

Research Article

IMPACT OF USING INFORMATION TECHNOLOGY ON CREATING A SUSTAINABLE COMPETITIVE ADVANTAGE FOR COMPANIES; (CASE STUDY: GOLESTAN FOOD COMPANIES)

***Ahmad Aslizadeh**

Department of Industrial Management, College of Management and Accounting, Yadegar-e-Imam Khomeini (RAH) Branch, Islamic Azad University, Tehran, Iran

**Author for Correspondence*

ABSTRACT

In this study, how to use information technology to create a sustainable competitive advantage in Golestan food companies are identified using structural equation modeling. The goal of this research is the application And the method of data collection, is descriptive - correlation. First, using library resources (Persian books, Latin books, and papers on the study of overt and covert variables) were developed theoretical foundations. Judgmental sampling (based on expert opinion) was performed, and After the questionnaire was designed based on literature, For the test, were distributed to the food industry and academic experts and After the reliability test, the final questionnaire was distributed to 130 employee companies in the food industry in Golestan Province. The results show a significant relationship between the uses of information technology in firms and create sustainable competitive advantage in them. According to research results, the secondary hypotheses are defined, management features have the greatest impact on IT adoption. Finally, it is proposed: Food companies have to Special attention to the management features including management and technical knowledge of IT and also management approach to innovation using the known factors influencing sustainable competitive advantage is achieved.

Keywords: *Information Technology, Sustainable Competitive Advantage, Food Industry Firms*

INTRODUCTION

In the landscape of the 21st century, firms have been stayed in a complicated competitive situation influenced by many factors, including globalization, increasing technologies and increasing speed of diffusion of new technologies. As part of this new vision, firms need to act differently than before to survive and thrive. In particular, firms must seek new sources of competitive advantage and implement new forms of competition which requires a clear understanding of the nature and dynamics of the race. According to the concept of competitive advantage that is derived from the concepts of strategic management, it can be said that competitive advantage is the result of a dynamic and continuous process given the position of the external and internal comes of organization resources and by deploying the right resources, abilities will be raised such that advantage of these capabilities brings competitive advantage for organizations.

On the other hand, by increasing complexity and highly competitive environment, the competitive advantage can be easily imitated by competitors or for customers simply reduce so organizations need to do to sustain their competitive advantage. Here, food production industry due to close contact with life of people is and fierce competition by companies and investors is studied.

Background of the Study

Data and Information

It is defined as a set of data, calculations and statistics; while the information is organized and processed data which is updated and correct (Holsapple, 2003). Related and processed data can be used as knowledge in organization.

Definition of Information Technology

On an instrument approach whatever the cause of the collection, Workflow, process and exchange data and messages without the constraints of space and time is information Technology. With strategic

Research Article

approach information Technology is a strategy, thought, and tool in the man field with innovation (Zargar, 2003). In other definitions, information technology is a set of different tools includes: Hardware, information theory, data network, workstations and artificial intelligence (robotics) that use of various forms of information as a systematic process used to implement the activities(Zandieh, 2005).

Importance of Information Technology

IT has changed the structure and processes. This technology forced organizations to be small, reduce their number of employees and organizational level, develop internal and external corporate communications, and reduce communication costs. Effective use of information technology means repeated creating of structures and organizational processes. In a new creation; the main emphasis is on simple, direct relationships between employees, customers, products and processes and electronic definition of organizational processes (Strebinger and Traiblmaier, 2006).

Information Technology as an Innovation

For decades, the value and importance of information systems and information technology has had a pervasive and determining role in organization's business. The rapid deployment of the Internet and corporate databases in the 80s and 90s have increased adjustment business practices process and its communication areas. This situation and its possible developments present several challenges to our ability to design and deliver information systems.

However, for many organizations, Information Systems (ICT) still has an innovative role in line with market performance and communication with stakeholders. It means admission process has been shaped as a possible object of the decision-making process and management issues. Incentives for innovation will create in organization when decision makers consider functional gaps or find that current situation of organization isn't satisfactory. Technological and process improvements have tangible role in achieving quality objectives and performance. Identify the improvements that increase the quality level of the organization is a crucial process for processing the performance.

