

Chapter 16

Evaluation of Innovation Performance With AHP and TOPSIS Integrated Approach: An Application in Hazelnut Sector

Derya Öztürk

Ordu University, Turkey

Yasemin Hancıoğlu

Ordu University, Turkey

ABSTRACT

The aim of the study is to determine the most appropriate enterprises by revealing the innovation performances of the companies operating in the hazelnut sector in Ünye. In this study, weights of the criteria and sub-criteria, which are thought to have an effect on the innovation performance of the enterprises, were determined by analytical hierarchy process (AHP). TOPSIS method has been used to rank the alternatives. In this way, TOPSIS aims to establish a degree of importance for each alternative enterprise and to determine the highest degree of importance as the most appropriate enterprise in terms of innovation performance. As a result of the study, it was determined that the main criterion that most affects innovation performance in hazelnut sector is the financing function, which is followed by production function, R&D function, management function, and marketing function, respectively. According to the results obtained using the TOPSIS method, the best alternative was Enterprise 4 in terms of innovation performance and the worst alternative was Enterprise 1.

INTRODUCTION

Innovation, which refers to the development, creation and promotion of new processes, products or services successfully (Udwadia, 1990) is an important concept for businesses because it results in a competitive advantage. Technological skills, knowledge and experience in creating new products increase

DOI: 10.4018/978-1-7998-5886-7.ch016

competitive advantage (Pla-Barber and Alegre, 2007). Innovation is a tool that increases productivity and profitability, reduces costs, improves the quality of products and services and facilitates entry into new markets (Özgür Güler and Kanber, 2011). Innovation is at the core of global competition, and therefore, should be understood, managed and supervised by businesses that actively seek growth in both domestic and international markets. Innovation, which plays a key role in increasing competitive advantage in the food industry, refers to the process in which new and creative ideas, processes, products or services are produced and introduced to target markets to meet customer expectations and to stand among the crowd. Hazelnut has always maintained its feature of being an important product among agricultural products in healthy nutrition, creating employment, supplying raw materials to other industrial branches and especially providing export income (Öztürk et al., 2019: 108). Hazelnut is a traditional export product of Turkey, covering about 15-20% of the total export of agricultural products. Turkey accounts for more than 80 percent of the world's hazelnut trade (Öztürk et al., 2017). Turkey needs value-added innovations to turn its global leadership in hazelnut exports into a major economic advantage. The city of Ordu accounted for 16.26% of total domestic hazelnut exports in Turkey in 2018 (Ordu Commodity Exchange, 2019). The aim of this study was, therefore, to analyze the innovation performance of companies operating in district of Ünye of Ordu and exporting hazelnuts to domestic and international markets. Analytic Hierarchy Process (AHP) were used to determine the weights of the criteria and sub-criteria which have an effect on the innovation performance of the companies. Alternatives were ranked in order of importance using TOPSIS method in order to determine which company had the highest importance, and hence, the best innovation performance. We believe that the results will help hazelnut companies identify and raise their awareness of the factors that play a key role in innovation in the hazelnut sector, and therefore, enable them to make a greater contribution to the national economy. To our knowledge, this is the first study to analyze the factors affecting the innovation performance of hazelnut companies.

THE CONCEPT OF INNOVATION

Innovation is an important concept that has attracted attention and become the subject of numerous studies in recent years. According to Lange (1943: 21), innovation is defined as changes in production function that provide enterprises with maximum net value under the current market conditions (in terms of production factor input and product output performance). Cumming (1998: 22) defines it as the first successful application of a product or process while Freeman and Engel (2007: 94) defines it as “a process that begins with a novel idea and concludes with market introduction”. According to McDaniel (2000: 277), innovation is a functional key used by entrepreneurial people. According to Parthasarthy and Hammond (2002: 75), it is a new product developed through existing or new scientific and technological knowledge and marketed by a business. Kitanovic (2005: 19) defines it as information, technology, new information or combination of information used in production. Roberts (2007: 36) defines it with the equation of “innovation = invention + commercialization”. According to Çetinkaya Bozkurt and Kalkan (2014: 189), innovation is the application of new ideas to create value for businesses.

The literature shows that there is no consensus on the definition of innovation. For some, innovation is the development and application of new concepts and ideas, while for others, it is the new or applied ideas themselves. Innovation is regarded not as a source of new ideas but as the benefit of successful applications arising out of those ideas (Naktiyok, 2007: 212).

20 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/evaluation-of-innovation-performance-with-ahp-and-topsis-integrated-approach/269011

Related Content

The Relationship and Impact of Communication on Leadership: A Research Note

Brian J. Galli (2021). *International Journal of Applied Management Sciences and Engineering* (pp. 1-11).

www.irma-international.org/article/the-relationship-and-impact-of-communication-on-leadership/271265

Corporate Governance: The Role of Board of Directors in the Strategic Planning Process of Organizations

Michael Anibal Altamirano and Ameil A. Sloley (2023). *Strategic Management and International Business Policies for Maintaining Competitive Advantage* (pp. 1-11).

www.irma-international.org/chapter/corporate-governance/326731

The Luxury Fashion Market in Russia: Evolution and Future Opportunities

Cesare Amatulli, Matteo De Angelis, Irina Bugakova, Emanuela Stagno and Gianluigi Guido (2016).

Handbook of Research on Global Fashion Management and Merchandising (pp. 670-693).

www.irma-international.org/chapter/the-luxury-fashion-market-in-russia/151757

The Influence of Culture on Consumer Decision-Making Styles of Namibian Millennials: An Application of Hofstede's Cultural Dimensions

Efigenia Madalena Mario Semente and Grafton Whyte (2019). *International Journal of Applied Management Sciences and Engineering* (pp. 29-45).

www.irma-international.org/article/the-influence-of-culture-on-consumer-decision-making-styles-of-namibian-millennials/218188

E-marketing for SMEs

Neeta Baporikar and Rosalia Fotelela (2018). *International Journal of Applied Management Sciences and Engineering* (pp. 11-28).

www.irma-international.org/article/e-marketing-for-smes/196584