

Improving Innovative Capabilities of Trucking Company: Action Research Approach

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Abstract

Amid intense competition and fast market dynamics, companies must keep innovating to stay competitive. Hence innovative capability is critical. Through action research, this study aims to improve the innovative capability of a trucking company in Indonesia. A series of improvement actions, divided into five stages, have been performed from December 2021 to May 2022. The level of innovative capability is measured using a maturity model. Further, the values before and after the improvements are compared. The results showed an increase in the company's innovative capability. Hopefully, these findings will provide practitioners with valuable insights and serve as exciting triggers for further research.

Keywords

Innovative capability, Dynamics capability, Action research, Maturity model, Trucking company.

1. Introduction

Indonesia's Trucking companies have played significant roles in the country's economy. They do 90 percent of the country's cargo movement (Sugianto et al. 2023). Their role is to deliver goods from one place to another, from the delivery of raw materials to places for final consumption. The trucking industry in Indonesia is characterized by a large number of players, low entry barriers, and, therefore, tight competition (Lookman et al. 2022a). Further, trucking companies need to be able to differentiate their services to remain competitive. Amid intense competition and fast market dynamics, trucking companies must acquire relevant capabilities (Danneels 2008), (Lintukangas et al. 2019). Innovative capability is needed to stay competitive (Hwang et al. 2020), (Ferreira and Coelho 2020).

The innovative capability is the ability to transform, adopt and implement new ideas and knowledge and continuous processes, systems, products, and services for the company's strategic interests through innovative behaviours (Hurley and Hult 1998), (Lawson and Samson 2001), (Wang and Ahmed 2004), (Shou et al. 2016), (Yang 2012). Our earlier study suggested that innovative capability is influenced by market orientation (customer and competitor orientation), technological capability, and good supplier relationships (Lookman et al. 2023). This study aims to improve the innovative capability of a trucking company through action research.

Action research is a tool to help companies to change from their current conditions and implement those changes (Salehi and Yaghtin 2015). Interactive relationships between the company and researcher will enrich the results by combining diverse knowledge to solve problems (Macintosh et al. 2007). In addition, collaboration with academics and practitioners aims to create and develop new ideas (Salehi and Yaghtin 2015) that can be used as solutions for stakeholders (Kocher et al. 2011).

The capability maturity model is then used to measure the maturity level of the company's innovative capability. The capability maturity model is a measurement model for evaluating organizational capabilities (Lahrman et al. 2011). There are five levels of maturity for the capability maturity model in this study (Paulk 1993), (Herbsleb et al. 1997), (Vakaslahti 1997), (Chen and Wang 2018), (Facchini et al. 2020). This model determines the degree of change and the success of this research on the company.

2. Literature Review

2.1 Innovative Capabilities

Business today is increasingly complex, characterized by rapid environmental changes. The competitive advantage that the company currently has may not be relevant shortly (Shafia et al. 2016). Thus, the ability to complement, configure and adjust existing resources is required (Teece et al. 1997), (Danneels 2008), (Lintukangas et al. 2019). Dynamic capabilities theory is part of enterprise capabilities that integrates, builds, extends, acquires, and configures new competencies or even changes and removes existing competencies to deal with a rapidly changing environment (Teece et al. 1997), (Eisenhardt and Martin 2000), (Winter 2003), (Zahra et al. 2006), (Nada and Ali 2015). It aims to gain a sustainable competitive advantage (Eisenhardt and Martin 2000), (Zimmermann et al. 2020). Innovative behavior is the main characteristic of dynamic capabilities, and the two are closely related. This behavior is the key to the company's success (Hult et al. 2004). Dynamic capabilities are closely related to product innovation because to do so requires speed and reaction in changing existing resources (Shafia et al. 2016).