From strategic aspects, successful management of innovation processes on competitive efforts. These efforts may include depth knowledge of technological advances and adequate analysis of networks advantages. This means that managers should consider technologies that necessarily will be offered with high levels of knowledge and to improve the quality of fusion alternatives.

These considerations about the value of information must be focused on organizations appraisal of IT. Past performance may be evaluated prior to the decision making process i.e. before installing the computational technologies in information systems related to them. After this operation organization can be focused on extra-functional assessment of the technology, it means evaluation of the operational use of IT (Alberto, 2007).

Factors influencing the adoption of information technology in organizations

- Individual factors
- Organizational factors
- Management features
- Economic factors
- Technological factors
- Position relative to competitors

In today's environment there is no longer doubt that a competitor will be able to maintain its position among competitors that are able to rely on their information and knowledge extracted from competitors, clever with use of ICT design and implement his strategy or strategic plan and manage it. Today in any business enterprise walking toward drawn path or its view can be possible without the use of ICT. In other word, nowadays getting optimal results of doing our around processes isn't impossible without the use of ICT (Najafi, 2010).

Definition of Competitive Advantage 1

Competitive advantage is amount of increasing the attractiveness of the company's in comparison with competitors in terms of customer suggestions (Kigan, 2001). In another definition, competitive advantage

Research Article

is offered company values to customers so that these values are higher than the costs of customer (Porter, 1990).

Competitive advantage is strategic focal point and main concept in strategic management. This advantage will be created distinct of an organization at a particular business in the view of stakeholders, including customers. Customer must feel mentally that organization was able to create more value to him than the other competitors. If an organization does not have a competitive advantage, cannot survive in the long term (Ismail, 2008).

Types of Competitive Advantage

Based on theoretical foundations and real and concrete dynamics of competition competitive advantage can be divided into five general types:

-Position Advantageous Against Movement (Dynamic)

Position advantageous is created from features and stock of company that causative agents of these advantages are usually static and they are on the basis of property resources and assets or based on availability. Competitive advantages movement (dynamic) are base of efficiency and effectiveness of companies in the market, because these benefits resulting in companies do their business activities more effectively and efficiently than competitors that usually based on the knowledge and capabilities of the firm.

- Homogeneous versus Heterogeneous Advantages

Position benefits and dynamic advantages can be homogeneous or heterogeneous when a company and its competitors, basically using the same method and the same skills and competencies congruent compete; in this case, competitive advantage can be achieved by performing similar activities better.

By contrast of homogeneous advantage is heterogeneous benefits that essentially playing distinct role in game or generally, playing role in game is different. In this advantage" being different "has an important role such that provide better services and more value for customers by using of skills, different combinations of resources or different products.

- *Tangible versus Intangible Benefits:* Obvious competitive advantage is that advantage that its origin is obvious sources that can be seen as physical data such as machinery, equipment, etc. On the other hand, intangible benefits of it are not simply possible to view it in the physical form. These types of advantages are usually hidden behind certain factors. This advantage can be due to trade secrets (Brand) reputation, teaching and learning methods and knowledge of staff, organizational culture, and so forth.

- *Simple Advantage versus Compound One:* Competitive advantage in terms of performance can act alone or as a combination of the multiple advantages as an integrated whole in interact with each other that in the first case competitive advantage is simple and it is combination in the second shape.

- *Temporary Advantage versus Permanent One:* Competitive advantage in any case can be competitive in terms of performance versus temporary competitive advantage, sustainable competitive advantage that it is long term and isn't temporary firstly and secondly, it isn't easily accessible by competitors.

Influencing Factors of Sustainable Competitive Advantage

Investigation in competitive advantage has shown that scholars emphasize on different factors to create and increase competitive advantage:

1- Entrepreneurial Capabilities

Defining Entrepreneurial Capabilities

It is said to a set of features that has allowed exploit of competitive advantage innovation in an organization and it is an approach for institutionalization of innovation in organizations.

Research Article

Mirzasafi *et al.*, (2009) counts innovation and creativity, risk taking, independence and achievement of entrepreneurial ability.

In fact, entrepreneurial capabilities are defined as a window into the operation of sustainable competitive advantages and leadership and innovation for enterprises (Imanipour, 2008).

- Innovation

Use of innovation in products and services is one of the most important and fundamental mechanisms of creating a sustainable competitive advantage in today's dynamic environment (Shahrakipour, 2010). In fact organizations have shown great interest in creativity and innovation in order to meet the rapidly changing of market.

