

Analyzing the Relationship between Competitive Intelligence Activities and Ethics with Sustainable Competitive Advantage and Capabilities of Technology Commercialization

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Received 22 Jul 2022

Accepted 22 Aug 2022

Online Published 7 Feb 2023

Abstract

Introduction: Today, competitive intelligence and ethics play a valuable role in promoting sustainable competitive advantage and technology commercialization capabilities of companies. According to the current competitive environment, companies are looking for a suitable solution for survival and durability. Therefore, the present research was conducted with the aim of analyzing the relationship between competitive intelligence activities and ethics and sustainable competitive advantage and technology commercialization capabilities.

Material and Methods: This research was applied and among descriptive-correlation researches. The statistical population was managers and experts in the fields of research and development, quality, marketing, commerce, sales, production, training, human resources and information technology of 11 large dairy companies in Tehran and Fars provinces. The sample size of the research was 306 people, and they were selected by cluster sampling method. The questionnaire tool was made by the researcher and finally the data were analyzed through SPSS 26 and Smart PLS 3 with structural equation modeling method.

Results: The results showed that the proposed model has a good fit for Iran's dairy industry. Competitive intelligence and ethics activities have a significant effect on sustainable competitive advantage and technology commercialization capabilities. Also, technology commercialization capabilities have a significant effect on the sustainable competitive advantage of companies.

Conclusions: Using the current research model in the dairy industry improves sustainable competitive advantage. Companies can help improve sustainable competitive advantage by considering competitive intelligence and ethics and technology commercialization capabilities.

Keywords: Sustainable Competitive Advantage, Competitive Intelligence Activities, Ethics, Technology

How to Cite: Zebarjad K, Rezaei G. Analyzing the Relationship between Competitive Intelligence Activities and Ethics with Sustainable Competitive Advantage and Capabilities of Technology Commercialization. Int J Ethics Soc. 2023;4(4):45-51. doi: 10.52547/ijethics.4.4.8

INTRODUCTION

Today's business environment has become an information-based industry, so that only experts and technology can create a sustainable competitive advantage [1]. In order to solve future problems, using new and existing resources, companies should look for competitive intelligence, including technology, new capabilities, and corporate ethics [2].

Sustainable competitive advantage and its advantages in inter-organizational relations of commercial companies that face constant changes in the environment have become an important area for their survival. Globalization of the market, competition and rapid

development of technology have directly affected business organizations [3]. The urgent need of companies to gain a sustainable competitive advantage has made them broaden their horizons and evaluate the issues related to competitive intelligence and ethics and technology commercialization capabilities more seriously [4].

The activities of competitive intelligence and ethics help companies to adapt to the changing environment and move in difficult conditions [5]. Competitive intelligence and ethics is a process that helps managers in making informed and correct decisions and brings competitive

advantages to the company [6]. The activities of competitive intelligence and ethics accelerate the commercialization of information technology, break tough conditions and ultimately lead to environmental changes [7].

Environmental and organizational characteristics affect the activities of competitive intelligence and ethics, and examining this issue provides a comprehensive perspective to help managers develop a sustainable competitive advantage [8]. Competitive intelligence and ethics as a strategic tool in the management of companies for the continuation of the company's economic life in a competitive environment is rapidly expanding and is becoming a standard that can help managers in making smart decisions in order to create a sustainable competitive advantage. This strategic tool facilitates the identification of opportunities and potential threats [9]. Competitive intelligence and ethics help senior managers, regardless of company size, make informed decisions about marketing, research and development, investment tactics, and long-term business strategies [10].

Technology commercialization can be used as a process to acquire ideas and a complementary knowledge tool, and this process can improve the development, production and sale of salable products in the market [11]. Most studies show that companies pay serious attention to topics related to competitive intelligence and ethics in order to gain a sustainable competitive advantage. For this reason, it can be stated that the more competitive intelligence and ethics are paid attention to by the company, the more sustainable competitive advantage will be brought to the company [12].

Based on theoretical studies, researchers have a consensus about the relationship between the concepts of competitive intelligence activities and ethics with sustainable competitive advantage and technology commercialization capabilities. In general, competitive intelligence and ethics is one of the important concepts of company management and is intertwined with their cultures, companies that use a suitable program of competitive intelligence and ethics have a better understanding of the competitive landscape and by moving towards strategies management, create appropriate programs to increase sustainable competitive advantage and technology commercialization capabilities [13].

Since the benefits of sustainable competitive advantage are an important factor for dairy companies to survive in turbulent conditions, this factor has been the basic issue for conducting this research. The perspective of

competitive intelligence and ethics is considered as a way to understand the process of strengthening sustainable competitive advantage and technology commercialization capabilities of dairy companies. Therefore, the purpose of this research is to analyze the relationship between competitive intelligence activities and ethics and sustainable competitive advantage and technology commercialization capabilities, according to the research conceptual model in Figure 1.

