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Research paper

A Review on Success Factors of Logistic Innovation in Agro-Industry

Yovita Yulia M Zai[1], Rika Ampuh Hadiguna[2], Feri Afrinaldi[3]

Faculty of Engineering, Postgraduated Program in Industrial Engineering, Andalas University, Limau Manis – Padang, West Sumatera, Indonesia

**Corresponding author E-mail:* yovitayuliamzai@gmail.com, hadiguna@eng.unand.ac.id,

Abstract

Innovation is much required to efficiently manage the logistics system. At the same time, to come up with a successful innovation is also a challenge for the agro-industry. There are many literatures which defined the success factors of logistics innovation. This study investigates the success factors of logistics innovation for agro-industry and determines factors relevant to the business process of agro-industry based on literature published between 2015 and 2018. Through a Systematic Literature Review with fifteen were determined as success factors of logistics innovation in agro-industry, i.e. (1) technology utilization, (2) suistainability, (3) distribution and transportation management, (4) infrastructure, (5) strategic planning, (6) technical support and service architecture, (7) integrated information technology, system, and management, (8) regulation/ policy, (9) logistics cost, (10) collaboration, (11) logistic competence, (12) alliance strategy, (13) continuous improvement, (14) efficiency in business processes, and (15) hunting on positive practices. The Fifteen factors have the same degree of importance and have the same contribution to the successful achievement of logistics innovation.

Keywords: *Innovation,* :Logistics System, *:Agro-Industry.*

1. Introduction

In the industrial competition, logistics play a major role in sustaining competitive advantage. The availability of the right amount of material becomes important in logistics. Overstock material is a waste. Inventory management of both material and storage movement activities can improve the cost efficiency of logistics. Cost efficiency can bring the company into cost leadership. The value of a product can be increased through logistics by ensuring the product will reach the market where it is needed, and available in the market at the right time and amount. Indonesia logistic cost is 24% higher than other countries such as: USA, UK, Japan, France, Canada, Italy (1).

Firms that survive, grow, and compete are those which understand the role of logistics and create logistics innovation. Logistic innovation is a "novelty" in the management of processes, goods, and information ranging from procurement to the hands of consumers to achieve effectiveness and efficiency. Logistics becomes the determinant factor of the nation's competitiveness as has been compiled in the blueprint of Indonesia's National Logistics System. The national logistics system was created through the issuance of presidential regulation No. 26 of 2012 on the blueprint for the development of a national logistics system. This blueprint carries the logical vision of 2025: "Locally Integrated, Globally Connected for National Competitiveness and Social Welfare". The development of a national logistics system is intended to connect all areas ranging from among villages, between ports, and between countries. The challenge for Indonesia now lies in competitiveness using science, technology and innovation. Indonesia ranks 36 out of 137 in terms of competitiveness (2). Ranked 87 out of 127 in terms of innovation competitiveness (3). And 80 out of 137 in terms of technological readiness (2). By looking at the vision and position of Indonesia's competitiveness, it is necessary to improve competitiveness, science and technology in the logistics sector.

Industry players aware of the role of logistics. Industry players who aware of the importance of logistics will optimize the strategic, tactical or operational decisions to improve the logistics system. Understanding the role of logistics is not enough to answer today's business challenges. Future industries that include: (a) Agro-based industries; (b) the transport-equipment industry; (c) Information technology and telecommunication equipment (telematics) industries; are the industries that prioritized its development in the future.

Indonesia as a potential country in the agro-industry also needs to make various logistic innovation in order to compete with other countries. Logistic innovation issues will be an important key in the logistics of agro-industry. This is because agro-industry has different characteristics with other industries. The agro-industry sector is a future industry considering its important and strategic role for the national industrial structure as well as the national economy. The important and strategic role is created because the industrial sector is supported by the availability of raw materials in the form of abundant natural resources in the country that comes from agriculture, fishery/ marine, livestock, plantation and forestry sectors. So, it is necessary to formulate/ determine the success factors in logistic innovation for agro-industry. Addressing this requirement, this study conducts a Systematic Literature Review (SLR).