- Risk

Usually, when we hear word "entrepreneur", remember risk. In fact, these two concepts are similar to each other.

Entrepreneurial risk because he buys primary factors of a product by a specified price and intends to market the product and sell. But he isn't sure about prices at all and may even don't be sure that what does the customer want or sold wares or not (Saeidi, 2009).

- Independence

Need for independence is of factors that are emphasized as a very motivating force in entrepreneurship. The desire for independence is a motivating force in entrepreneurship. Hence, the freedom is the rewards of entrepreneurship. In fact, need for independence is a factor that contributes to entrepreneurs achieve their goals and dreams (Mackeran and Felanigan, 1996).

Achievement

Success requires includes tendency to labor in higher standards level to being succeed in competitive conditions. Ministry with a high need for achievement tend to always be in challenges and in the way of achieving available objectives also to their performance; and needed for timing regular feedback.

Marketing Capabilities Definition

Marketability helps a company to establish a strong connection between customers and other users.

Marketing capabilities, including processes such as greatly service to customer, marketing research in order to identify customer needs and trait and creating a differentiated product in terms of quality, price, reputation, services and that each of these variables are positively associated with firm performance especially in the areas of innovation, quality, entrepreneurship, create competitive advantage and increase sales and market share (Weerawardena, 2003).

MATERIALS AND METHODS

Methodology

Conceptual Model of Research

With analysis similar patterns as well as previous research results and proposed hypotheses, the conceptual model of the present study consists of a main hypothesis and five sub- hypotheses in figure 1 was constructed.

This study aims to identify the effect of the independent variable of IT on dependent variable of sustainable competitive advantage.

In fact, this research analyzes theoretical relationships between hidden variables by inclusion measurable variables.