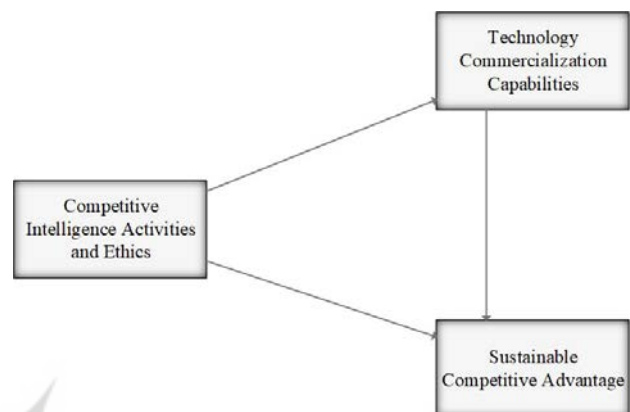


Figure 1. Conceptual model of research

MATERIAL AND METHODS

In terms of method, the present research is applied and the type of reasoning is comparative research. In terms of gathering information and data, research is considered quantitative which was implemented by descriptive-correlation method.

The statistical population includes managers and experts in the fields of research and development, quality, information technology, commerce, marketing, sales, training, production and human resources of dairy companies in Tehran and Fars provinces. Sampling of managers and experts in the fields of research and development, quality, information technology, commerce, marketing, sales, training, production and human resources of 11 dairy companies in Tehran and Fars provinces was done through convenience sampling. Among the companies of Fars province, we can mention Pegah Fars, Armaghan pasteurized milk company (Mani Mas), Zarin Ghazal (Daiti, Apada) and Arjan. Among the companies in Tehran province, we can mention Pegah Tehran, Pak, Sabah, Mihan, Panda, Rouzaneh and Chupan.

To determine the sample size, Cochran's formula was used with a specific statistical population and GPower software. Due to the possibility that some questionnaires may not be answered or returned, 10% more questionnaires than the calculated sample size have been distributed, so that this issue does not lead to a decrease

in the final sample size from the calculated sample size. Finally, 306 people were selected as a sample using multi-

stage cluster probability sampling. The demographic characteristics of the sample are presented in Table 1.

Table 1. The demographic characteristics of the sample

| | Frequency | Percentage |
|--------------------------------|-----------|------------|
| Gender | | |
| Male | 238 | 77.8 |
| Female | 68 | 22.2 |
| Age | | |
| Less than 30ys | 70 | 22.9 |
| 31-40ys | 180 | 58.8 |
| 41-50ys | 51 | 16.7 |
| More than 50ys | 5 | 1.6 |
| Education | | |
| Diploma | 26 | 8.5 |
| B.A | 146 | 47.7 |
| M.A | 124 | 40.5 |
| Ph.D | 10 | 3.3 |
| Organizational unit | | |
| R & D | 23 | 7.5 |
| Quality | 43 | 14.1 |
| Information technology | 24 | 7.8 |
| Business | 19 | 6.2 |
| Marketing | 41 | 13.4 |
| Sale | 60 | 19.6 |
| Training | 21 | 6.9 |
| Production | 47 | 15.4 |
| Human resources | 28 | 9.2 |
| Organizational position | | |
| Manager | 75 | 24.5 |
| Master manager | 17 | 5.6 |
| Expert | 183 | 59.8 |
| Master expert | 31 | 10.1 |

Table 2. Path coefficients of the relationship between constructs and their related components

| Hypothesis | Path Coefficient | P-Value | T-Value | Results |
|------------|------------------|---------|---------|----------|
| H1 | 0.292 | 0.000 | 4.423 | Accepted |
| H2 | 0.485 | 0.000 | 4.451 | Accepted |
| H3 | 0.116 | 0.000 | 2.742 | Accepted |

Table 3. Results of R²

| Variables | R ² | R ² adjusted |
|-----------------------------------|----------------|-------------------------|
| Capabilities of commercialization | 0.809 | 0.808 |
| Sustainable competitive advantage | 0.895 | 0.893 |

To collect data, a researcher-made questionnaire in the range of five Likert options was used. The research questionnaire is prepared in the form of news items, and the respondents answered one of the 5 options of the Likert scale including: Very little (1), Little (2), Medium (3), Much (4), Very much (5). Cronbach's alpha for all research constructs is above 0.7 and the reliability values are all reported above 0.7, which shows that the constructs have good composite reliability.

Data analysis was tested using structural equation modeling (SEM). Smart PLS software is used for data analysis and inferential statistics in this section. In the Smart PLS software, the relationships between research variables were examined, causal hypotheses based on

structural equation modeling, questionnaire reliability and validity tests and finally the final research model were examined.