In line with this theory, the company's capabilities have two levels. The first level is the basic capabilities that the company has in the short term to perform routine operations (Pavlou and Sawy 2010) and high-level capabilities to expand, modify and reconfigure, thus enabling the company to do something new (Winter 2003), (Mishra et al. 2013). The innovative capability is a high-level ability. Ideally, trucking companies need to focus more on this capability to provide better customer service (Wang et al. 2020). Innovative capability is the ability of the company as a whole to transform, adopt and implement ideas and knowledge into new and continuous processes, systems, products, and services for the company's strategic interests through innovative behaviors (Hurley and Hult 1998), (Lawson and Samson 2001), (Wang and Ahmed 2004), (Shou et al. 2016), (Yang 2012). This company's innovative capability affects the success of the company in the long run (Cardozo et al. 1993), (Lai et al. 2015).

Many factors influence the innovative capability of truck companies, but this research will focus on technological capabilities, supplier relationships, and market orientation. Technological capabilities include monitoring technological developments in the market and identifying, selecting, and adopting technology that suits the company (Rush et al. 2007), (Zawislak et al. 2018). This research will focus on two components of market orientation, customer orientation, and competitor orientation. Customer orientation continuously communicates and meets customer needs (Han et al. 1998). Customer orientation is important because creating superior value is carried out for them (McNaughton et al. 2002). In comparison, competitor orientation is an effort to predict competitors' strengths and weaknesses to provide better customer service than them (Huhtala et al. 2014).

Relational relationships are company relationships with its stakeholders (Youndt et al. 2004) and the basis of long-term collaboration and coordination with their partners (Karia et al. 2015). A supplier relationship is an interdependence of resources and information between the company and other parties to produce efficient business operations. Good relational relationships with suppliers are likely to increase productivity (Pérez and Sánchez 2002), thereby ensuring a company's competitive advantage (Karia et al. 2015), (Delbufalo 2015), (Shou et al. 2017).

2.2 Capability Maturity Model

The capability maturity model combines best practices to assess the company's process maturity, ranging from unmeasured and unstructured processes to mature processes (Herbsleb et al. 1997). This model provides a systematic framework for benchmarking, thus improving performance. The capability maturity model is a measurement model for evaluating capabilities (Lahrmann et al. 2011). The capability maturity model to assess the trucking company's capabilities has been done by previous research. The maturity model in this study utilizes five levels of maturity, adopted from past studies (Paulk 1993), (Herbsleb et al. 1997), (Vakaslaiti 1997), (Chen and Wang 2018), (Facchini et al. 2020). The five maturity levels and their descriptions was adopted from Lookman et al. (2022b), consist of Initial (1), Repetition (2), Defined (3), Managed (4), and Process Optimization (5).

3. Methods

3.1 Action Research

Action research originated from a study conducted by Lewin (1946). This research is unique because it studies social systems to make changes. Action research is a mature method in social science (Perry and Zuber-Skerritt 1992). Action research adopts an abductive process, but this perspective has received much criticism from researchers because it is commonly used to understand and test new ideas (Eden and Huxham 1996), (Bawden and Zuber-Skerritt 2002), (Kotnour 2011). The approach is used in action research to create knowledge. Action research gives researchers more

options to answer research questions (Reason and Bradbury 2001). Action research is a tool to help companies to change from their current conditions and implement those changes (Salehi and Yaghtin 2015). In addition, action research will increase understanding of managerial practices (Pålshaugen 2009).

This study requires participation from companies and researchers. This collaboration aims to increase the empirical and theoretical understanding of trucking companies' innovative capabilities to meet each party's goals (Waller et al. 2013). This study is carried out at several levels of operations. Therefore, proper decision-making support is needed (Burns 2007), and the results will be published in scientific journals (Altrichter et al. 2002). The process must be optimized adaptively and flexibly according to the conditions of researchers and companies. Therefore, a review of company dynamics, literature, objectives, and results will be carried out in each research phase. Researchers will propose key performance indicators (KPI) to measure the efforts made by the company. This research will begin with observations to understand complex organizational dynamics. The theory development is carried out using deductive and inductive approaches. An inductive approach is needed to understand the data and corroborate research findings (Bryman 2016).

