



# The Effect of Innovation Capability on Competitiveness: An Empirical Study at Food and Beverage Industry

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## ABSTRACT

This study was aimed to investigate the effect of dimensions of innovation capability on company competitiveness of the food and beverage industry in Makassar, South Sulawesi. Main data collection tool in this study was questionnaire. Number of samples was 122 companies, where managers/supervisors were respondents in this study. Both descriptive statistics and multiple linear regression were used as data analysis techniques. Furthermore, data was processed by using IBM SPSS version 25. This study found that learning capability, resource allocation capability, research and development capability, manufacturing capability, marketing capability, organizational capability, and strategic capability as innovation capability elements partially influence company competitiveness. Then, three dimensions of innovation capability i.e.: marketing, manufacturing, and strategic capability have a dominant influence on company competitiveness, especially in increasing product quality as well as product delivery to consumers.

**Keywords:** *Innovation capability, competitiveness, food and beverage industry.*

## 1. INTRODUCTION

Competitiveness is generated from the ability of each organization or company to produce goods and services of better quality than competitors in the market. Therefore, companies that can produce products that are able to compete in terms of quality, price, product delivery, flexibility, and innovation compared to their competitors will have better competitiveness [1]. The company's competitiveness can be increased through continuous improvement effort on all business activities from suppliers to end consumers. The core of business activities is to meet both customer demand and need. Companies that want to increase their competitiveness must be intensive and radical in making improvements, especially on its elements such as product innovation and speed in delivering goods and services to consumers [2] [3]. The company's competitiveness is also related to the company's ability to quickly introduce its products to the global market [4].

The rapidly changing external environment is a challenge as well as an opportunity for each organization to improve its innovation capabilities. The innovation capability of a company can be seen from the quality of goods and services produced [5]. In line with technological advances, activities to increase innovation capability can be carried out through technological innovation capability (TIC). Then Ferreira and Coelho [6] divide innovation capability into 7 dimensions, namely capability of learning, resource allocation, research and development (R&D), manufacturing, marketing, organizational, and strategic capability. The results of their research found that dimensions of innovation capability have a significant impact on company competitiveness, especially on sales growth and quality product. Another research also found that innovation capability affects a company's competitiveness [7].

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Furthermore, several previous studies related to the process of developing innovation capabilities in various developing countries, found that innovation capabilities have a significant contribution in increasing the competitiveness of companies in the short, medium and long term [8] [9]. The food and beverage industries are a strategic sector that must increase their competitiveness because they have an important role in the national economy. BPS noted that the contribution of the food and beverage industry was 6.61% to the non-oil and gas processing industry with growth between 5-7%, while in Makassar City the growth of this sector experienced significant growth averaging 5.5% in the period 2020-2022 [10]. Based on the theory and empirical facts mentioned above, this study is to examine and analyze the effect of innovation capability dimensions toward a company's competitiveness in the food and beverage industry sector.

**2. MATERIALS AND METHODS**

This study uses a quantitative research design, which is a research approach carried out to test hypotheses based on empirical theory and facts [11]. The population includes food and beverage companies registered of 5,488 units. The number of samples was 122 companies which were determined based on the Slovin formula at  $\alpha=10\%$ . Then respondents in this study were company leaders at the manager level (supervisor, middle manager, top manager). There are two types of variables in this study, namely independent variable, and dependent variable.

Organizational capability is the primary construct. It divided into seven variables i.e.: learning capability (X1), resource allocation capability (X2), research and development capability (X3), manufacturing capability (X4), marketing capability (X5), organizational capability (X6), and strategic capability (X7), while the company competitiveness (Y) is dependent variable. These variables are measured through their indicators by using Likert scale with score 1 to 5. Score 1 = strongly disagree until score 5 = strongly agree. Both primary data, and secondary data are used in the study. Primary data was collected through questionnaires, and interviews, then secondary data was obtained from company reports, and officially published data from local government, central bank of Indonesia and related institutions. Furthermore, both descriptive statistical, and multiple linear regression analysis is used to reveal respondent profile, variable, and hypothesis testing. Then, data is calculated by using IBM SPSS version 25.