RESULTS

In this research, the researcher has used structural equation modeling or partial least squares.

The hypothesis of this research are as follows:

1. The activities of competitive intelligence and ethics have a significant effect on technology commercialization capabilities (H1).
2. The activities of competitive intelligence and ethics have a significant effect on sustainable competitive advantage (H2).

3. Technology commercialization capabilities have a significant effect on sustainable competitive advantage (H3).

According to Table 2, path coefficients and significant values were examined.

(H1): Competitive intelligence activities and ethics have a significant effect on technology commercialization capabilities

The first hypothesis, according to the value of P-value = 0.000 and its standardized value t-value = 4.423, at the confidence level of 99%, H₀ is rejected and H₁ is significant in the target population. According to the mentioned cases, the activities of competitive intelligence and ethics have a significant effect on the commercialization capabilities of technology.

(H2): The activities of competitive intelligence and ethics have a significant effect on sustainable competitive advantage

The second hypothesis, according to the value of P-value = 0.000 and its standardized value t-value = 4.451, at the confidence level of 99%, H₀ is rejected and H₁ is significant in the target population. According to the mentioned cases, the activities of competitive intelligence and ethics have a significant effect on sustainable competitive advantage.

(H3): Technology commercialization capabilities have a significant effect on sustainable competitive advantage

The third hypothesis, according to the value of P-value = 0.000 and its standardized value t-value = 2.742, at the confidence level of 99%, H₀ is rejected and the statistical hypothesis H₁ is significant in the target population. According to the mentioned cases, technology commercialization capabilities have a significant effect with a sustainable competitive advantage.

The accuracy test for predicting endogenous variables, the higher the value of this criterion, indicates the correct selection of the selected variables in the model. To explain the data in Table 3, it can be said that the number below 0.19 is weak, the number between 0.19 and 0.33 is moderate, the number between 0.33 and 0.67 is strong and the number above 0.67 is very strong.

The variable of activities of competitive intelligence and ethics predicts the behavior of the variables of technology commercialization capabilities and sustainable competitive advantage with a coefficient at a very strong level.

Then the SRMR index is calculated and compared with the cut point of 0.08. If this index is smaller than 0.08, the model is suitable.

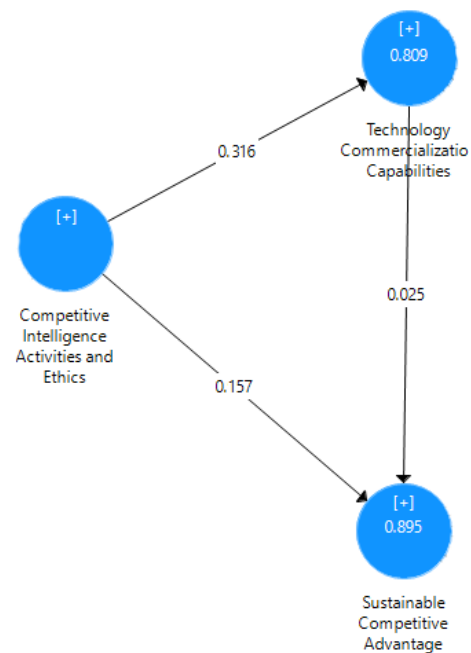


Figure 2. The general research model based on the estimation of standard coefficients

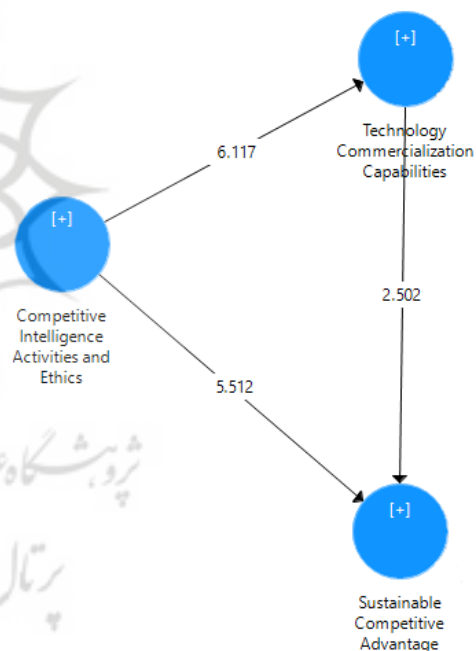


Figure 3. The general model of research in the significance of coefficients

The value of SRMR index is 0.061, which is smaller than 0.08, and it can be said that the model is suitable and the observations of the sample are consistent with reality. Then, the GOF criterion was examined, which is the geometric mean of the coefficients of determining the endogenous variables and the average of the shared values of the research variables. Three values of 0.01, 0.25 and 0.36 have been used to check the values of this criterion.

$$GOF = \sqrt{0.58 \times 0.31} = 0.424$$

Considering that the GOF value is more than 0.36, it can be said that the overall research model has a good fit.