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2. Literature Review

2.1 Systematic Literature Review

One of the most efficient methods of conducting a review of previous studies is the Systematic Literature Review (SLR) method (4). The SLR method works by evaluating and summarizing the literature systematically and conical. There are three stages in the use of this method, i.e.: planning, review, and delivery of results (5).
In the planning stage, it is necessary to identify the needs in the review by including the main criteria of the paper to be reviewed. At the review stage, enter the keywords of the research topic studied and then sort in accordance with the relevance of the study. In the last stage, the findings are explained through the evaluation and delivery of the summary results.

2.2 Logistic Innovation

Innovation is a social and economic success as a result of the introduction. Innovation is a discovery of new ways or new combinations that can create major changes. The major changes increased the use value or value of benefits (perceived by consumers/ or users) and monetary value or price (6). (7) state that innovation is the process of creating something new. This definition of innovation explains that innovation is a "novelty" that provides value to consumers and added value to producers (firms) where economic and social success is generated.
Logistics is one source of significant competitive advantage for the company (8). Logistics as an efficient planning, implementation and control process that includes the flow of costs, raw material storage, inventory, and other related information from the origin to the point of destination with the purpose of customer needs can be achieved (9). Logistics serves as an option of cost leadership strategy and service leader strategy (1),.
To transport goods from the origin to the point of destination will require some activities known as 'key activities in logistics' i.e.: (1) customer service, (2) demand forecasting/ planning, (3) inventory management, (4) logistics communications, (5) material handling, (6) traffic and transportation, and (7) warehousing and storage. The logistical context is identical to the organization, movement, and storage of material and humans. The target of logistics activities is the availability of a system capable of bringing the right products, in the right location, and at the right time so that the service level of consumers expect can be achieved (5).
In the Blueprint of National Logistics System Development (5), logistics is defined as part of a supply chain that handles goods, information and money through procurement, storage (warehousing), transportation), distribution (distribution), and delivery service (delivery service). Systems used to improve, move, and effectiveness of the movement of goods, information, and money from the point of origin to the point of destination according to the type, quality, quantity, time and place desired by the consumer. Logistic innovation can be interpreted as a "novelty" process of planning, implementation and control of goods, information, money, and decisions in the business/ company that leads to the increased value of use to consumers with care about economic, social and environmental threats and increased efficiency and effectiveness for the Company.

2.3 Agro-industry

Explicitly the meaning of agro-industry was first disclosed by (10) that is a company that processes plant-based (plant-derived) or animal (produced by animals) materials. The processes used include alteration and preservation through physical or chemical, storage, packaging and distribution. Agro-industry is an interconnected activity i.e.: production, processing, transportation, storage, funding, marketing and distribution of agricultural products. From the view of social economic experts, agro-industry (processing of agricultural products) is part of five subsystems agribusiness agreed, namely subsystems of supply of production facilities and equipment, farming, processing, marketing, facilities and coaching. Agro-industry thus includes Agricultural Product Processing, Agricultural Machinery and Equipment Industry and Agricultural Sector Service Industries.
Agricultural Products Processing Industry can be divided into several sections as follows: (1) food Crops: including those rich in carbohydrate, palawija and horticultural crops; (2) plantation crops, including sugarcane, coffee, tea, rubber, coconut, palm oil, tobacco, cloves, cocoa, vanilla, cinnamon and others, (3) forest product crops, including processed and non-timber products such as resin, rattan, tengkawang and other forest product, (4) fisheries, including the processing and storage of fish and fresh seafood, canning and processing and by-products of fish and sea, (5) livestock, including processing of fresh meat, milk, skin and other by-products.
Agricultural machinery and equipment industry is divided into two activities as follows: (1) agricultural power, which includes tools and machinery of land processing (hoes, plows, tractors and others); (2) processing, which includes tools and machinery processing various agricultural commodities, such as grinding thresher machine, rice milling machine, drying machine and so forth. Agricultural Sector Service Industry is divided into three activities as follows: (1) trading, which includes the transportation activities, packaging and storage of both raw materials and products of agricultural processing industries; (2) Consultation, including planning, management, quality control and evaluation and project appraisal; (3) communication, concerning software technology that involves the use of computers and other modern communication tools. With agriculture as its center, agro-industry is an economic sector that includes all companies, agents and institutions that supply all agricultural needs and take commodities from agriculture to be processed and distributed to consumers.