The action research in this study consists of five phases and one core phase, which was adopted from past research (Guertler et al. 2020). In the Core phase, both researchers and companies are jointly to create value for practical and academic purposes. This phase is closely related to learning and competency development (Susman and Evered 1978), (Levin 2012). Researchers continuously improve their understanding of what the industry needs and better understand the barriers to innovation. At the same time, the company is building its competence and making changes to its practices. This framework helps companies to reduce their dependence on previous work practices. Phases one to five are illustrated according to Figure 1, with the following descriptions:

1. Analysing and Framing (Phase 1) explains the problems faced and provides in-depth analysis regarding the limitations and gaps of the research.
2. Project Planning (Phase 2) explains the research questions, methods, and project plan.
3. Execution and Action (Phase 3) project implementation and documentation using planned research methods.
4. Reflecting and Learning (Phase 4) from the project and comparing the results with existing theory to understand the deviations.
5. Communicating and Pivoting (Phase 5) to business and academia by publishing the results.

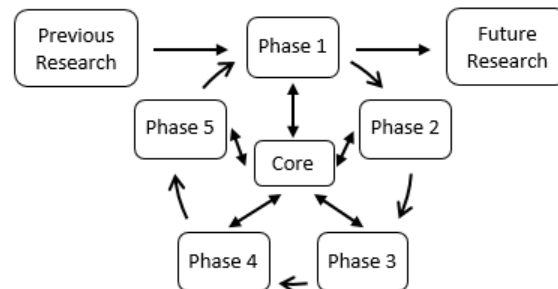


Figure 1. The framework of Action Research

3.2 Innovative Capabilities Capability Maturity Model

The capability maturity model is a model for evaluating organizational capabilities (Lahrmann et al. 2011). The capability maturity model will be used twice in this study. First, before this action research begins (Phase 1), the aim is to determine the company's innovative capability level baseline. The second is at the end of the project implementation (Phase 3) to see how many improvements have been realized.

4. Results and Discussion

4.1 Phase 1 (December 2021 – January 2022)

One trucking company involved in this research. This company was founded in 1985 and currently has approximately 300 trucks, specializing in transporting fast-moving consumer foods (FMCG) and finished products. The service coverage is Java, Sumatra, Bali, and Lombok. In the initiating phase, the framework and context of the research were

discussed by conducting interviews with the company's director to identify the company's resources and capabilities (Mumford 2001), (Snoeren et al. 2012), particularly the company's innovative capability. It is essential to develop and evaluate the framework and the selection of the parties involved in this research.

4.2 Phase 2 (January – February 2022)

This phase determines the purpose of action research: to increase the company's innovative capability. The schedule, activities, and resources are determined in this section. Capacity building is carried out to harmonize work practices and research. The researcher then identified the problem and developed a framework to solve the problem. Action research is used to build market orientation and technology capabilities to improve the company's innovative capability. Currently, methods, approaches, and techniques that differ from practice are tested. This phase uses qualitative research findings through interviews to address practical problems. Qualitative research methods such as interviews, observations, and data and document analysis were selected, adapted, and used for research activities (Sørensen et al. 2010). Employees are allocated based on their problems and abilities (Arieli et al. 2009). Further, the company assigned a project team to develop and evaluate the already defined framework. The initial state is obtained from the capability maturity model result to determine the project's Key Performance Indicator (KPI) (Anzai et al. 2012), as can be seen at Figure 2.



Figure 2. Initial innovative capability maturity model

4.3 Phase 3 (February – April 2022)

The action phase aims to develop solutions and required specifications based on research data. Even if the roadmap has been defined, observing progress and field deviations during this phase is essential. In this phase, the method of coordination has been discussed to address the changes that might occur with the parties involved (Mumford 2001).