The general model of the research is according to Figures 2 and 3 in two modes of estimation of standard coefficients and significance of coefficients.

DISCUSSION

The results of this research confirm the significant effect of competitive intelligence activities on the two variables of technology commercialization capabilities and sustainable competitive advantage. Also, the significant effect of technology commercialization capabilities on sustainable competitive advantage was investigated and confirmed.

According to hypothesis 1, competitive intelligence and ethics have a significant effect with technology commercialization capabilities and it is confirmed. This result has been confirmed in past researches [11, 12, 14]. The result of the research showed that the activities of competitive intelligence and ethics can directly affect the commercialization capabilities of technology.

According to hypothesis 2, competitive intelligence and ethics have a significant effect with sustainable competitive advantage and it is confirmed. This result has been confirmed in previous researches [11, 13, 15]. The results of the research showed that the activities of competitive intelligence and ethics can directly affect sustainable competitive advantage.

According to hypothesis 3, technology commercialization capabilities with sustainable competitive advantage have a significant effect and it is confirmed that this result has been confirmed in past researches [16-18]. The results of the research showed that technology commercialization capabilities can directly affect sustainable competitive advantage.

Competitive intelligence helps senior managers of organizations to make informed decisions about long-term business strategies and planning for sustainable competitive advantage. According to the above, in this research, we define the activities of competitive intelligence and ethics as a systematic process of collecting, analyzing and using information to evaluate the performance of competitors. The company's business environment survives through interaction with the external environment [19].

Ethics in organizations is defined as a system of values. On the basis of these values good and bad of the organization are determined and the bad action is distinguished from the good. Competitive intelligence as a strategic tool facilitates the identification of potential opportunities and as a technical framework increases the

efficiency of the organization and the integration of processes and finally focuses on decision-making processes at different organizational levels, [20, 21].

Applying a competitive intelligence program in companies by relying on strengthening business intelligence leads to a better understanding of the competitive landscape. The only lasting competitive advantage for companies is value ethics, which is the source of this ethical behavior of employees who use a knowledge-oriented approach in processes [22].

Every research has limitations and obstacles that each of these limitations affects the work process during its implementation. This research has the following limitations:

1. Dependence of data collection on how to respond from the point of view of managers and experts of research and development, quality, information technology, commerce, marketing, sales, education, production and human resources departments of dairy companies.
2. The degree of accuracy, interest and motivation of people in answering the questions of the questionnaire.
3. Considering that a questionnaire was used to collect research data, it is possible that some people refused to give real answers.

According to the results of this research, the following suggestions can be made:

- The company must have a special understanding of technological innovation, the trends of suppliers and buyers, and the activities of competing companies.
- Information security of input data, output data and analysis of companies should always be important, because information is an integral part of any company's success.
- Computer systems play a big role in the speed, accuracy and quality of information, so companies should provide appropriate systems to their employees.
- Companies should pay attention to maintaining friendly relations with suppliers, exerting effective influence on competitors and maintaining friendly relations with social pressure groups by strengthening competitive intelligence and ethics activities.
- Companies should have the ability to implement product ideas on time, develop products, introduce products on time, create products suitable for different demographic markets, improve products suitable for different regional markets and improve products suitable for markets have an area.
- Companies must have the ability to acquire technology and integrate technology to improve existing products and create new products.

- It is very important to prioritize high levels of service for customers regardless of price in order to maintain a stable competitive advantage.
- Guaranteeing superior technology compared to competitors and guaranteeing a superior service model compared to competitors are two factors that companies should prioritize.
- A company in the current market is successful if it has the ability to supply and provide products and services at least one level higher than the current level.
- In order to increase the competitive advantage, companies should invest more in marketing activities including advertising and promotion than competitors. It is also very important to understand the brand awareness of products or services by the company.
- By creating motivational conditions and training employees, companies provide the conditions in such a way that the department, units and employees meet management goals, cost reduction goals, competitiveness and management innovation program in their unit.
- The level of ethical commitment of employees regarding information security in competitive intelligence should be taken into consideration by companies through providing suitable conditions.

CONCLUSION

The results of this research show that sustainable competitive advantage and technology

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Ethical Considerations

Ethical issues (such as plagiarism, conscious satisfaction, misleading, making and or forging data, publishing or sending to two places, redundancy and etc.) have been fully considered by the writers.

Conflict of Interest

The authors declare that there is no conflict of interests.

Acknowledgement

Researchers consider it necessary to express our gratitude to all the faculty members, experts and managers who helped us in completing this research.

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