3. Methods

This paper takes a Systematic Literature Review (SLR) approach. This study investigates the success factors of logistic innovation in agro-industry. Given the focus of this paper, the keywords included in the electronic resources, i.e.: Science Direct, Google Scholar , Wiley Online Library, and also in books. Based on Figure 1 it can be seen that the term innovation first appeared in 1934, the term logistics began to bloom discussed since 1998, the term logistics innovation began to grow for research in the Year 2000, and research in the field of logistics innovation in agro-industry began to grow in 2012. By 2015 until now, research has begun to lead to successful logistical innovation. Based on the evolution of the literature, this study includes publication was published in the last three years between 2015 and 2018. The articles of the study mainly indexed in minimum Scopus indexed journal and for books have ISBNs would be referred. Stages in paper search can be seen in Figure 2 .

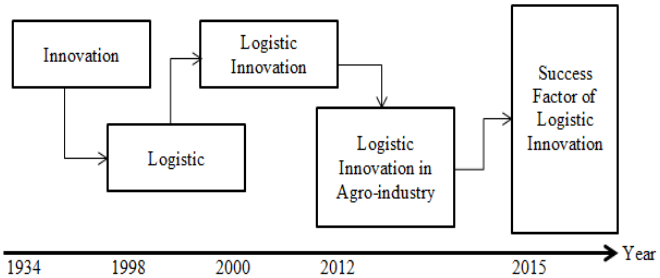


Fig. 1. Evolution of Logistic Innovation Literature's

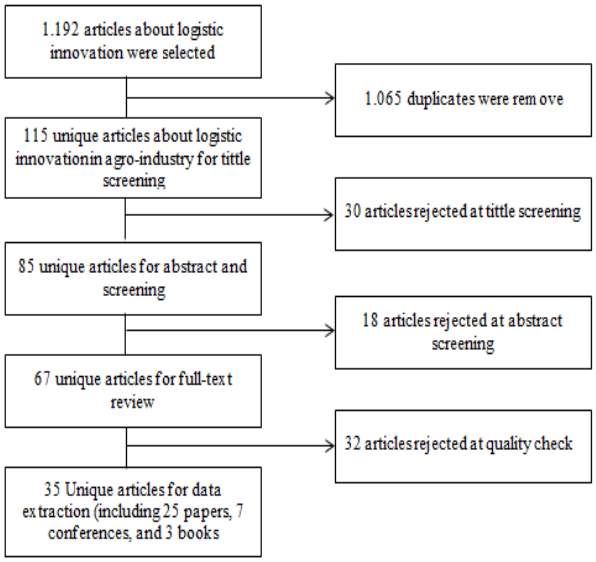


Fig. 2. Search Strategy and Final Selection

4. Results and Discussion

Agro-industry is a mainstay industry of the future in Indonesia because it is supported by natural resources potential from agriculture, fishery/ marine, livestock, plantation and forestry. There are at least five main reasons why agro-industry is important to become the locomotive of future national economic growth for Indonesia i.e.: (1) The processing industry is able to transform comparative advantage into a compatibility advantage that ultimately strengthens the competitiveness of Indonesian agribusiness products; (2) Have added value and a large market share so that progress can affect the growth of the national economy as a whole; (3) Having a great link both upstream and downstream (forward and bacward linkages), so as to attract the progress of other sectors; (4) Has a local raw material base (comparative advantage) that can be renewed so as to ensure sustainability; (5) Have the ability to transform the national economic structure from agriculture to industry with agro-industry as its driving force.