The project's sustainability is highly dependent on the role of participants in adapting to new changes. The role of the researcher is vital in providing training in methods to facilitate change and providing feedback around the research framework. So that research projects do not stall, a sound documentation system has been put in place for all activities, observations, reflections, and actions, including meeting minutes and discussions (Arieli et al. 2009). Researcher bias was avoided due to proximity to participants. Considering the results of capability maturity model to improve the innovative capability of the trucking company, most of the things that were not done in the company were competitor orientation, as many as 19 problems. The second is supplier relationship with four problems, and the last is customer orientation with one problem. As for the technological capability itself, the value is outstanding.

As long as 60-day was allocated for the process in phase 3, the human resource department was the facilitator to ensure a successful project. The primary responsibility for this project is the marketing and sales department. The company's top management also gave a very high commitment to the success of this project. Support from the company's leadership is needed to ensure the success of a project. The human resources department ensures 100 percent participation from every department. The company leadership issues an assignment letter to determine the personnel involved in each department.

The human resource department is responsible for assisting the marketing and sales departments manage the company's overall capabilities to find information regarding competitors. In carrying out this task, the human resources

department collaborates with other relevant departments, including management, information technology, marketing, sales, security, and safety. The information technology department provides technical support related to the use of technology. Finally, the safety and security department was also involved, as this department often collaborates with competitors on the company's security and safety matters within the truck association.

Action research activities were continued with the establishment of new standard operating procedures (SOPs). This SOP is an addition to the existing SOP, based on the competence of employees in seeking information about competitors. This SOP was created jointly, prioritizing collaboration between related departments, including management, information technology, marketing, sales, security, and safety. The human resources team chairs this activity. This SOP is vital as employees act within the company. So far, no attention has been paid to competitor orientation. This SOP is made so that this activity can be carried out consistently.

This meeting was held at the start of Phase 3 in early February. The human resource team and researchers completed this new additional SOP in seven days. This SOP is an additional activity added to the SOP of the marketing and sales department. The company marketing and sales department generally collects data and discusses customer information only. With the new SOP, they also need to collect data for competitors. It is intended so companies can respond more quickly when there are changes in competitors' strategies in the market.

The human resource department and other related parties analyze the knowledge and skills employees require to carry out activities based on their ability to find information about competitors. This activity is carried out with a target time of 14 days and must be completed in mid-February. The human resource department is looking for company personnel, preferably in the marketing, sales, and security and safety departments. The marketing and sales department focuses more on competitors' marketing activities, while the security and safety department focuses on other supporting activities because this department collaborates with competitors.

Given the very high level of activities for the marketing and sales departments, researchers and the human resources department are looking for alternatives for prospective personnel with sufficient skills and knowledge to carry out this task in other departments. Obtaining new personnel is impossible, considering that the world is currently experiencing a COVID-19 pandemic, and optimization of company personnel is a must. Finally, company personnel with adequate capabilities, one from the finance department and one from the security and safety department, were given additional tasks. With the appointment of this personnel, we plan based on their competence in seeking information about competitors.

The company only allocated two personnel as core personnel to determine competitors' strengths and weaknesses. In addition to allocating two personnel, a special team was formed, led directly by company management and facilitated by the human resources and information technology department during the project. This team consists of marketing, sales, security, and safety departments. After the project ends, the plan is that this team will continue to run with members from the marketing, sales, and security and safety departments. 5 percent of the personnel in each department is allocated to support this activity.

The above team is directly involved in searching for information about competitors. Competence regarding competitor orientation is a new for company. Because the marketing and sales departments are looking for information daily about the interests and needs of customers, doing the same for competitors is considered not difficult for them. The security and safety department, facilitated by the information technology department, also provides data regarding competitors.

Training and development are essential parts of this action research. It is because the company has a low maturity value on competitor orientation. Although the company can already deal with customers, competitors have not become a particular concern. This training aims to develop the employee's ability to search for information and identify competitors' strengths and weaknesses. The company's capabilities must be built so that activities related to competitor orientation can be carried out correctly and consistently.

This training activity plan will be carried out on two personnel who have been appointed, with an allocation of 16 hours of training for each personnel. This training will be completed within 30 days with 4 hours divided each week.