**3. RESULTS AND DISCUSSION**

This study uses a quantitative research design, which is a research approach carried out to test hypotheses based on empirical theory and facts [11]. The population includes food and beverage companies registered of 5,488 units. The number of samples was 122 companies which were determined based on the Slovin formula at  $\alpha=10\%$ . Then respondents in this study were company leaders at the manager level (supervisor, middle manager, top manager). There are two types of variables in this study, namely independent variable and dependent variable.

*3.1 Results of descriptive statistical*

The results of this analysis describe the implementation level of all variables based on respondent perception to innovation capability elements and company competitiveness with mean score. The results can be provided below.

**Table 1.** Description of Research Variable

Variable	Min	Max	Mean	Description
Learning capability (X1)	2	5	3.70	High
Resource allocation capability (X2)	2	5	3.92	High
R&D capability (X3)	2	5	3.36	High enough
Manufacturing capability (X4)	2	5	3.98	High
Marketing capability (X5)	2	5	4.26	Very High
Organizational capability (X6)	2	5	3.88	High
Strategic capability (X7)	2	5	3.94	High
Company's competitiveness (Y)	3	5	4.12	High

The results of the analysis in the table above show that in general the company's innovation capabilities are in a fairly good category. Marketing capability is a dimension of innovation capability that has the highest mean value

(4.26) compared to other dimensions, while research and development capability has the lowest average mean (3.36). This is an indication that food and beverage companies in Makassar City have high innovation capabilities in the marketing field. On the other hand, the ability to innovate in research and development (R&D) is still quite low. Data also shows that company competitiveness is also in the high category with a mean value of 4.12. This means that in general food and beverage companies in Makassar City can compete in the market, because they continuously develop their products, especially in terms of quality, flexibility, price, and speed of product delivery to consumers.

### 3.2 Results of multiple regression model

This model was used to test research hypotheses. The hypotheses tested and analyzed in this study include: H1: Learning capability has influence on company competitiveness; H2: Resource allocation capability has influence on company competitiveness; H3: R & D capability has influence on company competitiveness; H4: Manufacturing capability has influence on company competitiveness; H5: Marketing capability has influence on company competitiveness; H6: Organizational capability has influence on company competitiveness; and H7: Strategic capability has influence on company competitiveness. Completely, results of analysis can be seen below.

**Table 2.** Research hypothesis test results

Variable	Reg. Coefficient	t-value	Sig.	Description
Learning capability □ company's competitiveness	0.211	3.210	0.005	Significant (H1, accepted)
Resource allocation capability □ company's competitiveness	0.184	2.676	0.008	Significant (H2, accepted)
R & D capability □ company's competitiveness	0.255	3.422	0.001	Significant (H3, accepted)
Manufacturing capability □ company's competitiveness	0.402	5.175	0.000	Significant (H4, accepted)
Marketing capability □ company's competitiveness	0.477	5.660	0.000	Significant (H5, accepted)
Organizational capability □ company's competitiveness	0.326	4.581	0.000	Significant (H6, accepted)
Strategic capability □ company's competitiveness	0.382	4.964	0.000	Significant (H7, accepted)
n=122; t-table = 1.980; R <sup>2</sup> = 0.784; r = 0.886 F-value = 23.005; F-table = 2.440; Constant= 0.1855				

Based on the results above, the empirical equation model and empirical model results can be presented below:

$$Y = 0.1855 + 0.211 X_1 + 0.184 X_2 + 0.255 X_3 + 0.402 X_4 + 0.477 X_5 + 0.326 X_6 + 0.382 X_7$$

Results of analysis on the table show a correlation coefficient ( $r$ ) of 0.886. This indicates that the relationship between the innovation capability variable and competitiveness is a very strong category. Then, coefficient of determination value ( $R^2$ ) of 0.784. It means that variation in the score of the company competitiveness can be explained by the innovation capability variable of 78.4%, while the remaining ( $100\% - 78.4\% = 21.6\%$ ) is explained by other variables outside the model. Simultaneously, innovation capabilities have a significant effect on company competitiveness. F-value which is larger than the F-table ( $23.005 > 2.440$ ), and significance value less than  $\alpha$  standard (5%) support this finding.