The results of the review of the various papers resulted in sixteen factors becoming the key to successful logistical innovation in the agro-industry. Table 1 shows the results a review on success factor of logistic innovation in agro-industry.

Table 1. Assesment The Success Factors of logistic Innovation in Agro-Industry

S.No.	Success Factors	Description	Sources
1	Efficiency in business processes	The improved process so it is cheaper and faster	(11,12)
2	Continous improvement	Ongoing efforts to develop and improve products, services and processes. Creating the best solution for the existing problem, the results will continue to survive and develop even better.	(13–15)
3	Hunting on positive practices	actions or logistical activities that are positive results	(16)
4	Integrated information technology, systems, and management	Information systems and technologies involving various functional units as well as relationships with companies and outside parties,	(12,17–20)
5	Technology utilization	in every process is directed to the optimal use of technology	(11,13,14,17–19,21–28)
6	Technical support and service architecture	Various services provide assistance with technology aimed at helping users with specific problems.	(19,29–32)
7	Strategic planning	Strategic decisions that impact on the company's logistics performance within a span of time between 3 s.d. 5 years.	(13,19,32–34)
8	Distribution and transportation management	Management of the process of an activity to know the movement of a product from one location to the next where a movement like this usually form and produce a network or system	(12,15,20,24,34–36)
9	Alliance Strategy	long-term cooperation between the two companies in managing opportunities and risks	(1,19,37)
10	Collaboration	forms of cooperation, interaction, compromise of several elements related to individuals, institutions and/ or parties directly and indirectly involved in the consequences and benefits	(13,29,33,38)
11	Logistic competence	Competencies related to activities and logistics functions	(29,36,39)
12	Logistics Cost	expenditure aimed at bringing material from one place to the destination	(13,29,34,36)
13	Regulation/ policy	Any form of regulation to control business conduct, may be in the form of legal restrictions imposed by governments, industry regulations, trade association rules, and so on.	(13,18,19,33)
14	Infrastructure	Physical facilities developed / required by the user in carrying out logistical functions to support social and economic systems.	(13,19,32,35,36,40)
15	Sustainability	Socio-ecological processes characterized by the achievement of the same ideals, namely: the ability to maintain something by configuring civilization and human activity so as to meet their needs and express their greatest potential in the present, while preserving biodiversity and natural ecosystems, planning and acting to be able to defend the ideals for future generations.	(11,12,19,20,34,41–43)

The business efficiency of the agro-industry logistics process leads to business process optimization. To achieve this, continuous improvement is required throughout the logistics strategy. Logistics strategy is directed to achieve the target cost leader and service leader. Positive hunting in the form of best practices in logistic

innovation greatly helps the agro-industry to create innovative breakthroughs in logistics. The holding of innovation contests in logistics can present logistic innovation ideas for the agro-industry.

In the past few years many companies/ industries have utilized information technology solutions to optimize their business processes, but sometimes the solutions they develop are still halfway. They build the information technology solution in several separate systems, not in a single unit. This can cause some problems when there is a business process that requires collaboration or exchanges of information between work units or between business processes to complete the set of processes, which of course this will not be handled with information technology solutions such models. Integrated information and information technology systems are the solution to this problem.

Technology utilization in current logistics activities leads to digitalization. The application of digitization will support the successful realization of logistics innovation for agro-industry. Digitalisation is applied through the utilization of various technologies. Agro-industry should place the role of technology as supporting operations and data management. Some types of technologies that can be applied such as: 3D printing (Additive Layer Manufacturing) to robotics, Enterprise Resources Planning information systems, E-Commerce, application Decision Support System or abbreviated DSS, and others. Digitization will help in realizing the efficiency of time and cost in the business of logistics in agro-industry.