The entire training series was completed in March. Considering the short research time (six months), the training results will be implemented in April. All training activities were carried out successfully.

Sound performance management is an effort the company must make to get optimal and consistent results at every opportunity. Regarding orientation towards competitors, employee performance for this section should be calculated based on the ability to obtain information from competitors. Data regarding that competitor can be obtained through the security and safety department, as they often interact with competitors through truck associations. It should be noted that this data is limited to association members only. Other competitor data can also be obtained through other media, for example, the internet. This data must be further managed to become helpful information for the company.

Employee performance should also be calculated based on finding out the strengths and weaknesses of competitors. Information regarding the strengths and weaknesses of competitors is precious for the company to react quickly and appropriately to threats and opportunities that may arise. Employee performance concerning competitor orientation is also factored into the company's overall performance. Information on competitors and their strengths and weaknesses is presented in management meetings and then factored into the direction and goals of the company going forward. The calculation and formulation of performance management were completed in February, concluding that the target number of competitor data and information must be obtained is ten competing companies each month.

Once performance management is defined, compensation is essential for ensuring the change is permanent; formulation of compensation is based on employees' ability to find information regarding competitors' strengths and weaknesses. Performance targets have been determined in the previous section. When employees reach the targets the company expects, they will get a bonus based on the amount of information obtained. In addition to competitor orientation, we need to determine compensation for supplier relations in this section.

Since the marketing and sales departments have previously carried out this customer orientation, compensation for the marketing and sales departments will also consider how employees seek information to meet customer needs. The target amount of information for this section is the same as the target we have previously set, which is ten pieces of information per month regarding the required information. Meanwhile, data on meeting customer needs is obtained from satisfaction surveys and customer complaints conducted once a month. Compensation is calculated for sales and marketing department employees based on the fulfilment of data targets and customer satisfaction surveys.

The expected performance target is how employees maintain good relations with suppliers. The departments involved in supplier relationships include management, maintenance, fleet monitoring, and human resources. Data and information related are obtained through a survey of suppliers once a month. Compensation for those involved with suppliers considers the results of the above survey. This new compensation is targeted and completed no later than mid-March. The company thinks the employee compensation for this will be included in the company's annual bonus.

The development of new career paths for employees needed by the company is twofold. The first relates to competitor orientation and fostering good supplier relationships. For competitor orientation, employees are required to seek information about competitors. The company sees information about competitors as not the primary function required by the company, so no particular person is needed to handle this. This function can be accommodated by the marketing and sales departments. Due to the lack of personnel in this department, this work is carried out by one finance personnel and one security and safety personnel. Special personnel who are members of the marketing and sales departments will be needed in the future.

Trucking companies differ from manufacturing companies which have their procurement department. Suppliers in these trucking companies are generally suppliers of vehicles, spare parts, and others. Trucking companies do not have capital goods explicitly used for production purposes. Assets owned are trucks that require regular maintenance and management of the company does not need a particular procurement department to handle this matter. Major purchases, such as truck purchases, are handled directly by top management, while the maintenance, fleet management and human resource departments handle other purchases, such as spare parts and equipment. Each of these departments handles relationship-building with suppliers. The development of career paths, for now, cannot be implemented.

Two cultures that must be developed in this research include competitor orientation and a culture for building good supplier relationships. Cultural development takes a very long time. Forming a culture with only six months of research is challenging. In addition, during the research period, the company allocated staff from finance to find information

about competitors, even though the data was indeed in the security and safety department. It is feared that this will reduce the formation of competitor oriented culture. It is feared that a positive culture of building good supplier relationship with will also not be optimal, given the time and no special department to handle this. The department related to suppliers has other activities, so it is also feared that the focus will not be optimal for fostering good supplier relationship. Several performance management indicators related to the two things above were obtained through data collection and surveys, so management consistency in conducting supervision is crucial for forming a culture related to this.