Research Article

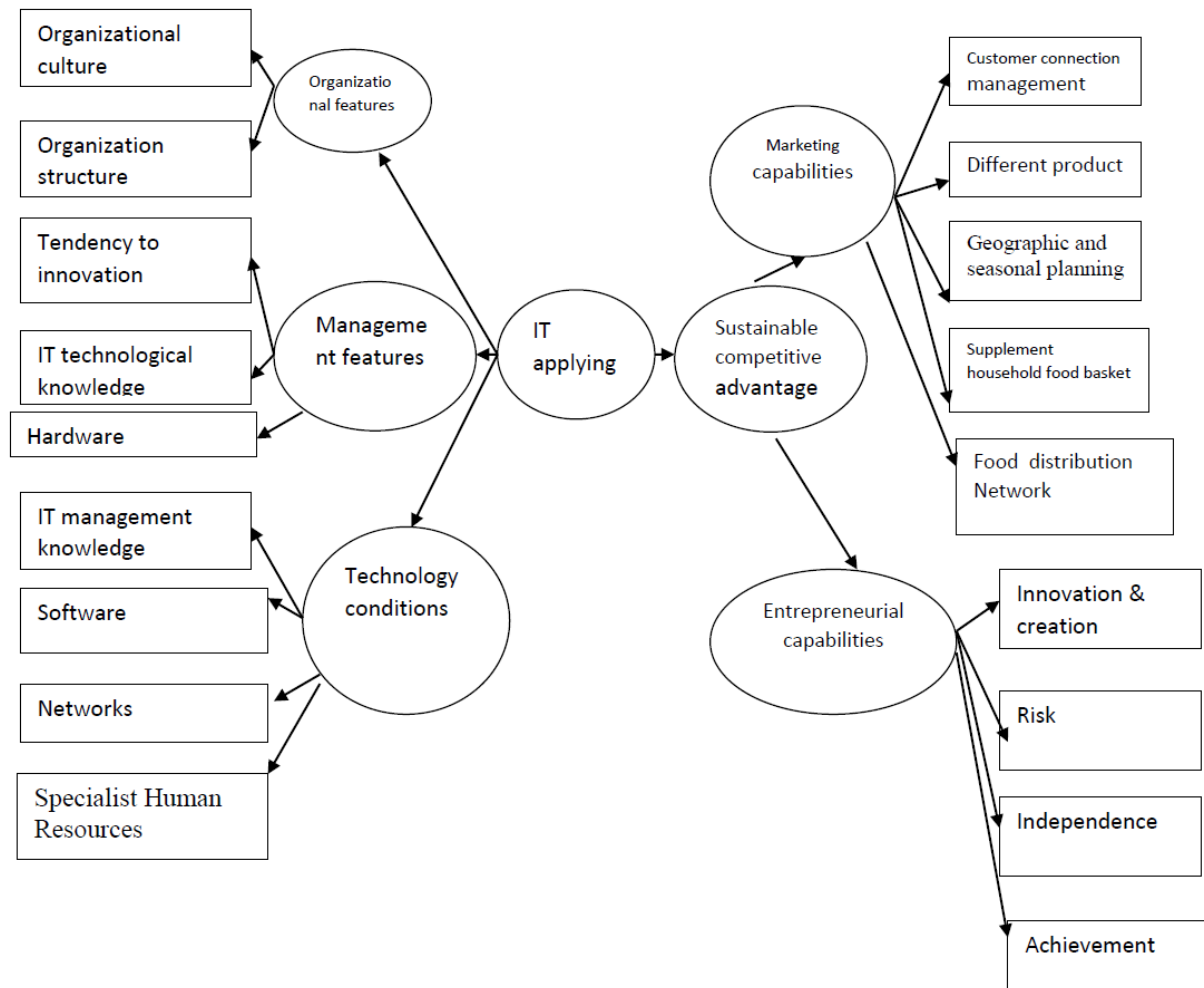


Figure 1: Conceptual model of the impact of information technology on creating a sustainable competitive advantage

To design this model, various models and acts of specialized experts in the field of information technology and food industry is used.

Research Hypotheses

Main Hypothesis: There is a positive and meaningful relation between “use of information technology” and “create a sustainable competitive advantage” in food industry companies of Golestan.

Sub-hypotheses

Hypotheses 1: There is a positive and meaningful relation between “organizational features” and “use of information technology” in food industry companies of Golestan.

Hypotheses 2: There is a positive and meaningful relation between “management features” and “use of information technology” in food industry companies of Golestan.

Hypotheses 3: There is a positive and meaningful relation between “Technological conditions” and “use of information technology” in food industry companies of Golestan.

Hypotheses 4: There is a positive and meaningful relation between “Marketing capabilities” and “use of information technology” in food industry companies of Golestan.

Hypotheses 5: There is a positive and meaningful relation between “Entrepreneurial capabilities” and “use of information technology” in food industry companies of Golestan.

Research Article

The Population, Sampling Method and Sample Size

Statistic society of this research is senior managers and 22 skilled workers in food Industries of Golestan. According to experts in the field, the target statistic society was limited. In this research statistic society is 130 people and 30 people of food distribution companies' experts and academic experts that are associated with relative education, with administrative experience in the IT field and are familiar with concept of competitive advantage were used for pre-test. In this way, sampling judgment (based on expert opinion) method was used, because of the specialized field of information technology and the limited number of experts in this field.

Methods and Tools for Analyzing Data

Analyze data using statistical techniques in particular, the Pearson correlation test to hypotheses test and the technique of "structural equation modeling" was used for conceptual modeling.

Researches Findings

After confirmatory factor analysis, we will test the research hypotheses by doing proper analysis

To research hypotheses test, structural equation modeling using LISREL statistical software for has been used. Structural equation modeling of this study is shown in Fig. In this diagram numbers or indices are divided into two categories. The first set is measurement equations that are relationships between latent variables (ellipses) and apparent variables (rectangles).

These equations are the so- called Loading factor. Second set are structural equations that are hidden and hidden relationships between variables and used to test hypotheses. These coefficients are the so- called Path coefficient. Based on the factor loadings, a measure that has maximum load factor has more shares in measuring related variable and index that has smaller coefficient plays a lesser role in the measurement corresponding structures.

Goodness of Fit Statistics

Chi-square=181.48, df=129, ($\chi^2/df=1.406<3$)

RMSEA=0.042<0.08, GFI=0.92>0.09

CFI=0.95>0.09, NFI=0.93>0.09

NNFI=0.97>0.09, IFI=0.95>0.09, RFI=0.92>0.09

Also, in Figure 3 structural equation model of this research is presented with the t-value.

That shows approval or rejection research at 95 percent insurance.