Strategic planning is a strategic decision that affects the company's logistics performance within a time span of 3 to 5 years. The decisions compiled in this strategic plan include: customer service management, distribution channel system, warehouse location, transportation mode options, strategic alliances, distribution and delivery systems, inventory management, distribution and transportation management, service level, and level stock. Implementation of this factor is an investment in increasing the competence of human resources, logistics and infrastructure sector investment. The technical standardization and processes within logistics system for agro-industry should also be structured in strategic planning to improve the efficiency and effectiveness of processes as strengthening and enhancing competitiveness.

Infrastructure plays an important role in determining the logistics performance of a company and even the state. Infrastructure is the physical facilities developed / required by the user in carrying out logistical functions as a supporter of social and economic systems. Transportation and warehousing are the main activities of the role of infrastructure. Logistics costs in Indonesia are still large because they are not yet supported by quality logistics infrastructure. Therefore, it needs to be improved: (1) integration of multimodal transport network through the alignment of various infrastructures to facilitate access to transport shipping/ shipping of oil from land to sea; (2) implement communication and information technology for planning and controlling logistics and warehousing transportation; (3) improve operational performance and service quality, for example by collaborating with strategic alliances (using third-party logistics (3 PL) in managing all material management activities for efficient solutions and improving overall logistics quality of the company.

Technological advances should be accompanied by adequate regulation and policy. This is needed to strengthen the national logistics system, primarily for export activities. Regulations and policies formulated effectively can realize the strengthening of the logistics system in agro-industry. The regulations and policies made must take into account the following aspects: social, economic, and environment, so as to achieve sustainability. The ranking result of success factors of logistic innovation in agro-industry can be seen in figure 3.

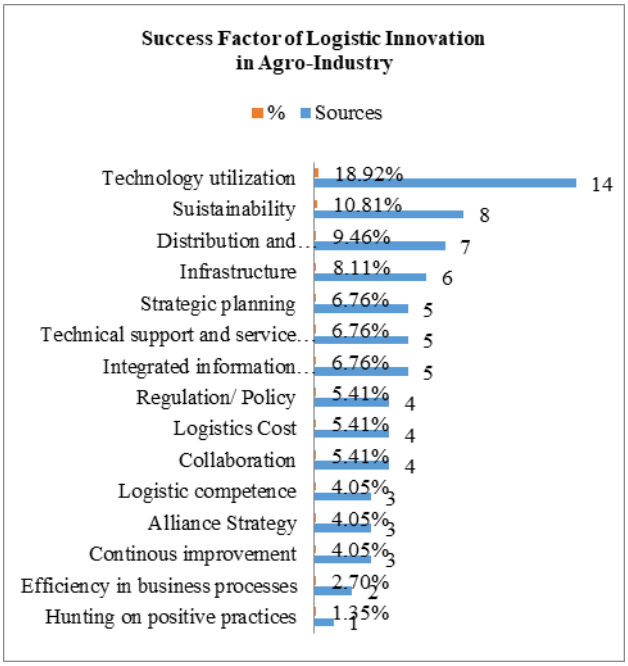


Fig. 3. Success Factor on Logistic Innovation in Agro-Industry

5. Conclusion and Recommendation

There are sixteen (15) factors that are determined as successful factors of logistics innovation in agro-industry of the search results using the Systematic Literature Review. These sixteen factors can be seen in Figure 5. The sixteen factors have the same degree of importance and have the same contribution to the successful achievement of logistics innovation. From the results of the study can be concluded that of the 15 factors, four (4) of them have a higher frequency of discussion than other factors. Therefore, it is deemed necessary to be given special attention to these 4 factors in creating logistic innovation in agro-industry. The 4 factors are: (1) technology utilization, (2) sustainability, (3) distribution and transportation management, and (4) infrastructure.

This study recommends that further research undertakes to deepen any successful factors of logistics innovation in agro-industry. The depth includes: observing the relationship between success factors of logistics innovation in agro-industry and determining what are the constraining factors or potential obstacles in the implementation of these factors.

6. Conflict of Interest

There was no conflict of interest in this study.

Acknowledgments

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