. Similarly, the correlation between the management and the participation of the parties with customers emphasizes the importance of interaction with customers and other stakeholders to achieve business success. Alpha knowledge of Kronbach for all measures shows excellent internal consistency and reliability with 0.9 or more. High reliability coefficients suggest that the design with the scale is sequentially measured.

**Conclusion:**

Pilot studies provide valuable information on the cooperation of the supply chain, the sustainable development practices and the relationship between the food industry. This study confirms the importance of the relationship between suppliers in ensuring the quality and safety of the product, which is consistent with the results of the previous study and emphasizes the key role of the participants in the lifting of the supply chain (Legeâ Bravo et al., 2017). Although the integration of sustainable development practices is clear, it is necessary to have more reliable stability strategies in areas such as environment and social responsibility. These results emphasize the importance of promoting cooperation between the parties and the promotion of cooperation among stakeholders. This is because various industries can require various levels of supply chain supply to achieve sustainable development goals (IMAM, 2023).

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**Conflicts of Interest**

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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