Goodness of Fit Statistics

Chi-square=181.48, df=129, ($\chi^2/df=1.406<3$)

RMSEA=0.042<0.08, GFI=0.92>0.09

CFI=0.95>0.09, NFI=0.93>0.09

NNFI=0.97>0.09, IFI=0.95>0.09, RFI=0.92>0.09

- *The First Hypothesis Tests:* There is a positive and meaningful relation between "organizational features" and "use of information technology" in food industry companies of Golestan.

As research finding, application IT with severity of 0.97 is influenced by organizational characteristics.

So regarding obtained coefficient significant and positive path coefficients, the above hypothesis is confirmed.

- *The Second Hypothesis Tests:* There is a positive and meaningful relation between "management features" and "use of information technology" in food industry companies of Golestan.

Also, application IT with severity of 1.11 is influenced by management characteristics. $Y=1.11$, $T=6.67$

So regarding obtained coefficient significant and positive path coefficients, the above hypothesis is confirmed.

- *The Second Hypothesis Tests:* There is a positive and meaningful relation between "management features" and "use of information technology" in food industry companies of Golestan.

Another side application IT with severity of 1.11 is influenced by management characteristics. $Y=1.11$, $T=6.67$

So regarding obtained coefficient significant and positive path coefficients, the above hypothesis is confirmed.

Research Article

- *The Third Hypothesis Tests:* There is a positive and meaningful relation between “Technological condition” and “use of information technology” in food industry companies of Golestan.

Also, application IT with severity of 0.65 is influenced by management characteristics. $Y=0.65$, $T=5.11$

So regarding obtained coefficient significant and positive path coefficients, the above hypothesis is confirmed.

- *The Forth Hypothesis Tests:* There is a positive and meaningful relation between “Marketing capabilities” and “use of information technology” in food industry companies of Golestan.

As figure 2 application IT with severity of 0.65 is influenced by management characteristics. $Y=0.66$, $T=2.23$

So regarding obtained coefficient significant and positive path coefficients, the above hypothesis is confirmed.

- *The Fifth Hypothesis Tests:* There is a positive and meaningful relation between “Entrepreneurship capabilities” and “use of information technology” in food industry companies of Golestan.

Another side, application IT with severity of 0.82 is influenced by management characteristics. $Y=0.82$, $T=2.13$

So regarding obtained coefficient significant and positive path coefficients, the above hypothesis is confirmed.

- *Main Research Hypothesis:* There is a positive and meaningful relation between “use of information technology “and” Create a sustainable competitive advantage” in food industry companies of Golestan.

Also, application IT with severity of 0.90 is influenced by management characteristics. $Y=0.90$, $T=5.04$.

Thus, according to the main hypothesis of this study can be concluded that there is a significant, directly and substantial relationship between use of IT and create a sustainable competitive advantage in companies and a positive coefficient indicates the direction of change of direction, such that the higher the rate of adoption of information technology in enterprises, company achieve sustainable competitive advantage will be even higher.

Practical Suggestions

One of research objective of present research is use of obtained results, offer to corporate executives to more use of the known benefits and use of information technology in order to gain competitive advantage in the food industry companies which are presented below:

- Given the magnitude of 0.71 for the Senior Director of IT technical knowledge, food companies should raise the issues of education and technical ability to do special enterprise IT senior managers to increasing applying level possibilities be provided.

- IT management knowledge is of important known factor that special attention should be paid to it at the macro level of organizational and with selection of top management in the IT category strengthen IT departments corporate.

- With regard to the impact of 0.64 for organizational structures sub-criteria food companies should focus on issues that are considered one of the organizational structure that the decision to focus heavily on the issue of the application of IT managers has been reduced and more freedom to decide will be given to IT organizations.

- Also in the context of organizational culture should be work on staff inferred from the use and potential benefits of using information technology to barriers are minimized.

- Creating good communication networking with current technology in order to make maximum use of information technology applications also can be placed on the agenda of senior business executives.

- Creativity and innovation using IT tools can assist the company in selling more products for example, use of special arrangements for products sale or providing benefits and services to customers who are members of web Club Inc can be considered as a proposal in this category.

- Use of software applications on the market for management customer relationship and consider the needs and feedback resulted of use of products can be effective in getting customer's view and encourage them to buy more and thus the profitability of the company.