Furthermore, from the results of the analysis, it can also be explained that partially the innovation capabilities variable which consist of capability of learning, resource allocation, research and development, manufacturing,

marketing, organizational, and strategic capability have a positive and significant influence on competitiveness. Value of significance (sig.) each variable less than standard  $\alpha = 5\%$ . In addition, it can also be seen that the t-value is greater than the t-table (t-value  $> 1.980$ ). Therefore, all the hypotheses proposed in this study (H1 to H7) are supported by empirical facts.

Learning capability influences company competitiveness with a regression coefficient of 0.211. This indicates that an increase in the learning capability score, namely the level of education, experience, and age of the employee impact on increasing company competitiveness in the aspects of quality, price/cost, speed of delivery, flexibility, and time to market. Then, resource allocation capability impacts company competitiveness with a regression coefficient of 0.184. This indicates that an increase in the resource allocation capability score, namely the number of employees, capital, raw materials and location impact on increasing company competitiveness.

Research and development (R&D) capability impact to company competitiveness with regression coefficient of 0.255. This indicates that an increase in the R&D capability score including development of innovation in products, processes, and marketing can support company competitiveness. Furthermore, manufacturing capability influences company competitiveness with a regression coefficient of 0.402. This indicates that an increase in the score of manufacturing capability including production tools/machines that are able to improve quality, productivity, and efficiency can support company competitiveness.

Marketing capability influences company competitiveness with a regression coefficient of 0.477. This indicates that an increased marketing capability score, namely products, prices, and brands that have been accepted in the market will impact on increasing competitiveness. Then, organizational capability impacts company competitiveness with a regression coefficient of 0.326. It indicates that an increase in organizational capability score, namely organization's ability to manage capital, conduct training and mentoring for employees and partner with external parties will have an impact on company competitiveness. In addition, strategic capability influences company competitiveness with a regression coefficient of 0.382. This indicates that an increase in the strategic capability score, namely a special strategy in competing and retaining customers, will impact positively on increasing the company competitiveness in terms of quality, price or cost, speed of delivery, flexibility, and time to market.

These findings are in line and strengthen the findings of previous research conducted by Lianto, *et al.* [12], and Bahta, *et al.* [7] that stated innovation capability is an important element in efforts to increase the competitiveness of organizations/companies. Furthermore, the results of the study also show that the dimension of innovation capability that gives the most influence in increasing competitiveness is marketing capability. [1], [13], and [14] confirmed that the ability to innovate in marketing is very important to ensure the sustainability of the organization in the long term. Hyper competition in the global market, rapid changes in consumer demand are some of the challenges that need to be resolved by management of a company by using technological advances in the field of marketing. Likewise, company competitiveness in the global market will be determined by the extent to which its level of innovation capability can be used to generate quality products and services in accordance with market needs.

#### 4. CONCLUSIONS

Innovation capability includes a number of capabilities that companies must owe in order to compete in the global market. The empirical findings of this study prove that ability in learning, resource allocation, research and development (R&D), manufacturing, marketing, organizational, and strategic capability are the key elements in improving company competitiveness. However, learning capability has a positive impact on company competitiveness both partially and simultaneously. This study also found that capability in marketing was a dominant variable in increasing company competitiveness. Marketing capabilities include the use of e-marketing technology such as social media marketing in marketing products and services to consumers. Therefore, managers of food and beverage companies should be focused on increasing innovation capabilities, especially innovation in the marketing field, in order their companies can achieve both best performance, and sustainable competitiveness. Currently, intensive use of e-marketing technology is one of the best options to encourage increased sales and market share for companies, especially those operating in the food and beverage sector.

#### AUTHORS' CONTRIBUTIONS

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