By finding new ways to find information about competitors, innovation needs to be continuously developed. The company plans to allocate a budget of IDR 20 million in one year to deal with this. This budget will focus on purchasing hardware and software equipment needed to support competitor orientation. Then part of the budget is used to be more active in association activities. As we all know, associations are associations of similar companies with the same interests. An association is a collection of competing companies, so it is an appropriate vehicle for obtaining information regarding what competitors are doing and doing together.

4.4 Phase 4 (April – May 2022)

This research involves company-wide. Many studies were not successful because they only focused on company leaders. The success of this research contributed to the support from all components of the companies. Researchers have high involvement with companies during action research. We measure the maturity level for the second time to compare the initial state with the final state after the project. After this project, the maturity level of competitor orientation increased to level 3 from level 1. It increased the overall maturity level of market orientation which was previously at level 3 and rose to 4.

Meanwhile, the maturity level for technology capabilities remains at level 5, and for suppliers' relationships, it remains at level 4. Together they increase the overall maturity level of the innovative capability to 4.33 from level 4. An illustration of this maturity level can be seen in Figure 3.



Figure 3. Improved innovative capability maturity model

As for Customer Orientation, the company believes that providing compensation and bonuses to seek information regarding customer needs is sufficient by annual bonus. In our opinion, an annual bonus will not impact employee behavior directly, similar to a supplier relationship. The company should optimize these factors by providing direct compensation. However, the company could not do this at this stage because of budget restrictions due to COVID-19. Competitor orientation has shown good development; from 19 problems that existed, eight problems have not been resolved. Seven more problems persist competence-based planning, practice and improvements, capability management, career path, innovation, and corporate culture formation. In parallel, two more problems of suppliers' relationships have not been resolved at the end of this research. Due to budget savings, recruiting new employees to handle competitors and procurement has not been performed. Employees from other departments were assigned to

handle both matters. Longer time is needed for culture formation, competency development, and innovation. Not much development supported competitor orientation and good relations with suppliers in a short time.

This phase is essential to reflect research findings and company practices, including academic and practical contributions (Swann 2002), (Sørensen et al. 2010), (Levin 2012).

5. Conclusion

Trucking companies are facing a harsh competitive environment today. Therefore, companies must constantly innovate to be more efficient and agile and increase competitiveness. We have conducted action research to improve the innovative capability of a trucking company. Initially, we measured the level of innovative capability using a maturity model developed previously. It involves assessing three significant elements of innovative capability, market orientation (customer and competitor orientation), technological capabilities, and supplier relationship. After six months of engagement, the exact measurement was conducted. The actions taken during the study improved the level of innovative capability.

This study has several limitations, including limited company resources. This limitation occurs due to the COVID-19 pandemic, so the company favors optimizing existing resources rather than investing in more fundamental innovation. In addition, some variables were not addressed with sufficient time, such as changes in corporate culture.

5.1 Academic Contribution

This study emphasizes the importance of good collaboration between researchers and companies due to numerous discussions and reflections that have been done. It distinguishes action research from other research methods (Farooq and O'Brien 2015). This research approach contributes to intense collaboration between researchers and companies by fostering mutual trust (Touboullic and Walker 2016). In a relatively short time, the trust between the parties was successfully obtained.

This research is new, addressing the innovative capabilities of trucking companies. Virtually no study reported in the literature has addressed the innovative capability of trucking companies. We believe this will contribute enormously to the economy of almost every country in the world. Innovative capabilities will enable trucking companies to perform better, yield lower logistics costs and more reliable deliveries, and improve the economy. Assessing innovative capability before and after action research is also a novel approach.

5.2 Practical Contribution

Although this research was applied to an Indonesian trucking company, we believe it can also be extended to other trucking companies, third-party logistics companies, distribution companies, courier companies, and other companies performing trucking services. There are at least two takeaways from this action research. First is the importance of having good relationships between the researcher and the organization where the action research is performed. The second is giving sufficient attention to human resources for better innovative capabilities.

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