Research Article

Suggestion for Further Research

- It is recommended due to the limited number of experts in the field and barriers to access to them fuzzy logic and similar linguistic variables in future research is used.
- It is recommended amount of sustainability of competitive advantage in companies that have advantage in the past few years and reasons for possible increase or decrease their competitive advantage be made.

REFERENCES

- Aghazadeh H and Esfidani M (2008).** IT application in sustainable competitive advantage. Case study of manufacturing firms in Iran, *Journal of Business Research* **46** 2012, 2020
- Atkins MH (1998).** The Role of Appropriability in Sustaining Competitive advantage. *Journal of Strategic Information Systems* **7**(2) 131-152.
- Ajhvan P (2004).** Implementation Business Strategy by Information Technology. *Tomorrow Management* (in Persian) **2**(7-8) 27.
- Barney J (1991).** Firm resources and sustained competitive advantage. *Journal of Management* **17**(1) 99–120.
- Chirani E, Bagheri M and Delafrooz N (2012).** Factors affecting competitive advantage Case Study: Food Industry Company in Mazandaran. *Trends in Advanced Science and Engineering* **5**(1) 2-6.
- Chiochan O, Lindley D and Dunn T (2000).** Factors affecting the use of information technology in Thai Agricultural Cooperatives: A Work in Progress. *The Electronic Journal on Information Systems in Developing Countries* **2**(1) 6-7.
- Day GS (2004).** The capabilities of the Market-Driven organization, *Journal of Marketing* **58** 37-52.
- Fani A and Mosleh A (2006).** Managerial and structural factors affecting use of information technology in government agencies: Boushehr, Professor of Humanities Quarterly **3** 170.
- Ireland D and Justin D (2007).** Strategic entrepreneurship: Creating competitive advantage through streams of innovation. Kelley School of Business, Indiana University.
- Heydarali H (2008).** *Structural Equation Modeling using Lisrel Software*, organization of study and Edit humanities science books of universities (SAMT).
- Lee and Hsieh (2010).** A Research in relating Entrepreneurship, Marketing capability, Innovative capability and sustained competitive advantage. *Journal of Business and Economics Research*.
- Kigan V (2001).** *Global Marketing Manager*, translated by Ibrahimh A, first printing (Cultural Research Bureau).
- Mashayekhi A, Farhangi A, Momeni M and Alidosti S (2005).** Researching affecting key factors on application of information technology in Iran government organizations, application of Delphi way 195-197.
- Mehri A (2004).** Take a look at the concept of sustainable competitive advantage, *Journal of Tact* **140**.
- Navarro A, Losada F, Ruzo E and Dí'ez JA (2010).** Implications of perceived competitive advantages, adaptation of marketing tactics and export commitment on export performance. *Journal of World Business* **45** 49-58.
- Ong JW and Ismail HB (2008).** Sustainable Competitive Advantage through Information Technology Competence: Resource-Based View on Small and Medium Enterprises. *Communications of the IBIMA* **1**.
- Powell TC and Dent-Micallef A (1997).** Information Technology as Competitive Advantage: The Role of Human, Business and Technology Resources. *Strategic Management Journal* **18**(5) 375-405.
- Robert P and Clare J (2004).** A framework for supporting the management of technological knowledge. *International Journal of Technology Management* **27**(1).
- Shakiba J and Jalali Seyed H (2000).** Identify influencing factors in creation competitive advantage by using strategic orientation towards entrepreneurship, First Annual Conference on Management, *Innovation and Entrepreneurship* 5-2.

Research Article

Talebnejad A (2008). The role and effect of information technology in the creation and maintenance of sustainable competitive advantage. *International Journal of Information Science and Technology* **6**(1) 60-70.

Verdinezhad F, Amiri M and Bahrani Sh (2009). Effect of modern technology on competitive advantage agency of the Islamic Republic, Public Administration **3** 186-187

Weerawardena J (2003). The role of marketing capability in innovative-based competitive strategy. *Journal of Strategic Marketing*.

Zargar M (2003). *Principles and Concepts of Information Technology*, first Printing, Tehran, knowledge production **16**.

Zhang MJ and Lado AA (2001). Information systems and competitive advantage: a competency based view. *Journal of Technovation* **21** 147–156.